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Practical Comparison of Use of Inj. Ranitidine and Inj. Omeprazole in Peri-Operative Period in Respect to Efficacy and Cost-Effectiveness for Prevention of Stress Ulcers

Shah Bhavin K.[1], Asokan Aiamperumal[2]

[1]Associate Professor [2]Second Year Resident, Department of General Surgery, SBKS Medical Institute & Research Center, Piparia, Vadodara, Gujarat 390025, India.

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Abstract

Background: Since advent of Proton Pump Inhibitors (PPIs) use of H2 receptor blockers (Ranitidine) is on decline. There is no doubt that PPIs are superior gastric acid suppressors and should be first line of therapy for peptic ulcer disease. Surgeons routinely use gastric acid suppressors for prevention of stress ulcers in peri-operative period. PPIs are more expensive, especially in injectable form. *Methodology:* We studied incidence of complications in the form of 1. Haemetemesis or bloody aspiration from Ryle's tube 2. Newly developing epigastric tenderness retrospectively in 1000 patients underwent, laparotomy under general anaesthesia over the period of October 2011 to June 2018 in our surgical department. Patients were classified according to whether they were given PPI or H2-receptor blocking agents in peri-operative period. Patients with portal hypertension and gastric surgeries were excluded from the study. *Results:* there was no statistical significant difference between use of either agent for prophylaxis of stress gastritis. *Conclusions:* H2-receptor blockers should be used in peri-oprative period instead of PPIs to reduce the cost of surgery as it does not increase risk of stress ulcers.

Keywords: Inj. Ranitidine, Inj. omeprazole, stress-ulcers, gastritis, haemetemesis

Corresponding Author: . Shah Bhavin K, Associate Professor, Department of General Surgery, SBKS Medical Institute & Research Center, Piparia, Vadodara, Gujarat 390025, India.

E-mail: drbhavin_08@yahoo.com

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Introduction

Stress ulcers are mucosal defects in stomach or duodenum which can become complicated by upper gastrointestinal bleeding due to severe physiologic stress. Ordinary peptic ulcers usually occur in the gastric antrum and the duodenum while stress ulcers usually occur in gastric fundus. However, they can occur anywhere in the stomach and proximal duodenum. The characteristic lesions may be multiple, superficial in mucosa, similar to erosive gastritis. Occasionally, there may be a large acute ulcer in the duodenum (Curling's ulcer) [1]. They range in depth from mere shedding of the superficial epithelium (erosion) to deeper lesions that involve the entire mucosal thickness (ulceration) [2]. The ulcerations may be confined to the mucosa or they may penetrate deeper into the submucosa. Erosions cause diffuse mucosal oozing while the ulcer can erode into a submucosal vessel and produce frank hemorrhage [3].

Material and Methods

This study was carried out over a period of 6.5 years at our institution SBKS Medical Institute & Research Center in department of General Surgery, Vadodara. As the study was done for already established drugs (which did not involve any new drugs), permission of Institute Research Council was not taken. 1000 cases undergone laparotomy during this period were studied retrospectively and were divided in two parts. Those who had PPIs and those who had H2-receptor blockers used for stress ulcer prevention.

Pathogenesis

Adequate mucosal blood flow is important to maintain the mucosal barrier, and to buffer any back-diffused hydrogen ions. When blood flow is inadequate, these processes fail and mucosal breakdown occurs. Due to inadequate gastric mucosal blood flow during periods of intense physiologic stress or a breakdown in other normal mucosal defense mechanisms in conjunction with the injurious effects of acid and pepsin on the gastroduodenal mucosa [4] stress ulcers and erosive gastritis develops.

Risk factors- are broadly divided in two parts

1. Non-critically ill medical patients with two or more of the following: respiratory failure, sepsis, heart failure, hepatic encephalopathy, jaundice, kidney failure, stroke, hypertension, previous gastrointestinal disease and treatment with corticosteroids, NSAIDS, heparin, or warfarin.

2. In surgical critically ill patients, only those patients who are on a mechanical ventilator for more than 48 hours, those with a coagulopathy [5] or who develop one of the severe medical complication as mentioned above. It is also encountered in patients who sustain severe trauma (especially burns) or undergo major surgery (including neurosurgery) [6].

Stress ulcers were seen in 1.5% of patients in the 2252 patients in the Canadian Critical Care Trials group study [3]. People with stress ulcers have a longer ICU length of stay (up to 8 days) and a higher mortality (up to 4 fold) than patients who do not have stress ulceration and bleeding [7]. While the bleeding and transfusions associated with the stress ulcerations contribute to the increased mortality, the contribution of factors like low blood pressure, sepsis, and respiratory failure to the mortality independently of the stress ulceration can not be ignored. Patients who develop stress ulcers typically do not secrete large quantities of gastric acid; however, acid does appear to be involved in the pathogenesis of the lesions. Thus it is reasonable either to neutralize acid or to inhibit its secretion in patients at high risk [8]. Endoscopic means of treating stress ulceration may be ineffective and operation may require [9]. Surgical options include Vagotomy + Distal gastrectomy with oversewing of the major bleeding lesions, near total gastrectomy or Angiographic embolization. In selected patients, either endoscopic therapy or selective infusion of vasopressin into the left gastric artery may help control the hemorrhage [10].

Results & Observations

We found that out of 1000 cases studied, 210 patients were given PPIs and 790 patients were given H2-receptor blockers in peri-operative period for stress ulcer prevention. Only 2 patients had either haemetemesis or blood in Ryle's tube and 15 patients had epigastric pain in peri-opertive period in those having PPIs. Only 1 patient had either haemetemesis or blood in the Ryle's tube and 5 patients had epigastric pain in those having H2-receptor blockers (Inj. Ranitidine). There was no mortality from either group and in most patients bleeding was stopped by increasing dose of given drug. Only 1 patient needed endoscopy to stop bleeding from fundus of stomach.

Discussion

Stress gastritis is a peculiar entity that has all but disappeared from the clinical (if not endoscopic) lexicon, largely due to better critical care and acid suppression or cytoprotective agents (e.g., sucralfate) in the intensive care unit (ICU). Modern intensive care, with emphasis on adequate tissue perfusion and oxygenation, has undoubtedly decreased the severity of gastric mucosal injury seen in the ICU today. Although it is still common to see small mucosal erosions when performing upper endoscopy in the ICU, it is rare for these lesions to coalesce into the larger bleeding erosions that plagued the ICU patient 30 to 50 years ago. The need for medications to prevent stress ulcer among those in the intensive care unit is unclear. The quality of the evidence is poor [11]. It is unclear which agent is best or if prevention is needed at all [12]. Benefit may only occur in those who are not being fed [13]. Drugs used include antacids, H2-receptor blockers, sucralfate, and proton pump inhibitors (PPIs). Some study shows tentative evidence to support that PPIs may be better than H2 blockers [14].

As some studies show that prevention may not needed in all patients but prevention of the stress bleeding from the stomach is much easier than treating it, and hence the routine use of H2-antagonists with or without barrier agents, such as sucralfate, in patients who are on intensive care. These measures have been shown to reduce the incidence of bleeding from stress ulceration. Histamine2-receptor antagonists and antacids are associated with the a trend toward lower clinically important bleeding rates than with sucralfate is [15]. Concerns with the use of stress ulcer prophylaxis

agents include increased rates of pneumonia and Clostridium difficile colitis.

These injections are one of the most commonly used drugs in the world. They have reduced incidence of stess ulcers to negligible. It is debatable which drug is more effective.

Alhhazani published his trial of comparing both and showed that PPI are more effective than H2-receptor blockers. However, there was no difference in mortality. In his own words "The robustness of this conclusion is limited by the trial methodology, differences between lower and higher quality trials, sparse data, and possible publication bias" [16].

Michal Leavy compared Inj.Ranitidine with oral omeprazole and found that oral omeprazole is safe, effective, and clinically feasible for stress ulcer prophylaxis [17]. Low number of patients (only 67) and higher number of risk factors in ranitidine group [The ranitidine treated group had 2.7 risk factors per patient while the omeprazole-treated group had 1.9 ($p < 0.05$)] may have an impact in outcome.

Fig. 1: M.R.P. 60 Rupees

Some believe that routine ulcer prophylaxis in patients without a history of peptic ulcer disease has only been of proven benefit in those with a coagulopathy or prolonged ventilator dependence; however, it is a common practice to use antiulcer agents in all patients who are nil per os (n.p.o.) for a prolonged period of time [18]. Acid suppression for the prevention of stress ulcer is regularly practiced in peri-operative period in India. In our hospital these agents are used during surgery and in post-operative period for at least 5 days in all patient undergone laparotomy whether patient had been in ICU or not. Many of these patients were young and relatively healthy. This may be one reason why our study result is differing from others who show PPIs somewhat better than H2-receptor blockers.

Fig. 2: M.R.P. 2.80 Rupees

As we can see in figures 1 and 2, if Inj. Ranitidine is used 8 hourly the cost is 9 rupees/day, means 45 rupees for 5 days, while if Inj. Pantoprazole is used 12 hourly the cost is 120 rupees/day, means 600 rupees for 5 days. This is a big saving of 555 rupees for a poor patient, which can be used for necessary antibiotics like inj. Amikacin 500 mg. coming at 50 rupees/ ampoule, 100 rupees/ day and 500 rupees for 5 days ($p<0.05$).

Conclusion

In surgical patients, at least in elective laparotomies, routine use of PPIs should be replaced by H2-blockers as it is as effective as PPIs in preventing stress ulcers and saved valuable resource can be used for more necessary drugs so that in country like India (where poverty is a huge national problem) treatment becomes more affordable.

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Original Research Article

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Study of Abdominal Tuberculosis in Surgical Patients

Nilesh K Goswami[1], Jignesh N Mahida[2], Kishan R Katua[3], Nidhi D Shukla[4]

[1]Associate Professor [2,3]Third Year Resident Doctor [4]First Year Resident Doctor, Department of General Surgery, Shree M.P. Shah Government Medical College, Jamnagar, Gujarat 361008, India.

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Abstract

Tuberculosis of gastrointestinal tract is the sixth most frequent form of extra pulmonary involvment, following lymphatic, genitourinary, bones and joints, miliary and meningeal tuberculsois. 5% tuberculosis patients have abdominal tuberculosis and most common site of involvement is ileo-caecal region. Inspite of antitubercular drugs and investigative modalities the disease has significant morbidity. Considerably higher morbidity is noted in emergency surgery probably due to inadequate bowel preparation, contamination and fluid electrolyte imbalance. Early diagnosis and treatment, early initiation of ATT, regular follow up along with proper nutrition and education of patients about hygiene and sanitation is the key to success.

Keywords: Tuberculosis; In Surgical Patients; Management.

Introduction

Five percent TB patients may have abdominal tuberculosis and most common site of involvement of gastrointestinal tuberculosis is the ileocecal region [1].

Boyd has named it as the most sinister consequence of pulmonary tuberculosis [2]. In the 5th century BC, Hippocrates recorded that diarrhoea in a person with phthisis was a mortal symptom. This is probably the first recorded connection between gastrointestinal symptoms and tuberculosis [3]. An early reference to probable intestinal tuberculosis was made in 1643 when the autopsy of Louis XIII showed ulcerative intestinal lesions associated with a large pulmonarycavity [4].

The interest in intestinal tuberculosis has increased considerably since the publication in 1926 of Brown and Sampson's book on diagnosis and treatment of this common complication in pulmonary tuberculosis. Though they are not the first to demonstrate the typical finding in intestinal tuberculosis, they certainly deserves compliment for putting x- ray diagnosis on a rational base. They showed convincingly that this method was superior to any other, both in its reliability and in making an early diagnosis possible, where other methods have failed [5].

John Hunter said in one of his lectures that: " Tubercles may be classed under the head of spurious tumours: they are most frequent in the viscera. They are mostly of the lymphatic kind.

Robert Koch's discovered tubercle bacilli and proved them as a causative organism in all forms of tuberculosis [3]. Cases of ileocecal tuberculosis were nothing but the cases of regional ileitis, and hyperplastic tuberculosis was only a plastic stage of regional ileitis [6].

Anand in 1956 produced sound and convincing data, providing high criteria, for diagnosis and suggested that ileocecal tuberculosis is a separate

Corresponding Author: Jignesh N Mahida, Third Year Resident Doctor, Department of General Surgery, Shree M.P. Shah Government Medical College, Jamnagar, Gujarat 361008, India.

E-mail: drnileshgoswami@gmail.com

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disease entity. He also suggested that regional ileitis was a state in healing process of intestinal tuberculosis.

Aims and Objectives

A. To study & analyze clinical presentation of cases of abdominal tuberculosis in surgical patients
B. To study & analyze various diagnostic modalities for confirmation of abdominal tuberculosis in surgical patients.
C. To study & analyze management of abdominal tuberculosis in surgical patients.
D. To study & analyze complication of abdominal tuberculosis in surgical patients.

Materials and Methods

This retrospective randomized study of twenty five patients, each of either sex with tuberculosis was carried out in surgical wards of tertiary care teaching hospital attached to Government medical college in the period between July 2016 and November 2018.

A specially designed Performa was filled in for each patient case record which included meticulous history and physical examination and investigations like blood counts including TC, DC, ESR, HB, Mantoux test, chest x-ray, abdominal x-ray, abdominal ultrasonography, CT scan, ascitic fluid examination and treatment (conservative or operative) and histopathology in operated patients. All collected data has been studied, tabulated and analyzed thoroughly.

Inclusion Criteria

- All suspected and confirmed cases of abdominaltuberculosis.

Exclusion Criteria

- Cases having active pulmonarytuberculosis.

Results and Discussion

In this retrospective study 50 cases were admitted and treated in Shree MP Shah Government Medical College, Jamnagar during August 2016 to September 2018.

In our study the most common age group being 21 to 30 years. In Anand and Pathak [7] series nearly 95% of cases occur in age group of 11 to 40 years. In series by Das and Shukla [8], disease was found to be more common in 2nd and 3rd decade of life.

In our study Male to female ratio is 3.1:1, In series by Anand and Pathak [9] the male to female ratio was 1: 3.1. In series by Das and Shukla [10], the ratio was 1: 2.6.

In India women are commonly affected as documented in literature. This has been attributable to their relative increased exposure to children with tuberculosis who are the largest reservoir of infection. 76% of the patients of this series are from low income group because of poor nutrition, overcrowding and insanitary living conditions. Similarly in study by Das and Shukla [10] most of the patients were from lower socio economicclass. Pain was present in all the cases in this series. In series by Anand and Pathak [9], pain was present in 100% patients. While in series by Das and Shukla [10] pain was present in 94% cases. In this series anorexia and weight loss was found in 60% and 40% of cases. Anorexia and weight loss was found in 40% and 43% of cases by Anand and Pathak [9], and about 44.4% and 35% of cases by Das and Shukla [10]. In this study fever of varied duration was recorded in 36% of cases, this was observed in 40% of cases by Anand and Pathak [9], while in series studied by Das and Shukla [10] it was present in 42% of cases in this study constipation in 12% of cases. This was observed in 40% of cases by Anand and Pathak [9], while in 46.7% of cases by Das and Shukla [10]. Breathlessness seen in 10 cases (40%) in this series. Cough seen in 11 cases (11%) in this series. Abdominallump was found in 32% of cases this series. Lump was found in RIF region in both patients. Lump was found in 28.6% of cases by Das and Shukla [8]. Chest swelling was found in 16% of cases this series. Neck swelling: it was found 28% of cases this series. Lymphadenopathy was found in 16% of cases this series. Haemoglobin levels ranges from 9.3 gm% to 16.8 gm%. Average haemoglobin level being 12.25gm/dl. (Tables 3,4).

Table 1: Age distribution of abdominal tuberculosis in surgical patients.

	Number of patients	Percentage
0-10	0	0
11-20	3	12
21-30	8	32
31-40	6	24
41-50	2	8
51-60	4	16
61-70	1	4

71-80	1	4
Total	25	100

Table 2: Sex distribution of abdominal tuberculosis in surgical patients

Sex	Number of patients	Percentage
Male	19	76
Female	6	24
Total	25	100

Table 3: Symptoms of abdominal tuberculosis in surgical patients

Symptom	Number of patients	Percentage
Pain	25	100
Anorexia	15	60
Loss of Weight	10	40
Fever	09	36
Constipation	3	12
Breathlessness	10	40
Cough	11	44

Table 4: Sign of abdominal tuberculosis in surgical patients

Sign	Number of patients	Percentage
Abdominal lump	8	32
Lymphadenopathy	4	16
Abdominal distention	2	8

Table 5: Investigation of abdominal tuberculosis in surgical patients

Investigation	Number of patients	Percentage
a. Chest	X-ray	with
finding of Koch's	2	8
b. Abdomen X-ray		
Air fluid level	7	28
Gas filled bowel loops	4	16
Free gas under diaphragm	1	4
Normal	11	44
Total	25	100

Table 6: Ultrasonography findings of abdominal tuberculosis in surgical patients

Ultrasonography finding	Number of patients	Percentage
No changes Finding of small intestinal	8	32
Obstruction (stricture)	8	32
Bowel wall thickening	6	24
Ascitis	3	12
Finding of intestinal Perforation	1	04
Lymphadenopathy (suggestive of tb changes)	12	52

A raised ESR has no diagnostic value, but a prognostic value. In this series it was elevated above 30 mm in 1st hour in 64% of cases of cases. In this series positive Mauntoux test was found in 4 cases (16%) while it was negative in 21 cases (84%). A positive Mauntoux test is suggestive of tuberculosis in children not immunized with B.C.G. but in the adult, it does not help as subclinical infection is very common. Also Sputum afb is positive in 11 cases (44%) in our series. Evidence of pulmonary Koch's was found in 2 (8%) of cases, and both had healed lesions. Plain X-ray abdomen was done in all 25 cases in both standing and lying down positions. In our series 11 (44%) cases had evidence of multiple air fluid level and gas filled bowel and in 3 (12%) patient's plain X-ray abdomen was suggestive of pneumoperitoneum.

In this series 28% of patients showed finding of small intestinal obstruction, in 24% of patients symmetrical bowel wall thickening was found. In this series contrast enhanced computed tomography scan of abdomen was done in 21 cases. In all patients, CT features were helpfulin diagnosis of abdominal tuberculosis.

Complication of Abdominal Tuberculosis

In this study, 14 cases (56%) presented with complication of tuberculosis. Out of these 14 cases 10 cases (40%) presented with features of small intestinal obstruction and 4 cases (16%) presented with features of GI perforation. (Table 7) (Fig. 1).

Table 7: Complications of abdominal tuberculosis in surgical patients

Complication	Number of patients	Percentage
Small intestinal obstruction (due to adhesions and stricture)	10	40
Intestinal perforation	4	16
Total	14	56

Management

In our series 60% of patients were managed conservatively and 40% patients required surgical intervention. All patients were kept on Anti Koch's treatment (AKT) cat I according to the RNTCP guideline. In this series, resection and anastomosis of small bowel was carried out in 16%. In 12% cases adhesiolysis was carried out and in 60% cases, conservative management was carried out. In 04% cases, simple closure of intestinal perforation done.

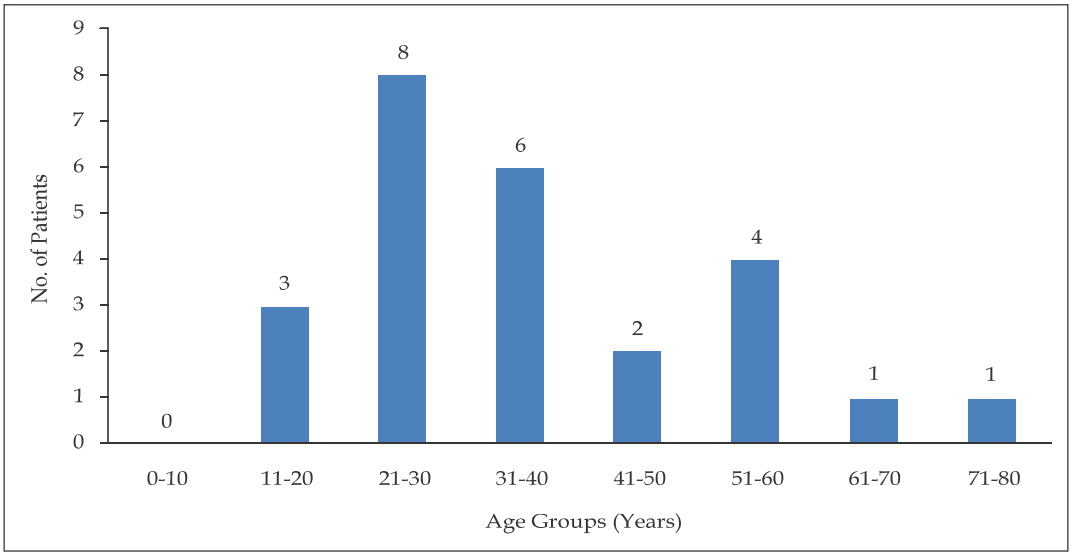

Fig. 1: Age distribution of abdominal tuberculosis in surgical patients

Post-operative wound infection had occurred in five patients (20%). One patient had paralytic ileus (4%). Post-operative fecal fistula was noted in 1 case (04%).

Conclusion

1. Young people between 21 to 30 years are the most commonly affected. (Table 1) (Fig. 1)
2. In present series ratio of male to female is 3.1:1 a definite preponderance in male isobserved. (Table 2)
3. Most of the patients belong to low socio-economical class – this naturally is a result of undernourishment and lowresistance.
4. Plain x-ray chest and abdomen coupled with ultrasonography of the abdomen are the investigation of choice in acutecases (Table 5,6).
5. The ileum and ileocecal junction is the most commonly involved part of gastrointestinal tract.
6. Most of the patients present late in the disease course with complication of abdominal tuberculosis. Small intestinal obstruction is the most commoncomplication.
7. Resection and anastomosis is the surgical procedure of choice in small bowel stricture and conservative ileocecal resection should be performed if disease is restricted to ileocecal region. But no long term follow up data is available.

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Original Research Article

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Observational Study of 30 Cases of Esophageal Stenting with or without Adjuvant Chemoradiotherapy in Patients of Carcinoma Esophagus

Priya Rana[1], Ravi B. Parmar[2], Dharmik Kumar M. Patel[3], Nimesh Verma[4]

[1]Resident [2,3]Senior Resident [4]Consultant, Dept. of General Surgery, Sumandeep Vidyapeeth University and Dhiraj Hospital, Piparia, Gujarat 390015, India.

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Abstract

Introduction: Esophageal cancer had an estimated 482,300 new cases in 2014 worldwide. The incidence rates of esophageal cancer vary greatly based on region, with the highest rates found in Asia, including China and Central Asia, and in Africa. Presently, a number of endoscopy-based modalities are utilized to palliate these symptoms. *Aims & Objectives:* To evaluate if esophageal stenting in patients of esophageal carcinoma who has crossed stage of inoperability is of any use in improving symptoms or quality of life. To evaluate whether esophageal stenting is of any role in improving quality of life in inoperable carcinoma esophagus cases To see how esophageal stenting affects perception of pain in patients of esophageal carcinoma. *Material and Methods:* We conducted an observational study from 2016 to 2018. We included 30 patients with esophageal cancer in whom the cancer had spread beyond the stage of operability and only option available was palliative treatment. Before the start of my study we got approval from ethics committee. Stenting procedure was standardized. We used SEMS (Self Expandable Metallic Stents) for our patients and those were made available free of cost by the hospital administration. SEMS of size 100 mm, 120 mm, 140 mm, or 160 mm were used in different cases depending upon the length of the oesophagus. *Observation:* In our study we found that all patients had significant relief of dysphagia and improvement in quality of life, though with increase in pain scores. Following stent deployment, the relief of dysphagia is almost immediate lasting and excellent relief of dysphagia has been a consistent finding with the use of SEMS. Complications are uncommon following SEMS placement, major ones being perforation and aspiration pneumonia. In our study perforation was seen in one patient and aspiration pneumonia was observed in two patients. In one study, the procedure had a 7% mortality rate.in our study, there was one procedure-related death. Pain, gastroesophageal reflux and respiratory infection were the commonest complications. *Conclusion:* We concluded that SEMS placement is safe and effective in the palliation of dysphagia in selected patients with unresectable malignant esophageal carcinoma. It provides lasting relief of dysphagia and improves QOL significantly, without major complications. However SEMS do not increase the life expectancy in these patients. However our study had few limitations and a very small sample size so the results of my study cannot be generalized to the whole population in general.

Keywords: Esophageal Stenting; Carcinoma Esophagus; Chemoradiotherapy.

Introduction

Esophageal cancer had an estimated 482,300 new cases in 2014 worldwide. The incidence rates of esophageal cancer vary greatly based on region, with the highest rates found in Asia, including China and Central Asia, and in Africa [1]. Most carcinomas of esophagus are diagnosed at an advanced stage, with very few patients eligible for potentially curative resection at the time of presentation, leaving palliation as a more realistic option for these patients [2]. Dysphagia is the predominant symptom in more than 70% of

Corresponding Author: Ravi. B. Parmar, Senior Resident, Dept. of General Surgery, Sumandeep Vidyapeeth University and Dhiraj Hospital, Piparia, Gujarat 390015, India.

E-mail: ravirajmyatra@gmail.com

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patients with esophageal cancer resulting in weight loss and malnutrition [3]. Other symptoms include aspiration of saliva (due to complete dysphagia) or food (secondary to esophago respiratory fistulae), and thoracic pain caused by the invasion of an unrespectable tumour. These symptoms have led to the development of a variety of treatment modalities to help maintain caloric intake and improve the quality of life remaining for patients with advanced disease. Presently, a number of endoscopy-based modalities are utilized to palliate these symptoms. There are many advantages to SEMS (Self Expandable Metallic Stents), and these include the following: easy insertion, with success rate for placement of almost 100%, large internal diameter, low risk of perforation of the esophagus during the procedure, it can be used as a sole therapy and be inserted in stenosis without the need for excessive dilation of the organ, it adapts better to angled stenosis due to its malleability, it requires conscious sedation of the patient, and in general, palliation of dysphagia occurs immediately in the majority of cases. SEMS is also effective when coated occluding tracheo-esophageal fistulas with a success rate between 70% and 100% [3,4,5,6].

Aims & Objectives

Aims: To evaluate if esophageal stenting in patients of esophageal carcinoma who has crossed stage of inoperability is of any use in improving symptoms or quality of life.

Objectives: To evaluate whether esophageal stenting is of any role in improving quality of life in inoperable carcinoma esophagus cases To see how esophageal stenting affects perception of pain in patients of esophageal carcinoma.

Material and Methods

An observational study was conducted from November 2016 to December 2018. The study included 30 patients with esophageal cancer in whom the cancer had spread beyond the stage of operability and only option available was palliative treatment.

Inclusion criteria: All Cases of carcinoma esophagus who are either non-operable or do not opt for surgery. All patients of carcinoma esophagus having tracheo –esophageal fistula.

Exclusion criteria: Cases of esophageal carcinoma with complete obstruction where stent could not be negotiated, Cases of esophageal carcinoma who are operable and opt for surgery, Cases of carcinoma esophagus who have growth near cricopharangeal junction.

Data Collection: The patients were screened in the OPD and evaluated and those who were befitting candidates and those who were willing to undergo stenting were pg. 40 admitted. Patients were evaluated thoroughly in the ward with battery of blood tests, chest x-ray, ECG, USG abdomen & pelvis and clinical examination. A recent CT Scanthoax+ abdomen and Histopathology biopsy report was absolute pre requisite before proceeding for stenting. Stenting procedure was standardized. We used SEMS (Self Expandable Metallic Stents) for our patients and those were made available free of cost by the hospital administration. SEMS of size 100 mm, 120 mm, 140 mm, or 160 mm were used in different cases depending upon the length of esophagus involved which was determined by pre-operative CT Scan of Thorax. After each procedure Digital chest X-ray AP and Lateral view were taken within 6hrs or when patient become clinically stable after the procedure to evaluate the position of the deployed stent. Patients were kept under through monitoring in wards and were managed for any post-operative complaints or complications. Patients were discharged when they were stable and were kept in follow up in person and with telephonic communication at regular intervals of 1 month, 3 months and 6 months.

Results

Our study population consisted of 17 females and 13 males with mean age of 55 years. In our study we found that number of patients in age group 70 years is 1 (Table 1 and Fig. 1).

Table 1: Sex Wise Distribution

Male	**13**
Female	17

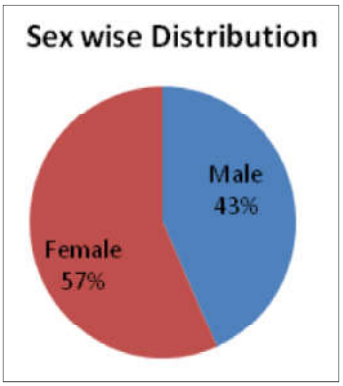

Fig. 1: Sex Wise Distribution

Table 2: Location of Tumor

Part of esophagus	No of Patients
Upper	1
Middle	11
Lower	18

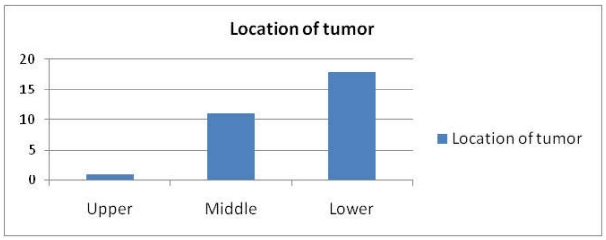

Fig. 2: Location of Tumor

In our study 1 patient had Tumor in upper esophagus, 11 patients had Tumor in middle esophagus, and 18 patients had Tumor in lower esophagus (Table 2 and Fig. 2).

Table 3: Complication

Complication	No of Patients:
Aspiration pneumonitis	1
Airway compromise	0
Malposition	3
Delivery system entrapment	0
Perforation	1
Bleeding	0
Chest pain	6
Nausea	2
Recurrent dysphagia due to reconstruction from tumor or food impaction Migration)	1
Migration	0
Tracheosophageal fistula	0
Gastrophageal reflux disease/aspiration	4

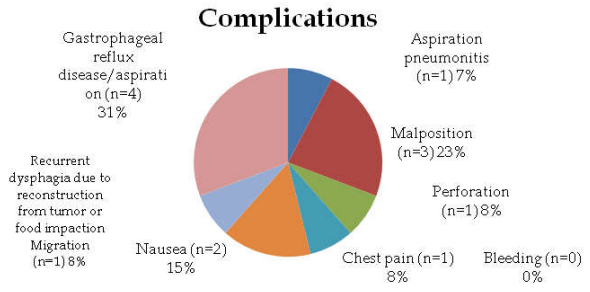

Fig. 3: Complication

In our study we found many complications which we came across during follow up. Most common complication observed was gastro esophageal reflux disease which occurred in 11 patients. 6 patients had chest pain, 2 patients had nausea, 3 patients had malposition of stent, 1 patient had aspiration pneumonia, 1 had perforation and 1 had recurrent dysphagia (Table 3 and Fig. 3).

Table 4: Followup cases showing increase in weight

	Static	1 Kg	2 Kg	3 Kg
Increment of weight at 1 month after stenting (26)	5	15	6	
Increment in weight at 3 month after stenting (18)		6	11	1

Table 4 and Fig. 4 shows increment of weight one month after stenting and 3 months after stenting.

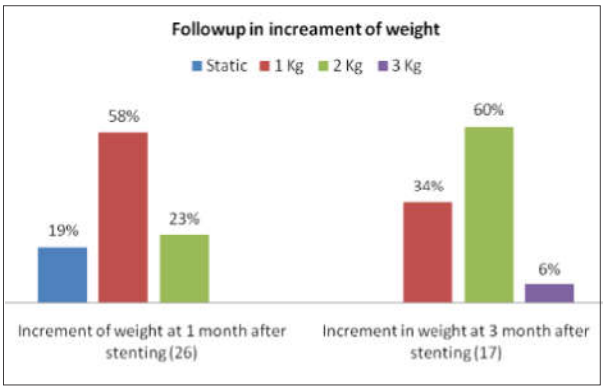

Fig. 4: Followup cases showing increase in weight

Discussion

In our study all patients had significant relief of dysphagia and improvement in quality of life, though with increase in pain scores. Following stent deployment, the relief of dysphagia is almost immediate [7]. Lasting and excellent relief of dysphagia has been a consistent finding with the use of SEMS. Randomized controlled trials have previously established the superiority of SEMS over plastic stents in improving overall QOL [8]. Complications are uncommon following SEMS placement, major ones being perforation and aspiration pneumonia. In our study perforation was seen In one patient and aspiration pneumonia was observed in two patients. In one study, the procedure had a 7% mortality rate [9]. In our study, there was one procedure-related death. Pain, gastroesophageal reflux and respiratory infection were the commonest complications. Stent obstruction due to tumor ingrowth or overgrowth is a known complication that occurs in up to 36% of patients [10]. However, we did not came across Tumor ingrowth or overgrowth. Distal migration of the stent is a common complication, with rates of up to 30%. Migrations is more common with covered

stents used to treat distal esophageal lesions near the gastroesophageal junction [11]. Three patients in our study had distal stent migration and were managed with placement of another stent proximally. Contrary to some previous studies [12], we did not observe any increase in device-related complications in patients who had received prior radiotherapy. Our results are limited by the fact that these were obtained in a limited group of patients who had Tumor which was located not too close to the cricopharynx. Thus, these may not be applicable to all patients with esophageal cancer. Impaction of food in a stent is a less of a complication of stent itself and more a consequence of inadequate patient education and noncompliance with proper food selection, chewing and swallowing. Dietary instructions, were given to patients and care givers before discharge from the hospital. Taking food in small boluses and chewing properly should be emphasized. Increased fluid intake especially carbonated drinks enhance the flow of impacted food through stent lumen. Medications were asked to be given in crushed form. Quality of life assessment of patients was done using EORTC QLQ–OES18 questionnaire which was used in regional language to assess different parameters of complaints and complications of esophageal carcinoma. This was used to evaluate how the stenting affected quality of life; it showed that there was significant improvement in quality of life of majority of patients with significant improvement in dysphagia in all the patients. Pain of the patients was evaluated using visual analogue scale. One of the major reasons which led to the increase in pain after stent insertion was the mechanical force exerted by the stent over esophagus. We compared our study with two similar studies conducted by other researchers. One was conducted by Nanda Kishore Maroju, Anbalagan P, Vikram Kate, N Ananthakrishnan at department of Surgery, Jawaharlal Institute of Post-Graduate Medical Education and Research, Pondicherry. The title of their study was "Improvement in dysphagia and quality of life with selfexpanding metallic stents in malignant esophageal strictures" and the other study was conducted by Shahriyar Ghazanfar et al. at Dow University of Health Sciences (DUHS).

Conclusion

SEMS placement is safe and effective in the palliation of dysphagia in selected patients with unresectable malignant esophageal carcinoma. It provides lasting relief of dysphagia and improves QOL significantly, without major complications. However SEMS do not increase the life expectancy in these patients. However, our study had few limitations and a very small sample size so the results of my study cannot be generalized to the whole population in general.

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Original Research Article

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Reconstruction of Conchal Defect with Hinge Flap

Vinayak Chavan[1], Ravi Kumar Chittoria[2], Senthil Kumaran[3], Sudhanva Hemant Kumar[4], Preethitha Babu[5], Elankumar S[6], Konda Sireesha Reddy[7], Abhinav Agarwal[8], Saurabh Gupta[9]

[1]Senior Resident [2]Professor & Head [3,4,5,6,7,8,9]Senior Resident, Department of Plastic Surgery, Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Pondicherry 605006, India.

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Abstract

Ear pinna defects commonly occur following trauma, ear piercing, iatrogenic or infective or malignancy. Standard reconstructions of such defects are described but not applicable to every defect of which Conchal defects is rarely described with no standard technique. This article describes a simple technique for reconstruction of full thickness defects of the concha in bilayer with hinge flap taken from the posterior surface of the ear and full thickness skin graft to cover the resultant raw area.

Keywords: Conchal Defect; Ear Reconstruction; Hinge Flap; Full Thickness Graft.

Introduction

The auricle is an aesthetic sculpture of complex convexities and concavities that are smooth and uninterrupted. The elastic cartilage framework of the auricle is pliable yet structurally strong and resilient to trauma. The soft tissue envelope of the ear is fibro fatty and loose over the lobule and the margin of the helix but thin and fixed over the remaining cartilage framework [1].

The auricular concha refers to the central portion of the external ear adjacent to external auditory canal composed of thin skin, subcutaneous tissue, and concave shaped cartilage. Conchal defects occur due to ear piercing, iatrogenic, infective or malignant causes. Healing by secondary intention, Skin graft have been described for defect with intact perichondrium whereas local flap are used for full thickness defects taken from retroauricular region. Defects of the central portion of the ear are less common and only a few surgical techniques have been described [2,3,4].

We describe a technique used to reconstruct full thickness defects of the cavum conchae using post auricular dermal flap to cover the defect anteriorly and full thickness skin graft to cover the donor site and posterior layer achieving excellent reconstructive outcome.

Methods and Material

A 22-year-old male presented with a history of defect in concha of the left ear, which he sustained due to religious ritual in childhood and wants it corrected for aesthetic reasons. On examination, there was an elliptical full-thickness defect in the concha measuring 7 mm × 5 mm. Circumferential scarring was noted around the defect. Skin surrounding the defect, on both sides of the ear, was normal and unscarred. (Fig. 1).

Operative Technique

The patient was operated under general anesthesia with a 2.5x loupe magnification. Inferiorly based dermal flap was marked 8mmx

Corresponding Author: Ravi Kumar Chittoria, Professor and Head, Department of Plastic Surgery, Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Pondicherry 605006, India
E-mail: drchittoria@yahoo.com

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6mm on the posterior aspect of ear as shown in Figure 2. Edges of the defect were freshened by 1mm over all sides except superiorly. An incision was made and flap elevated with caution to retain perichondrium. The flap elevated with superior margin of defect as hinge. The flap was turned 180 degrees and brought anteriorly through the defect to cover the anterior surface skin defect [Figure 3]. The resulting raw area on the posterior conchal skin, along with the original defect, measured 16 mm × 8 mm. The donor defect and posterior aspect of hinge flap was covered with full thickness skin graft taken from opposite postauricular region [Figure 4] Bolster dressing was done.

The anterior hinge flap and posterior full thickness skin graft survived completely. (Figure 5,6).

Fig 1: Full thickness conchal defect

Fig 2: Marking of flap

Fig 3: Flap immediate post operative

Fig 4: Full thickness graft

Fig 5: One month Post operative (anterior)

Fig 6: One month post operative (posterior)

Discussion

Auricular concha forms the central portion of Ear pinna, though not contributing much to structural integrity forms important aesthetic feature of the individual. Defect of concha is commonly due to ear piercing, iatrogenic and malignant cause [5, 6,7]. Surgical closure of any such conchal defect needs tension-free repair with preservation of the post auricular sulcus which is achieved by local flaps [8]. Primary closure of defect is difficult due to unyielding nature of the skin and skin graft is associated with complications like delayed healing, pigmentation and centripetal contraction [9].

The ideal choice for covering the anterior concha is skin from the post auricular area or from the posterior surface of the ear due to less donor site morbidity, color and texture match and primary closure of donor site. Masson described the conventional postauricular "revolving-door" island flap for ear reconstruction in 1972 since then modifications have been described. T Masson described the conventional postauricular "revolving-door" island flap for ear reconstruction in 1972 [10].

The hinge flap technique described in our study is a simple and easy procedure in which the flap is harvested from the margin of the defect. The flap can be harvested from any margin depending on scarring. The margin acts as a hinge and the posterior ear skin is turned anteriorly through the defect without de-epithelization and sutured to the other margins. Flap cover can be taken with or without pericondrium, in later the exposed cartilage has to be covered with another local flap. In our case we retained the pericondrium and covered the raw area with a full thickness graft as posterior layer for it was small raw area and the natural convexity of cavum concha would prevent contraction of graft.

Conclusion

The conchal defect can be corrected by various methods depending on its size and location. This article describes a simple technique for covering small full-thickness conchal defect in two layers, anterior layer by hinge flap and posterior layer by full thickness graft.

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E-mail: author@rfppl.co.in

Original Research Article

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Incidence and Position of Acute Appendicitis in Western India: A Retrospective Study

Akhilesh G Sukhlecha

Associate Professor, Department of Surgery, Gujarat Adani Institute of Medical Science, Bhuj, Kutch, Gujarat 370001, India.

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Abstract

Background: Acute appendicitis is a common problem in children and early adult life. Appendicectomy is immediate or emergency procedure to reduce morbidity and mortality. The present study was conducted to find out incidence, position and clinical profile of acute appendicitis and also complications of appendicectomy. *Methods:* Around 186 patients presented with complaints of appendicitis. Out of these, 37 were managed conservatively with antibiotics and sent home. The remaining 149 patients had acute appendicitis and were operated. This retrospective study was conducted among 149 patients diagnosed as acute appendicitis in Department of Surgery, Gujarat Adani Institute of Medical Science, Bhuj, Kutch for a duration of one year. The clinical profile like age, sex, symptoms of the patients and post-operative complications were recorded. As per records, all patients underwent appendicectomy and were followed post operatively. *Results:* Out of 149 patients, 54% were males and 46% were females. Nearly 70% of the patients belonged to the age group of 15-30 years.100% had pain abdomen, 83% had fever and 76% had vomiting. Fever (10.7%) and wound infection (3.3%) were the common post-operative complications. *Conclusion:* Acute appendicitis is very common in younger age groups shows that whenever young patients present with acute abdominal pain, it may be considered acute appendicitis. The complication of appendectomy is very minimal and gives good prognosis.

Keywords: Acute Appendicitis; Pain Abdomen; Fever, Position of Appendix.

Corresponding Author: Akhilesh G Sukhlecha, Associate Professor, Department of Surgery, Gujarat Adani Institute of Medical Science, Bhuj, Kutch, Gujarat 370001, India

E-mail: researchguide86@gmail.com

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Introduction

The vermiform appendix is considered to be a vestigial organ, its importance in surgery due only to its propensity for inflammation which results in clinical syndrome known as acute appendicitis. Acute appendicitis is a common problem among older children and young adults. This problem occurs sudden in onset and warrants the patients to seek immediate health care.

Occasionally the perforation of appendix may produce life threatening situations. Several studies reported male predominance than female. Many patients have typical clinical symptoms like abdominal pain, fever and vomiting. Most of the times, appendicectomy reduces morbidity and mortality. In United States, 250,000 cases of appendicitis are reported annually [1].

The lifetime prevalence of acute appendicitis is approximately 7% [2]. Acute appendicitis is the most common cause of acute abdomen requiring surgical intervention during childhood, accounting for 1-8% of children who present to the paediatric emergency room with acute abdominal pain [3].

The present study was conducted to find out the common symptoms, certain demographic profile and post-operative complication of acute appendicitis which may help in diagnosing and management of acute appendicitis.

Materials and Methods

Around 186 patients presented with complaints of appendicitis. Out of these, 37 were managed conservatively with antibiotics and sent home. The remaining 149 patients had acute appendicitis and were operated. This retrospective study was conducted among 149 patients diagnosed as acute appendicitis in various hospitals in Bhuj for duration of one year. The clinical profile like age, sex, symptoms of the patients and post-operative complications were recorded. As per records, all patients underwent appendicectomy and were followed post operatively.

From records of 149 patients with acute appendicitis clinical examination and other investigation like ultrasonography findings were noted. The clinical symptoms were recorded, certain demographic profile like age and sex were collected. All the 149 patients had undergone appendicectomy and were followed in the hospital for immediate complication and also followed for remote complications. From the records, we noted that all patients had received 3 to 7 days antibiotics, and regular treatment. Appropriate treatment was given whenever complication was noted.

Results

Out of 149 patients, 54% were males and 46% were females. Nearly 70% of the patients belonged to the age group of 15-30 years [Table 1]. Hundred percentage of participants had pain abdomen, 83% had fever and 76% had vomiting [Table 2]. The position of the appendix during the surgery nearly 83% of the position of appendix was retrocaecal [Table 3]. Nintey three percentage of appendixes were inflamed and 3% were perforated and 3% were gangrenous.

Table 1: Age and sex distribution in study population (n = 149)

Age	Male (%)	Female (%)	Overall (%)
0-14	8 (5.4)	9 (6.0)	17 (11.4)
15-30	58 (38.9)	46 (30.9)	104 (69.8)
31-46	11 (7.4)	12 (8)	23 (15.4)
46-61	2 (1.3)	1 (0.7)	3 (2.0)
Above 62	1 (0.7)	1 (0.7)	2 (1.3)
Total	80 (53.7)	69 (46.3)	149 (100)

Table 2: Symptoms of acute appendicitis noted in study population (n=149)

Symptom	Frequency (%)
Pain abdomen	149 (100)
Fever	123 (82.6)
Nausea and vomiting	113 (75.8)
Loss of appetite	103 (69.1)
Disturbed bowel habits	97 (65.1)
Others	92 (61.7)

Table 3: Position of appendix in study population (n=149)

Position	Frequency (%)
Retrocaecal	123 (82.6)
Pelvic	15 (10.1)
Postileal	4 (2.7)
Preileal	3 (2.0)
Paracolic	2 (1.3)
Sub caecal	2 (1.3)
Total	149 (100)

Table 4: Post-operative complications of appendicectomy in study population (n=149)

Complications	Frequency (%)
Fever	16 (10.7)
Wound infection	5 (3.3)
Wound gaping	3 (2.0)
Adhesive small bowel obstruction	2 (1.3)
Others	2 (1.3)

The common post-operative complications were fever (10.7%) and wound infection (3.3%) were [Table 4] all these patients were treated appropriately and discharged in good condition. No delayed complications were observed in follow up of the patients. The mortality was not observed in this study. The proteus organisms, pseudomonas organisms were found in wound infections.

Discussion

The present study was conducted among 149 patients diagnosed as acute appendicitis and observed that male were more in number (54%) than female shows that male predominance in acute appendicitis is one of the notable factor which is similar to 60% males in a study conducted in Maharastra, India [4] and 55% in a study in Chennai [5].

This study has found out that most of the sufferers were in the age group of 15 to 30 years (70%) which is supported by a study conducted at Maharashtra [4] and a study in Chennai (71%) [5]. The present study has observed that pain abdomen was in 99%, fever was in 82% and vomiting in 77% of the patients which is almost close to 99%, 76% and 56% respectively, a study conducted in south

India [4] and a study in Chennai where it was 100%, 81% and 75% respectively [5].

The position of appendix was also observed in this study and found out that 82% of the appendix were in retrocecal in position. This means that most of the time appendix present in retrocaecal and 11% in pelvic in position which is supported by 57% retrocecal and 25% pelvic a study conducted in Maharashtra [6] and a study in Chennai that reports 81% and 12% respectively [8].

This study has noticed that 4% of the patients had postoperative complication and also were mostly due to wound infection, wound gaping, adhesive small bowel obstruction which is little lower to 11% in another study [7]. 15% of the patients have developed fever postoperatively and may be due to various reasons like urinary tract infection or respiratory tract infections also. In a similar study in Chennai, similar 3% had post operative complications [8]. The proportion of open procedures done has fallen with the increased use of laparoscopic techniques [9].

Acute appendicitis in Northern Italy has a crude rate of 89 cases per 100000 inhabitants per year, and this data is comparable to similar studies in other country worldwide. 10-13 Surprisingly, during the study period the incidence decreased significantly, from 120 to 73 cases per 100000 inhabitants. This data contrasts with the data reported by Buckius et al. [12] in the United States over a similar period of time.

Clinical scores have been developed and proposed in the last years to help surgeons reaching a diagnosis of acute appendicitis, such as the Alvarado and the Andersson score [14,15]. The decrease in the incidence rate could be explained by the diffusion of these scores and a consequent increased attention in the diagnosis of acute appendicitis, in order to reduce the rate of negative appendectomies. As expected, acute appendicitis is more frequent in young and male patients, as reported by the literature [10-12].

Gradual diffusion of the laparoscopic technique, as shown by similar study for acute cholecystitis in the same context [16]. Appendectomy exposes patients to the risk of intestinal obstruction due to adherences in 0.7%-10.7% [17-19]. Laparoscopic appendectomy has been shown to reduce the risk of intestinal obstruction [20].

The limitations of the study was size of the sample which is little low and if larger sample may show minimal variations.

Conclusion

Acute appendicitis is very common in younger age groups shows that whenever young patients present with acute abdominal pain, it may be considered acute appendicitis. The complication of appendectomy is very minimal and gives good prognosis.

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Correlation between Symptomatology, Digital and Sonographic Prostatic Size with Post Voidal Residual Urine in Benign Prostatic Hyperplasia

Amarish Pravinchandra Mehta[1], Om Pal Singh[2], Dixit Prajapati[3], Mehul M. Tadvi[4]

[1]Assistant Professor [2]3rd Year Resident Doctor [3]1st Year Resident [4]Senior Resident, Department of General Surgery, Shri M.P. Shah Medical College, Jamnagar, Gujarat 361001, India.

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Abstract

This Prospective study included 100 patients having urinary complains studied under the Department of General Surgery, M.P. Shah Medical College, Jamnagar from October 2017 to December 2018. Commonest in 50-75 years of age, burning micturation (45%) was the most common complain followed by lower abdominal pain (35%), urinary retention (21%). Hematuria (17%). Symptoms included nocturia (96%), increase in urinary frequency (84%), straining during urination (71.0%), weak stream during urination (84.0%), urgency (95.0%), incomplete emptying (81.0%) and intermittency (86.0). Most of the subjects presented with moderate severity of symptoms (42%) belonged to 50-75 years of age group. DRE revealed, prostatic size normal (13%), +1(57%), +2 (30%). Median sulcus obliterated (24%), overlying mucosa fixed (8%). Consistency was firm (86%), elastic (8%) and nodular (6%). IPSS Score - mild (19%) moderate (73%) and severe (8%). (2%) had prostatic volume <20cc, (20%) between 21-30cc, (38%) between 31-50cc, (33%) between 51-80cc, (7%) >80cc. Average MLP for prostatic <20 cc is1.1 cm, 21-30 cc is1.04 cm, 31-50 cc is 1.326 cm and 51-80 cc is1.65 cm. Average PVRU for prostate < 20 cc is 5cc, 21-30 cc is 19.8 cc, 31-50cc is 32.05cc , 51-80 cc is 44.59 and > 80 cc is 69.86 cc. The person's coefficient of correlation between the sonographic prostatic size and PVRU r1=0.54072 and between IPSS with PVRU r2=0.681461

Corresponding Author: Om Pal Singh, 3rd year resident, Department of General Surgery, Shri M.P. Shah Medical College, Jamnagar, Gujarat 361001, India

E-mail: authenticallyathiest_om@rediffmail.com

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Keywords: Benign Prostate Hypertrophy; Digital Rectal Examination (DRE); Post Voidal Residual Urine (Pvru); Median Lobe Projection (MLP)

Introduction

Benign prostatic hyperplasia (BPH), also called benign enlargement of the prostate (BEP or BPE), is a noncancerous increase in size of the prostate. BPH is characterized pathologically by the abnormal proliferation of cells (hyperplasia) in the transition zone, leading to structural changes accompanied by the formation of nodules, which can consist of stromal tissue (i.e. involving undifferentiated mesenchymal cells [mesenchymal hyperplasia], fibroblasts [fibroblastic hyperplasia], smooth muscle cells [leiomyomatous hyperplasia], and fibromuscular stroma [fibromuscular hyperplasia] or glandular tissue (glandular hyperplasia) [1].

When sufficiently large, the nodules push on and narrow the urethra resulting in an increased resistance to flow of urine from the bladder. This is commonly referred to as "obstruction", although the urethral lumen is no less patent, only compressed. Resistance to urine flow requires the bladder to work harder during voiding, possibly leading to progressive hypertrophy, instability, or weakness (atony) of the bladder muscle. If BPH causes obstruction of the bladder and remains untreated, complications such as recurrent urinary tract infections, bladder stones, and chronic kidney disease (potentially leading to kidney failure) may ensue.

The assessment of prostate includes detailed

analysis of symptomatology, digital rectal examination for assessing lateral lobe enlargement and ultrasonography for measurement of median lobe. But all these methods assess the size of prostate while the effect of this increase in size on bladder outflow will be indirectly yet effectively assessed by post voidal residual urine measurement by sonography. It is this volume of post voidal residual urine that governs the treatment and not just the size of prostate.

Precisely, thorough study of symptoms with its severity, digital per rectal examination and ultra-sonographic findings may be tools enough to establish a final diagnosis of Benign Prostatic Hyperplasia with ease and at lower cost so that the plan of management can be decided and dreaded complications may be avoided.

Aims of Surgery

1. To study various symptoms and signs associated with Benign prostatic hyperplasia.
2. To study the methods, clinical and sonographic, used for the estimation of prostatic size in benign prostatic hyperplasia.
3. To study the relationship between lower urinary tract symptoms and estimated prostatic size via digital rectal examination and sonographic estimation.
4. To correlate the assessment of prostatic size with the effect of increase in size by analyzing post voids residual urine.

Material and Methdogy

This Prospective study included 100 patients having urinary complains visiting G.G. Hospital Jamnagar studied under the Department of General Surgery, M.P. Shah Medical College, Jamnagar during period of October 2017 to December 2018. In this study symptomatology, digital rectal examination and ultra sonographic investigation to be done.

Sample size: 100 patients

Inclusion criteria

- Incomplete emptying
- Frequency
- Intermittency
- Urgency
- Weak Stream
- Straining
- Nocturea
- Retention of urine
- Hematuria
- Others associated complains like burning micturition and lower abdominal pain

Exclusion criteria

- Those who do not give consent
- Patients who are confirmed case of prostratic carcinoma.
- Patients who have undergone any urosurgery for obstructive symptoms in the past are excluded from the study.

Results

During study period 100 patients with urinary complains were studied for symptomatology, Prostatic size sonographically and by per Rectal examination the mean age of the patients was 65.49 years. The most common presenting IPSS-LUTS was nocturia in 96 patients (96%) followed by increase in urinary frequency in 84 patients (84%), straining during urination in 71 patients (71.0%), weak stream during urination in 84 patients (84.0%), urgency in 95 patients (95.0%), incomplete emptying of bladder in 81 patients (81.0%) and intermittency in 86 patients (86.0%) (Fig. 1). Most of the patients had moderate symptoms (42%) on IPSS (Fig. 2). Out of 100 patients, Sonographically the Prostatic volume <20 ml seen only in 1 patient, 21-30 ml seen in 10 patients, 31-50ml seen in 36 patients, 51-80ml seen in 39 patients, >80ml seen in 14 patients. Digital Rectal Examination showed, prostatic size normal in 13 patients (13%), +1 prostate seen in 30 patients (30%), +2 prostate seen in 57 patients (57%) (Figure – 3). Median sulcus obliterated seen in 24 patients (24%), palpable in 76 patients (76%). Overlying mucosa fixed in 8 patient (8%) free in 92 patients (92%). The consistency was found to be firm in 86 patients (86%) , elastic in 8 patients (8%), nodular in 6 patients(6%). 19% had a mild IPSS Score ,73% had a moderate IPSS score and 8% had severe IPSS score (Fig. 4). Moreover only 2% of the subjects had prostatic volume below 20cc, 20% of the subjects had prostrate volume between 21-30cc, 38% of the subjects had prostrate volume between 31-50cc, 33% of the subjects had prostrate volume between 51 to 80 and 7% of the subjects had prostrate volume >80cc. Average median lobe projection for prostatic

size <20 cc is1.1 cm, 31-50 cc prostatic volume has a median lobe projection of 1.326cm and 51-80 cc prostatic volume has a median lobe projection of 1.65 (Table 1). A study of average values of post void residual urine as per distribution of prostatic volume reveals that average value for post void residual urine for prostatic volumes < 20 cc is 5cc, 21-30 cc is 19.8 cc, 31-50cc is 32.05cc , 51-80 cc is 44.59 and >80 cc is 69.86 cc (Table 2). It is obvious that the post void residual urine is increasing with the increase in the prostatic volume.

Table 1: Correlation between prostatic volume and median lobe enlargement (n=100)

S.No.	Prostatic Volume (mi)	Avaerage Median Lobe Projection (cm)
1	<20	1.1
2	21-30	1.04
3	31-50	1.326
4	51-80	1.65
5	>81	2.178

Table 2: Correlation between prostatic volume and post void residual urine. (N=100)

S.No.	Prostatic Volume (ml)	Average Post Void Residual Urine (ml)
1	<20	5
2	21-30	19.8
3	31-50	32.05
4	51-80	44.59
5	>81	68.86

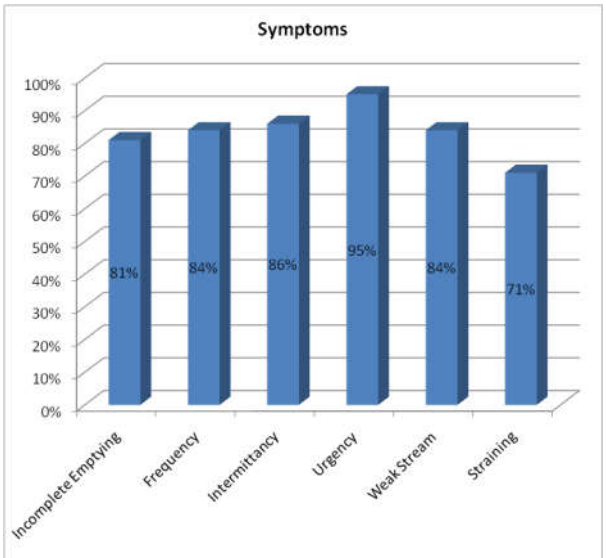

Fig. 1: Distribution of important obstructive and irritative symptoms in the subjects (n=100)

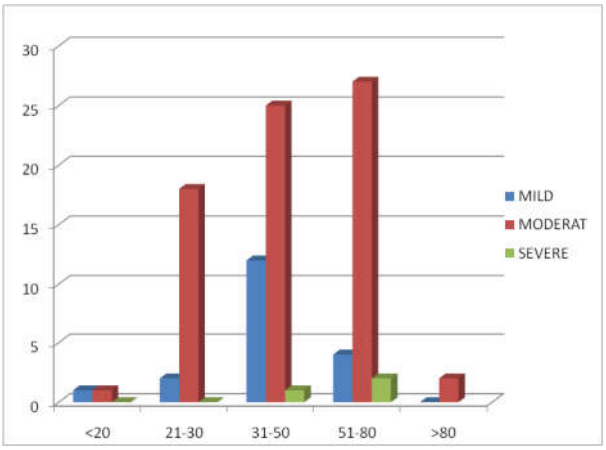

Fig. 2: Correlation between ipss and prostatic volume (n=100)

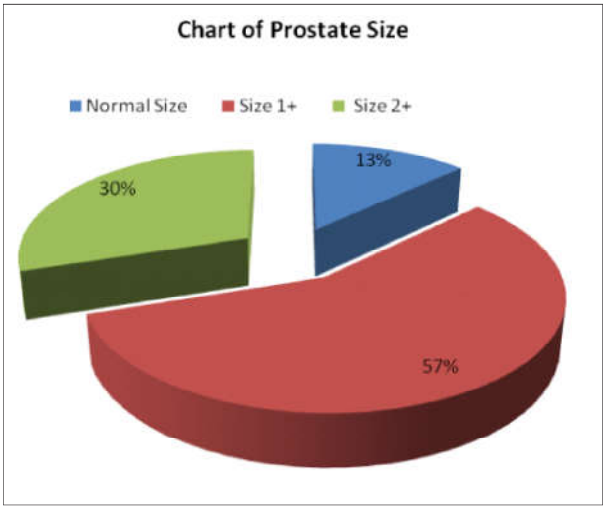

Fig. 3: Prostatic size by digital rectal examination (n=100)

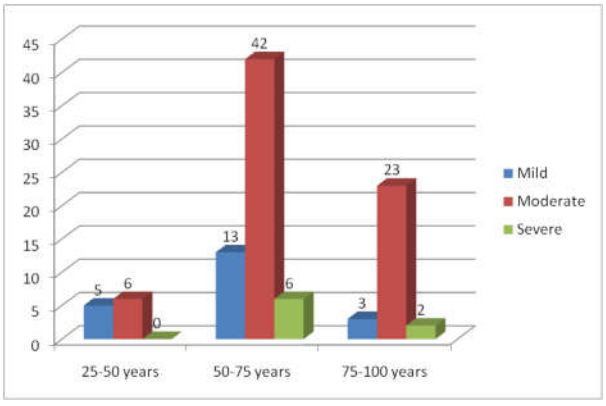

Fig. 4: Age wise distribution of severity of symptoms based on the ipss score of the subjects (n=100)

Discussion

LUTS can be due to mechanical obstruction to urine flow or due to bladder hypo-contractility. These patho physiologic elements are all common in the elderly and may be present alone or in combination [2]. LUTS-BPH consists of BPE, BOO, and LUTS. However, patients with LUTS-BPH do not always share these components and as such they do not show similar degree of symptoms [3]. Factors such as dynamic urethral resistance, prostate capsule, and anatomic pleomorphism rather than actual Prostate size can influence severity of symptoms [4]. It is therefore imperative that patients with LUTS be properly investigated and categorized based on the cause of LUTS. Objective symptom assessment using various symptom scoring systems, such as IPSS, uroflowmetry, and urodynamics, have proved very useful tools in the assessment of patients with LUTS-BPH before definitive treatment.

This study showed that most of our patients (42%) presented with moderate IPSS scores. The most common symptom of LUTS from this study was nocturia (96%) followed by urgency to pass urine (95%), urinary frequency (81%) and straining to pass urine (71%). A study of Nnamdi azikiwe University symptoms among Europeans showed that the most common symptom was nocturia (100%) similar to our finding, followed by incomplete emptying (39.2%) and urgency (41.2%), weak urinary stream (84%), and urinary frequency (98%).

In our study when the pearson's coefficient of correlation is calculated between the sonographically calculated prostatic size and the post void residual urine where the value of r=0.54072 which is suggestive of a moderate uphill positive linear correlation between the two studied parameters which is in concordance with the study by Martha K. Terris, Naveed Afzal, and John N. Kabalin, Adult Urology [5].

Conclusion

Benign Prostatic Hyperplasia is one of the most common condition affecting elderly males, its incidence proved to be increasing with the rise in the age of the individual. Early and close clinical diagnosis can be established by closely studying the patients complains along with its severity in relation to his age and then correlating them to the clinical finding of digital per rectal examination. This clinical diagnosis may then be reinforced by ultrasonographic examination involving detection of prostatic volume, median lobe projection and post void residual urine to come to the final diagnosis. Adequate therapy may help in prevention of urinary infections causing complications like burning micturition lower abdominal pain flank pain, urinary retention and in worst conditions hematuria.

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Assessment of Biochemical Renal Parameters in Burn Patients

Amritpal Singh Bhatia[1], Akashdeep Singh Kahlon[2], Avneet Singh Setia[3], Kushal Aggarwal[4]

[1]Assistant Professor [2,3]2nd Year Resident [4]Intern, Dept. of General Surgery, Sri Guru Ram Das Institute of Medical Sciences & Research, Amritsar, Punjab 143001, India.

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Abstract

Burn is a serious systemic illness not only injury to the skin which is followed by various serious complications such as infections, shock, renal failure etc. Renal failure has been well recognized complication of burns. In-spite of many advances and treatment, mortality rate of patients who develop renal failure in post burn conditions remain high. in this study, 50 burn patients were studied bty assessing various parameters in blood and urine, along with the urine output and the incidence of renal failure.

Keywords: Burn; Biochemical Renal Parameters; Renal failure.

Introduction

A burn is a type of injury to flesh or skin caused by heat, electricity, chemical, friction or radiation [1]. An electrical burn is a burn that results from electricity passing through the body causing rapid injury. Electrical burns differ from thermal or chemical burns in that they cause much more sub dermal damage [2].

Chemical burns can be caused by over 25,000 substances, most of which are either a strong base (55%) or a strong acid (26%). Most chemical burns are secondary to ingestion. A radiation burn is damage to the skin or other biological tissue caused by exposure to radiation. The radiation types of greatest concern are thermal radiation, radio frequency energy, Ultraviolet light and ionizing radiation. Radiation dermatitis occurs to some degree in most patients receiving radiation therapy [3].

Heat burns are burns to skin by any external heat source which may be in the form of naked flame from open fireplace or house wire, scald from steam, hot liquid, via direct contact with hot object.

Acute renal failure that occurs immediately after burns is mostly due to reduced cardiac output, which is caused mainly by fluid loss and is usually reversible. Reduced urine output despite adequate fluid administration is usually the first sign of acute renal failure. This is followed by a rise in serum creatinine and urea concentrations. Early renal support will control serum electrolytes and accommodate the large volumes of nutritional supplementation required in a major burn [4].

Many mediators including cytokines (TNF, IL-1), eicosanoids (PGs, thromboxane, leukotrienes) and platelet aggregating factor are produced or released in the early post-burn patient. They act variably to increase vascular permeability and to induce tissue damage [5]. Excessively high level of stress related hormones with impairment in secretion of ANP may contribute in reducing renal function [6].

We aimed to study the biochemical renal parameters in burns patients and the incidence of renal failure in them.

Corresponding Author: Akashdeep Singh Kahlon, 2nd Year Resident, Dept. of General Surgery, Sri Guru Ram Das Institute of Medical Sciences & Research, Amritsar, Punjab 143001, India.

E-mail: akashric@yahoo.co.in

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Patients and Methods

This study was done is Sri Guru Ramdass Institute of Medical Sciences and Research, Amritsar in which 50 patients of burns were studied for various renal parameters and the incidence of renal failure within 14 days of admission.

Patients were divided into 2 groups.

Group I – Burnt body surface area >50%

Group II- Burnt body surface area <50%

Inclusion criteria:

1. Age 20-65 years

2. Percentage of burns 18-70%

3. Conscious patients

Patients were initially treated for shock by giving intravenous fluids according to Parkland's formula. Plasma samples were taken in the morning and were sent for serum urea, serum creatinine and serum electrolytes, on days 1, 2, 3, 4, 7, 14.

Urine samples were obtained and were sent for urinary urea, urinary creatinine and urinary electrolytes on days 1, 2, 3, 4, 7, 14.

Result & Discussion

Blood urea and serum creatinine was high in group I and they also had low mean daily urine output as compared to group II. While studying serum electrolytes and urinary electrolytes, there was high serum sodium and low urinary sodium and high urinary potassium in group I as compared to group II while there was no significant difference in serum potassium levels. Four patients of renal failure developed significant hypernatremia and two patients of renal failure developed hyperkalemia.

Excretion of urea and creatinine was low in group I as compared to group II. Patients who developed renal failure had persistently high levels of blood urea and serum creatinineand low levels of urinary urea and creatinine.

10 patients who developed renal failure had urinary/plasma creatinine <20 urinary/plasma urea, <10 and renal function index >1

Incidence of renal failure was studied. 10 out of 50 patients developed renal failure (incidence 20%). All 10 patients were among group I out of which 6 were from age group 20-39 years and 4 were from 40-65 years.

Among 10 patients of renal failure, 8 died (80%) showing a high mortality among these patients.

Conclusions

- Renal function derangement occur more in burn patients having large burn area as compared to small burns while these disarrangements are not dependent upon the age of the patient.
- Incidence of renal failure came out to be 20% which occur in burn patients having burnt body surface area greater than 50%.
- Renal failure was of both typesoliguric and non-oliguric.
- Mortality among the patients of renal failure in burns patients was very high (8 out of 10 patients of renal failure- 80%). So study of renal function in burn patients is of prognostic value.

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A Randomized Comparative Study between Laparoscopic and Open Repair of Ventral Hernias in a Rural Tertiary Center

Dhruva G Prakash[1], Sharath V Kumar[2], Naveen N[3]

[1,2]Assistant Professor, Department of General Surgery [3]Assistant Professor, Department of Plastic Surgery, Adichunchanagiri Institute of Medical Sciences, BG Nagara, Nagamangala, Mandya, Karnataka 571448, India.

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Abstract

Context: Ventral Hernias are an abnormal protrusion of an abdominal viscous or a part of it through the anterior abdominal wall at a site other than the groin region. Laparoscopic surgery has reaped importance for being less invasive, lessen hospital stay and also has better aesthetic value. However debate on the role of laparoscopy in ventral hernia repair outcome needs further evaluation despite it becoming increasingly popular. *Aims*: To study demographics of ventral hernia and compare open and laparoscopic method of repair for ventral hernias, duration of surgery, hospital stay, and expenditure between two procedures and to find the difference in complication rate between two groups. *Settings and Design:* Prospective randomized clinical study *Methods and Material:* Comparative hospital based prospective clinical study was conducted on patients presenting with Ventral hernias in a tertiary care centre for a duration of 18 months. A total of 48 subjects were randomized into two groups. Ethical clearance and informed consent was obtained prior to the start of the study. *Statistical analysis used:* Categorical data was represented in the form of Frequencies and proportions. Chi-square was used as test of significance. Continuous data was represented as mean and SD. Independent t test was used as test of significance to identify the mean difference between two groups. p value < 0.05 was considered as statistically significant. *Results:* Laparoscopic surgery was performed in Smaller hernia and Open surgery was performed for hernia with Larger size. Mean time required for post operative mobilization and duration of ICU stay was lesser in Laparoscopic group compared to open group significantly. Expenditure was significantly greater in laparoscopic group than in the open group. Open group required longer duration of stay in ICU than Laparoscopic group. This difference in mobilization and ICU stay during post operative period was statistically significantly. *Conclusions:* Laparoscopic procedure in Ventral Hernia has shown good results and is widely consented for. It has dwarfed hospital stay, ICU stay and has seen to lower immediate complications such as pain, compared to open repair.

Keywords: Laparoscopic; Open; Ventral Hernia; Hernia Repair.

Introduction

Hernia defined as an abnormal protrusion of a viscous or a part of a viscous lined by a sac [1]; is the consequence of human ability to walk erect which has led to vulnerability between the abdominal muscle wall and the hard pelvic bones resulting in this malady. Hernia is deep seated in the history of surgery. Ventral Hernias are an abnormal protrusion of an abdominal viscous or a part of it through the anterior abdominal wall at a site other than the groin region and include epigastric, incisional, umbilical, paraumbilical, and spigelian hernias [2]. Incisional hernias are the only abdominal wall hernias which are deemed to be iatrogenic. It is one of the most frequent complications of abdominal

Corresponding Author: Sharath V Kumar, Assistant Professor, Department of General Surgery, Adichunchanagiri Institute of Medical Sciences, BG Nagara, Nagamangala, Mandya, Karnataka 571448, India.

E-mail: naveen_uno1@yahoo.co.in

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surgery and costs significant morbidity and time loss from employment [3].

Hernia repair is the most generally carried out surgical procedure in medical practice but despite high incidence of this; ideal outcome of surgery and lessened post-operative complications is an enigma to operating surgeon. Frequent occurrence of abdominal hernia, inscrutable quality of the causative background and choice of treatment method; make hernia treatment one of the major parts of surgery [4]. In the past, repair of incisional hernia had been coupled with high recurrence rate. An undesirable high recurrence rate and protracted post-operative pain and recuperation time along with knowledge of the metabolic origin of hernias has led to the notion of tension free hernioplasty thereof drastically decreasing the rate of recurrence [4].

Midline hernias usually occur through the linea alba adjoining superiorly or inferiorly to the umbilicus and are referred to as paraumbilical hernia. They are usually an acquired lesion. If the defect is minor, same can be repaired by primary closure. But sizeable hernias are difficult to mend surgically hence they require restoration with synthetic mesh repair. Epigastric hernia usually occurs by protruding from linea alba over the umbilicus. Approximately 5% of the populations have epigastric hernias. Following diagnosis, surgery is the only permanent cure. Majority of the spigelian hernias are acquired and surgery is the only remedy.

In the current era of surgery, accent is made on decreasing the hospital stay and also diminishing the post operative morbidity and superior cosmesis. Hence, Laparoscopic surgery has obtained importance for being minimally invasive with lessened hospital stay and commands better cosmesis. The vogue of minimal access surgery has encouraged general surgeons to scrutinize all surgeries towards laparoscopic techniques.

From the time, first laparoscopic ventral hernia surgery was performed by Le Blanc in the year 1993; it showed a lot of promise in remedy for ventral hernias. But, unlike inguinal hernia, ventral hernia laparoscopic surgery is still not the standard of treatment. The key reason for this is greater recurrence rate and lengthened duration of surgery in initial days. At present, with the advancement of technicality and better understanding of the laparoscopic anatomy, laparoscopic surgery has emerged as a hopeful substitute to open repair. [5]. However, there is continued argument as to the part of laparoscopy in ventral hernia surgery, even though it has become growingly accepted, its results need additional assessment. The current clinical study intends to compare laparoscopic ventral hernia repair with open repair in regard to operative time length, intraoperative and postoperative complications, postoperative morbidity and period of hospital stay along with cost effectiveness of the procedure.

Subjects and Methods

This comparative prospective randomized clinical study was conducted at Department of General Surgery in Adichunchanagiri Institute of Medical Science, BG Nagara over a period of 18 months from February 2018 to January 2019. The study intended to follow up cases in the study group for a minimum period of 6 months.

Patients with ventral hernia of more than 2cm in size and those with recurrent hernia with even smaller size and obesity wear included in the study. Patients with multiple scars on the abdominal wall making intra-peritoneal access difficult, large defects wherein 3 to 5 inches of mesh overlie is not possible intra-abdominally, those with infection and peritonitis, concurrent acute and sub acute intestinal obstruction and those cases deemed unfit for surgery were excluded from the study.

Sample size was estimated by using the Mean duration of Hospital stay from the study by Raftopoulos I et al. Mean duration in Laparoscopic group was 3 ± 1.4 days and in Open group was 4.9 ± 1.9 days. Using these values at 99% Confidence limit and 90% power sample size of 23 was obtained in each group. With 10% non-response sample size of 22 + 2.2 ≈ 24 cases was included in each group.

Consecutive patients who fulfilled the inclusion criteria were randomized in to two groups. Randomization plan obtained from www. randomization.com and subjects were randomized as per the plan obtained till the desired sample size of 24 in each group was obtained during the study duration.

All the patients were assessed. Ultrasound abdomen was done for all patients to determine the size, number of defects, contents if any and other abdominal pathology if present.

In open surgery group, all patients were operated under spinal anaesthesia. Foley's catheterization

and nasogastric tube were used sparingly. Patients were placed in supine position. Skin incision was made according to the location and size of the defect and nature of hernia. The hernia sac was dissected out and reduced and the defect assessed. When there were adhesions, sac was opened and contents were reduced. Polypropylene mesh was sutured either over the anterior rectus or placed in the preperitoneal space (Fig. 3). The mesh was fixed at its four corners with non absorbable sutures (Fig 4). Anterior rectus sheath was sutured over the mesh by non absorbable sutures. Suction drain was used in all patients. Skin and subcutaneous tissue were closed in layers.

In case of laparoscopic surgery group, all patients underwent surgery under general anaesthesia. Nasogastric tube was used in all upper abdominal hernias and a Foley's catheter was inserted in lower abdominal hernias. Both were removed after the procedure. Pneumoperitoneum was established by veres needle in Palmar's point 2 to 3cm below the left costal margin in the midclavicular line. A 10 mm camera port was placed at this point and the intraabdominal pressure was maintained at 12 mm Hg. Two additional 5mm ports were placed, under vision, depending on the type of hernia (Fig 1). Adhesiolysis was performed using either sharp dissection or monopolar diathermy.

Defect was delineated and a thread was passed through the 5mm port and the defect size measured intracorporally. The dimension of the mesh required was assessed. The section to be covered by the mesh was marked and soon after pneumoperitoneum was released. Spots for transfacial sutures were marked taking care to place defect at its centre. The mesh was prepared and 2 non absorbable nylon sutures on both side at the upper end and two prolene sutures at opposite end. This was mainly done for the easy identification based on colour difference. The mesh was rolled around the grasper and inserted through the 10 mm port. Mesh was unrolled intraperitoneally and with the help of a Maryland grasper mesh was affixed to the anterior abdominal wall. Tackers in a double crown fashion were also used in some cases (Fig. 2). At the close of the procedure, the ports were withdrawn under vision. 10 mm port site was closed with 2-0 polyglactin. Skin closed with ethilon 3-0. A compression dressing is placed in the area of defect to reduce the incidence of post operative seroma.

Fig.1: Picture of lapraroscopic port placement

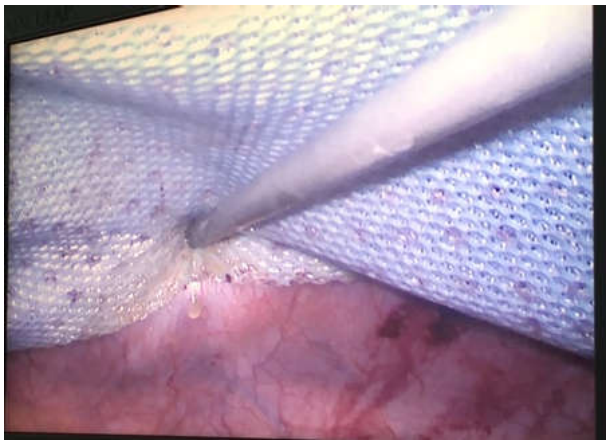


Fig. 2: Picture of laproscopic Mesh fixation with takers

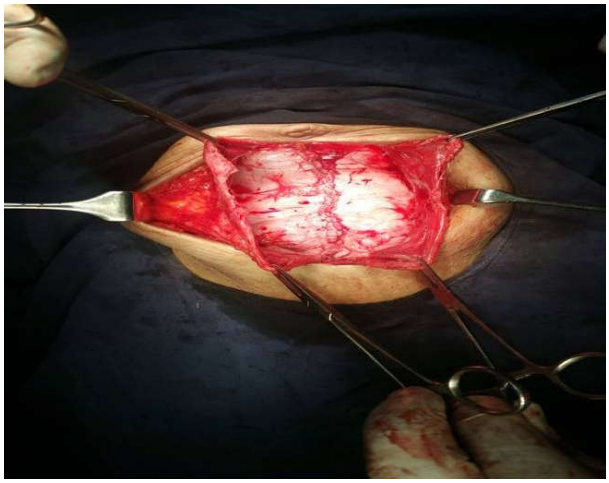


Fig. 3: Open hernia preperitoneal plane created for mesh placement

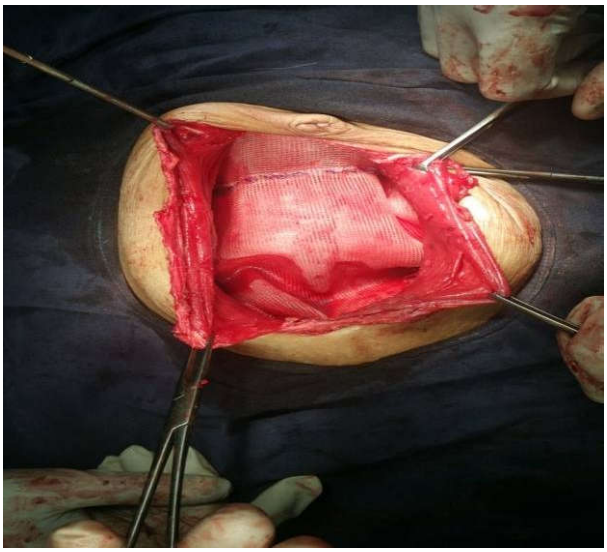


Fig. 4: Picture of mesh placement and fixation in open hernia repair

During post operative period, IV aqueous diclofenac injection was administered on demand. Ambulation within 24 hrs of surgery and oral feeding was encouraged in all patients. Fluid sips was initialized followed by normal diet once there was resolution of post operative ileus.

In case of persistent ileus, patients were kept NPO and if required a nasogastric tube was used until bowel movements resumed. The surgical site was inspected for seroma, hematoma or infection, if any.

Drains were removed, in open group, if collection was less than 30 ml for 2 consecutive days. Patients on tolerating normal diet and complete ambulation were discharged encouraging them to return to their normal activities as soon as possible. Patients were followed up at intervals of 1 week, 1 month, 3 month and 6 months.

During the initial follow up, the patients were appraised for short term complications like seroma or hematoma, wound infection and wound dehiscence. Chronic pain at operated site, return to regular activity and recurrence were looked for in subsequent visits. The pain experienced by the patients in the post operative period has been scored according to the Visual Analogue Scale (VAS) which ranges from no pain to the most unpleasant pain on the scale of 0 to 10.

The end points measured in both the groups are duration of surgery, intra operative complications, incidence of post operative complications like seroma formation, wound infection, postoperative ileus etc, duration of post operative pain using the visual analogue scale, length of hospital stay, return to normal activity, reoperation and recurrence rates during the follow up. Data pertaining was collected and entered into Microsoft excel data sheet and was analyzed using SPSS 22 version software. Categorical data was represented in the form of Frequencies and proportions. Chi-square was used as test of significance. Continuous data was represented as mean and SD. Independent t test was used as test of significance to identify the mean difference between two groups. p value <0.05 was considered as statistically significant.

Institutional ethical clearance and informed consent from patients was obtained from all the participants.

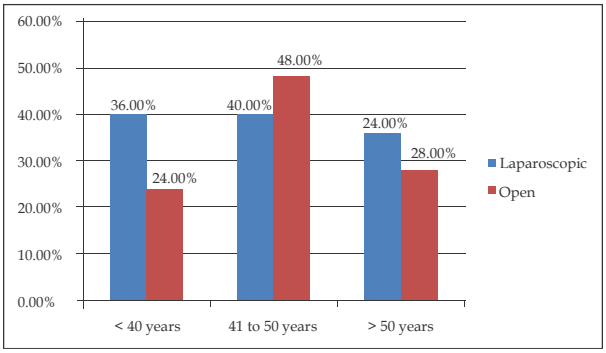
Results

Data was analyzed and results were tabulated.

1. Mean age of subjects in the laparoscopic group was 42.8 ± 9.7 years and in open group was 45.5 ± 9 years. There was no significant difference in mean age between two groups. (Table 1). In both laparoscopic and open clusters, majority of the patients were in the age group of 41-50 years. No significant difference in age distribution was observed between two groups. (Graph 1).

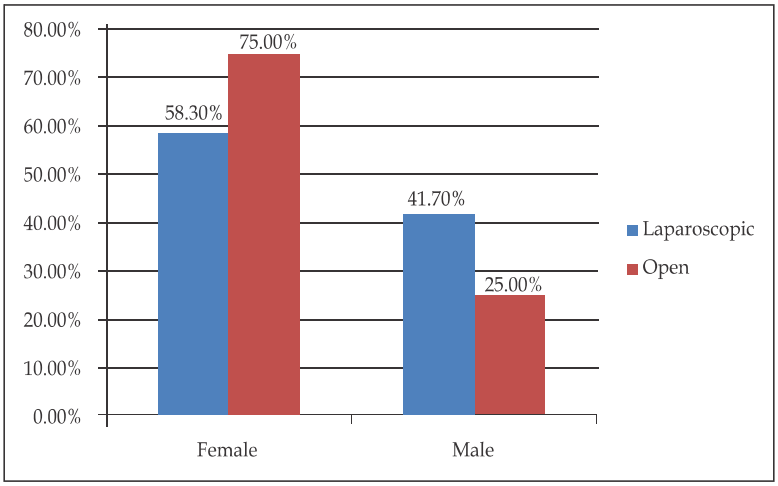
Table 1: Mean Age distribution of subjects in the study

	Group				P value
	Laparoscopic (n = 25)		Open (n = 25)		
	Mean	SD	Mean	SD	
Age	42.7	9.5	46.0	9.1	0.223



Graph 1: Bar diagram showing Age distribution of subjects

2. Majority of subjects in the study were females (32 patients) in both the groups. While there were 26 male patients in the study. There was no significant difference in gender distribution in the study. (Graph 2).



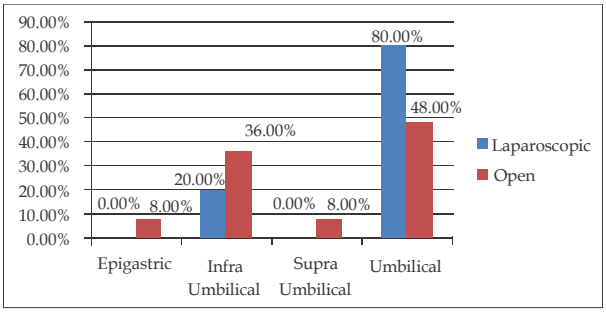
Graph 2: Bar diagram showing Gender distribution of subjects

3. In the study majority of subjects in both group had hernia from a period of 3 to 6 months. There was no significant difference in duration of hernia between two groups (Table 2).

Table 2: Duration of hernia in the study subjects

		Group			
		Laparoscopic		Open	
		Count	%	Count	%
Duration	< 3 months	10	40.0%	4	16.0%
	3 months to 6 months	10	40.0%	14	56.0%
	6 months to 1 year	5	20.0%	3	12.0%
	> 1 year	0	0.0%	4	16.0%

4. In the study 79.2% and 20.8% of hernia was umbilical and infra umbilical in laparoscopic and open group respectively. Were as in open group 45.8% were umbilical, 37.5% were infra umbilical and 8.3% was Epigastric and supra umbilical respectively. This difference was not statically significant. (Graph 3).



Graph 3: Bar diagram showing Location of Hernia on presentation

5. All the subjects (100%) in both the group had swelling as complaint. 62.5% of subjects in Laparoscopic group had pain and 91.7% in open group had pain. This difference in clinical presentation was statistically significant.

6. Mean Size of Hernia in Laparoscopic group was 3.4 ± 0.3 cm and in open group was 4.1 ± 1.6 cms. This difference in mean size of hernia between two groups was statistically significant (Table 3). Laparoscopic surgery was performed in Smaller hernia and Open surgery was performed for hernia with Larger size. In the study 95.8% and 75% of Hernia were < 4cm in Laparoscopic and open group respectively. 25% of hernia was > 4 cm in open group. This difference was statistically significant. (Table 4).

Table 3: Mean defect Size of Hernia between two groups

	Group				p value
	Laparoscopic		Open		
	Mean	SD	Mean	SD	
Defect in cm	3.4	0.3	4.1	1.6	0.031*

Table 4: Defect Size of Hernia between two groups

		Group			
		Laparoscopic		Open	
		Count	%	Count	%
Defect	3 to 3.5 cm	17	68.0%	14	56.0%
	3.6 to 4 cm	7	28.0%	4	16.0%
	> 4 cm	1	4.0%	7	28.0%

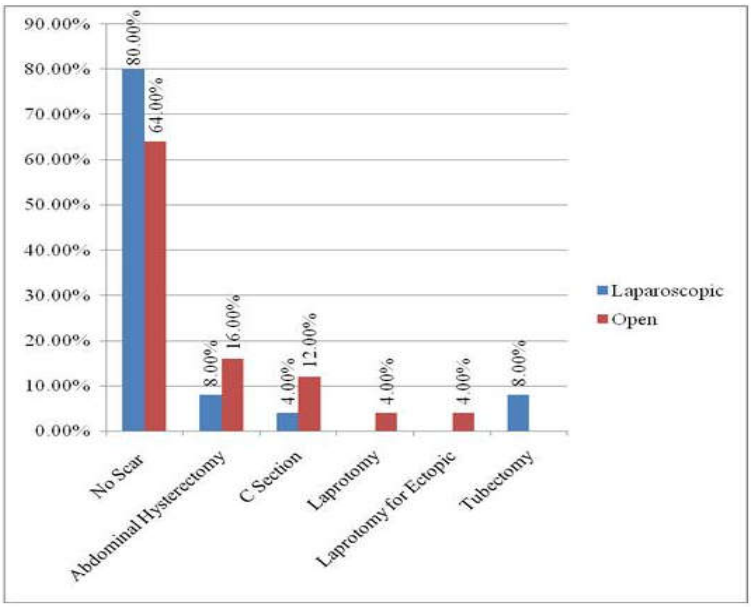
$\chi 2 = 5.609$, df = 2, p = 0.061

7. In the study 20.8% in Laparoscopic and 37.5% in Open group had history of previous scar. There was no significant difference in h/o previous scar between two groups (Table 5). Abdominal hysterectomy was the most common reason

for previous scar in both the groups (Graph 4). There was no significant difference in reason for scar between two groups. In the study majority of subjects in both group had DM and HTN as Comorbid condition. There was no significant difference in Comorbid condition between two groups.

Table 5: History of Previous scar among subjects

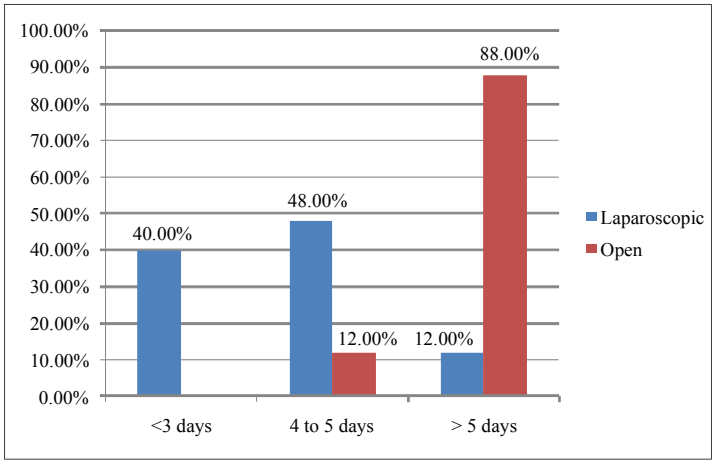
		Group			
		Laparoscopic		Open	
		Count	%	Count	%
Previous Scar	No	20	80.0%	16	64.0%
	Yes	5	20.0%	9	36.0%



Graph 4: Bar diagram showing Reason for Previous abdominal scar in both groups

Table 6: Duration of Surgery, Post-operative mobilization, Duration of post-operative stay and Expenditure between two groups

	Group				p value
	Laparoscopic		Open		
	Mean	SD	Mean	SD	
Duration of Surgery	68.8	7.8	87.0	10.1	<0.001*
Post-Operative Mobilization In Days	1.6	0.7	2.2	0.8	0.005*
Duration of Stay In Hospital In Days	4.0	1.1	7.2	1.8	<0.001*
Expenses in Rs	31920.0	1846.6	27840.0	2339.5	<0.001*



Graph 5: Bar diagram showing Duration of stay in hospital in Days between two groups

8. In the study Mean duration of surgery was 88 ± 6.9 min in laparoscopic group and 87.2 ± 9.08 min in Open group. There was no significant difference in duration of surgery between two groups. Mean time required for post op mobilization was less compared to open group significantly. Similarly mean duration of stay in ICU was significantly less in laparoscopic group than open group. Expenditure was significantly higher in laparoscopic group than open group. (Table 6) In the laparoscopic group, 40% of subjects stayed in hospital for <3 days, 48% stayed in hospital for 4 to 5 days, and 12% stayed in hospital for >5 days. Whereas in open group 12% of subjects stayed in hospital for 4 to 5 days and 88% stayed in hospital for >5 days. This difference in hospital stay during post-operative period was better in Laparoscopic group significantly.

Discussion

The present study is a prospective, randomized study contrasting the outcome of laparoscopic ventral hernia repair against open repair. In the current scenario, mesh repair has become the standard for hernia repair and played a crucial role in dipping the recurrence rates, Also widespread acceptance of laparoscopic surgery among surgeons, has paved the way as option for hernia repair other than open hernia surgery. Originally laparoscopic ventral hernia surgery was performed by Le Blanc in 1993. Since then it has faced many trials and has undergone many desired modifications till now. For comparing the both laparoscopic and open repairs there have been number of randomized control trials (RCT) in medical literature. And accordingly suggested advantages of laparoscopic repair have been described. They are decreased rate of wound infection, reduced analgesic requirements and decreased hospital stay all owing to prevention of large incisions and subsequent massive dissections of the abdomen or groin area. The present study comprises a total of 48 patients, 24 in the open cluster and 24 in the laparoscopy cluster. Subjects were randomized into the two groups to reduce the bias. Single blinding technique was used in the study.

In one of the largest studies conducted by Ramshaw et al., [6] there were a total of 253 patients, 174 in open group and 79 in laproscopy group. In one of the recent RCT conducted by Itani et al in the year 2010, 146 patients were randomized of which 73 patients underwent open repair and 73 underwent laparoscopic surgery [7]. In the current study, the mean age is comparable between the two clusters: 45.5 yrs in conventional repair group and 42.8 yrs in laparoscopy repair group. Mean age of the patients in open group was 45.2 yrs and laparoscopy group was 45.96 yrs, in the study conducted by Misra et al. in 2006. [8] Whereas the mean age in laparoscopy group was 61.2 yrs and in open group was 59.6 yrs in Itani et al study. [7]

In our study of ventral hernia comprising of epigastric, umbilical, para umbilical and incisional hernias, most of the cases had umbilical hernia - open group (45.8%) and laparoscopy group (79.2%).

Majority of the patients were females in both the groups - open (75%) and laparoscopy (58.3%) – in our study. While most of the subjects were males - open (91.8%) and laparoscopy (91.8%) groups – in Itani et al study. [7] However in Misra et al study, around 80% were females in both study groups. [8]

Majority of patients in our study, had defect size less than 3 to 3.5 cm - 37 (58.3%) in open group and 17 (70.8%). In Misra et al study, mean defect size was 42.12 mm in open group and 65.66 mm in laparoscopy group. However in the current study majority of subjects operated in both the groups were less than 4 cm. the reason being probably early detection of hernia in our cases. Though the criterion for the selection of type of procedure doesn't entirely depend on size of the defect, hernias less than 2 - 3 cm in size are better off being repaired by conventional methods without using a mesh. Also attempt should be made to cover the whole extent of the incision with prosthetic mesh, during surgery, to prevent recurrence at a new site along the scar. Though it is a matter of substantial debate, the current recommendation for area to be covered by mesh in hernia repair is at least a margin of 5 cm overlap from the fascial defect, reason being the probability of mesh shrinkage. Hence in our study groups, it was ensured to cover with a minimum overlap of 5 cm.

Regarding yet another debate, method used for fixation of the mesh, there is no general conscience. Early series of laparoscopic ventral hernia repair studies established association between absence of transfascial sutures and recurrence of hernia. Conversely many scholars were of opinion that these series did not consider other potential factors responsible for recurrence. Lengthy surgery time, increased extent of incision, poor aesthesis, increased rate of infection and pain in post operative period are the described disadvantages. With titanium non absorbable spiral and vicryl absorbable tacks availability and introduction of double crowning technique, use of transfascial

sutures has largely been disregarded.

In a randomized study, over duration of 4 years, 3 approaches of mesh fixation were studied - absorbable transfacial sutures, non absorbable transfacial sutures and double crown technique of tacker fixation. It was concluded that none had advantage over one another in reducing post operative pain. In a study by Misra MC et al., conclusion was derived that suture fixation was more cost effective than tacker fixation and statistically insignificant post operative pain. [8]

Recent studies, however, suggest that using double crown technique with tacking devices has similar recurrence rates. This is due to better anatomical and technical understanding of factors responsible for recurrence such as type of mesh and area of mesh coverage. In our study, we employed transfascial sutures in all patients and both sutures and tackers in 24 patients.

Operating time is a disadvantageous factor in the evaluation of procedure effectiveness. In our study, mean operating time was 87.2 ± 9.08 mins in open group and 88 ± 6.9 mins in laparoscopy group. However, there was no statistical significant difference in duration of surgery between two groups. In Ramshaw et al. and Asencio et al .studies, lesser operating times were reported in laparoscopy group. [6] However, Mishra et al & Pring et al studies there was no significant difference in operating times between the open and laparoscopic procedures [8,9]. In Carbajo et al. study, significantly reduced operating was noted in laparoscopic surgery group.10 Duration of surgery depends on various factors such as experience of surgeon in laparoscopy and open surgeries and others such as time of conducting surgery, no of assistants present etc.

Laparoscopic surgery has been since long generally associated with reduced post operative immediate and chronic pain. In 4 RCTs (Asencio 2009, Misra 2006, Pring 2008) almost equal incidence of postoperative pain scores in both conventional and laparoscopic groups were noted [8,9,11]. However in our study, 62.5% of subjects in Laparoscopic group had pain and 91.7% in open group had pain. This difference in clinical presentation was statistically significant.

Also another advantage of laparoscopic repair is decreased incidence of wound related complications. In almost all the RCTs except for Asencio's, [11] there was decreased wound related complications in laparoscopic surgery. Most commonly reported complications are seroma formation and wound infection. Asencio et al, Misra et al and Pring et al, reported higher seroma rates in laparoscopic groups while Itani et al, reported lesser seroma occurrence in laparoscopy group. But in all the studies, wound infection rates were shown to be higher in open group [7,8,9,11].

In the present study none of the subjects in both groups developed any complications during surgery and during the post operative period of follow up. This can be ascribed to the hygienic practices carried out during and after surgery, in our hospital.

Mean duration of hospital stay was 7.2 days in open group and 4 days in laparoscopy group, in our study and is statistically significant ($p<0.001$). In Holzman et al. and Ramshaw et al. RCTs, laparoscopy hernia repair had showed significant advantage of laparoscopic repair but other studies didn't demonstrate the same [6,12].

From majority of studies, available in medical literature, it has been shown that Laparoscopic ventral hernia repair has advantages over open hernia repair not only in regard with reduced post operative pain and reduced hospital stay duration with earlier return to normal activity but also has better cosmesis. Hence, laparoscopic ventral hernia repair is a better, reliable and practicable choice over open repair. However, commonly cited shortcoming of it being comparatively expensive can be compensated practically with the cost incurred in open repair with lengthy hospital stay, and protracted return to daily activities.

One drawback in our study was the short follow up period for assessment of recurrence rate in both procedures.

Several randomized controlled trials have started emerging from the late 90s, but the main drawback was the lack of sufficient sample size and follow up. Here within we quote a few certain studies. In the RCT study by Holzman et al., it was concluded that, operating time and postoperative seroma incidence was elevated in the laparoscopic group of 20 patients while hospital stay duration was protracted in the open group comprising of 16 patients. There was not much difference in the postoperative complication rate, infection rate and recurrence between the two groups. The mean follow up was 19 months for open group and 10 months for the laparoscopic group.

In single centre RCT conducted by Misra et al., 66 patients with both primary and recurrent incisional hernias were randomized to be operated by either conventional or laparoscopic mesh

repair. Patients were followed up at 1, 3, and 6 months post operatively and thereafter for a mean of 12.17 months in open group and 13.73 months in laparoscopic group. Prosthesis sizes used were 152.67 cm^2 and 203.83 cm^2 in open and laparoscopic groups respectively. There was one incidence of recurrence in open group (3%) and two cases of recurrence in laparoscopic group (6%). In their study it was concluded that Laparoscopic repair of ventral hernias was superior in terms of considerably less blood loss, lesser post operative complications, early return to normal activities and shorter hospital stay with admirable cosmetic outcome.

In Pring et al. (2008) prospective randomized study was conducted to assess hernia recurrence adn incidence of postoperative complications. Of the 58 patients in the study, 31 underwent laparoscopic and 27 underwent open hernia repair. Median follow-up period was 27.5 months. In both groups, patient demographics were similar. One recurrence each in both laparoscopic and open group was noted. It was concluded in the study that laparoscopic and open ventral hernia repairs are comparable as results had an equivalent rate of surgery duration, length of hospital stay, pain scoring, return to routine activities and post operative complications.

Asencio et al. in 2009 published a randomized trial of a total of 79 repairs of which 41 were laparoscopic and 38 were open repairs. In their study, mean operating time and post operative complication rate was higher in laparoscopy group. Duration of hospital stay, post operative pain and return to daily activity was almost similar in both groups.

Itani et al. in 2010 conducted a randomized trial comprising of 162 patients of whom, 146 underwent surgery (73 open and 73 laparoscopic repairs). It was shown that complications were less common in the laparoscopic group (31.5%) compared to those in open repair group (47.9%). Surgical site infection was less common in the laparoscopic group (5.6%) compared to open group (23.3%) Mean worst pain score in the laparoscopic group was lower in contrast with open group at end of 52 weeks. Time taken to return to routine activities was shorter in laparoscopic group (median of 23.0 days vs 28.5 days). Overall recurrence at 2 years end post operatively was 12.5% in the laparoscopic group and 8.2% in the open group. It was summarized that laparoscopic repair was associated, though more severe, with fewer complications.

Laparoscopic hernia repair though requires lengthier operative time due to demand of high laparoscopic skills and expensive, it has shorter hospital and ICU stay along with fewer short-term complications such as pain, seroma formation, compared to open repair. Also there is decreased incidence of wound infection, early return of bowel activity and quicker recommencement to routine activities favor in laparoscopic procedure. As discussed before, though laparoscopic procedure is expensive compared to open repair, shorter hospital stay and early return to normal activities can lessen overall cost of surgery. Added advantage is that the procedure can be performed as day care surgery. Also, visualization of hernia defects not apparent clinically is feasible in laparoscopic repair. Thus treatment of multiple hernias located in different areas of abdomen allowing dissection in right anatomical plane is possible through same access.

Conclusions

1. Mean age of subjects in the laparoscopic group was 42.8 ± 9.7 years and in open group was 45.5 ± 9 years. Age matching was achieved in the study. Hernia is common after 40 years.
2. Majority of subjects in the study were females in both the groups. Gender matching was achieved in the study.
3. Majority of subjects in both group had hernia from a period of 3 to 6 months. Hence subjects with Hernia will wait for 3 to 6 months to get it operated.
4. Umbilical and infra umbilical hernia was the common location in both laparoscopic and open group.
5. 62.5% of subjects in Laparoscopic group had pain and 91.7% in open group had pain. Hence pain was more commonly seen in Open type of repair.
6. Laparoscopic surgery was performed in Smaller hernia and Open surgery was performed for hernia with Larger size.
7. Mean time required for post operative mobilization was lesser in Laparoscopic group compared to open group significantly.
8. Mean duration of stay in ICU was significantly less in laparoscopic group than open group.
9. Expenditure was significantly higher in laparoscopic group than open group.
10. In the laparoscopic group by 3 days all the subjects were mobilized, were as in open group

by 3rd day 95.8% of subjects were mobilized. The difference in mobilization during post operative period was better in Laparoscopic group significantly.

11. Open group required longer duration of stay in ICU than Laparoscopic group. This difference in ICU stay during post operative period was statistically significantly.

Key Messages

Laparoscopic hernia repair though steep is advantageous over open hernia repair in terms of lessened hospital stay, lowered short term complications, lesser incidence of infection, early return of bowel activity and hastened return to daily activities.

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Effectiveness of Vacuum-Assisted Closure (VAC) Versus Surgical Debridement in the Management of Diabetic Foot Ulcerations

Ghanshyam Parmar[1], Kamlesh Vegad[2]

[1]Associate Professor [2]Assistant Professor, Department of Surgery, Gujarat Adani Institute of Medical Science, Bhuj, Kutch, Gujarat 370630, India.

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Abstract

Aim: The aim of present research was to evaluate the efficiency of vacuum-assisted closure (VAC) against surgical debridement in diabetic foot ulcerations (DFUs) in stipulations of healing rate, protection, and patient agreement. *Material and Methods:* Present prospective randomized case-control study was performed in surgery department of tertiary care hospital in Kutch, Gujarat, India. Total 46 patients had participated in the study. The participants of the research were subjects with DM aged 18-75 years, with stage 2 or 3 DFU, divided into Group A (patients cured with VAC) or Group B (patients cured with conventional dressings), having equivalent Patients. Treatment effect was evaluated as time taken for manifestation of granulation tissue. *Results:* The patient's age was in the center of 35 and 75 years in Group A with a mean age of 56.47 years and amid 38 and 69 years in Group B with a mean age of 54.36 years. By Week 2, wound discharge departed in 8 cases of Group A against not any in the control group. Granulation tissue emerged in 16 patients by the ending of Week 2 whereas it come out in 8 patients in Group B. *Conclusion:* VAC comes out to be further successful, secure, and patient suitable contrast to conservative dressings for the treatment of DFUs.

Keywords: Diabetic Foot Ulcerations; Granulation Tissue, Kutch; Wound Discharge.

Corresponding Author: Kamlesh Vegad, Assistant Professor, Department of Surgery, Gujarat Adani Institute of Medical Science, Bhuj, Kutch, Gujarat 370630, India.

E-mail: researchguide86@gmail.com

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Introduction

Diabetic foot is solitary and distressing obstacles of diabetes, and is distinct as a foot precious by ulceration that is linked with neuropathy in Diabetes patients. The occurrence of diabetic foot ulceration in the diabetic populace is 4–10%; the situation is more common in elder patients. [1-3] The greater part of ulcers will cure whereas 10–15% will stay vigorous, and 5–24% will at last direct to limb amputation within a epoch of 6–18 months following the first assessment.

Different DFU treatments accounted in the text, which includes superior moist wound therapy (AMWT) [4,5], bioengineered tissue or skin substitutes [6,7], growth factors [8,9], electric stimulation, and negative pressure wound therapy (NPWT) [10,11]. Management success lies on ulcer chronicity, patient execution and suitable off-load of the attachment. All of these treatments are linked with noteworthy disbursement and are being used in various situations with no adequate scientific confirmation in errand of their effectiveness [12]. NPWT generates a restricted controlled sub atmospheric (negative) pressure surroundings. It encourages wound healing by deferred primary or secondary purpose through producing a damp wound environment, organizing the wound bed for closure and promoting configuration and perfusion of granulation tissue [13]. Vacuum-assisted closure therapy is designated for utilize in Severe care settings and for a diversity of wound types with diabetic foot ulcers [14].

The aim of present research was to evaluate the efficacy of vacuum-assisted closure (VAC) against

surgical debridement in diabetic foot ulcerations (DFUs) in stipulations of healing rate, protection, and patient happiness.

Materials and Methods

Present prospective randomized case-control study was conducted in the department of General surgery at a tertiary care hospital in Kutch, Gujarat, India. Total 46 patients had participated in the study. Prior to beginning of the treatment, informed consent was acquired from all of the participants and an institutional ethical team accepted the research. The participants included patients with DM aged 18-75 years, with stage 2 or 3 DFU (as defined by Wagner's classification) [15], separated into Group A (patients treated with VAC) or Group B (patients treated with conventional dressings), having equal Patients. Exclusion criteria were age of patients smaller than eighteen years, patients having pregnancy and patients with foot ulcers further than diabetes. A thorough history, clinical examination and pertinent investigations were performed in all patients.

Wounds of all participants undergo prickly surgical debridement; involved the removal of all necrotic and impure tissue until vigorous, hemorrhagic tissue was attained [16]. After debridement in group A, sterile, polyurethane foam dressing was positioned into the wound defect. Lastly, negative pressure was given to the wound. Group B established one time every day saline drenched gauze dressing.

At each dressing change, the wound was cautiously evaluated to conclude if the wound was well, dirt free and granulating. Following each 3 days, cultures were taken from the bottom of the ulcer to evaluate for the bacterial flora. Ulcers were managed waiting the wound was clogged impulsively, surgically or awaiting achievement of the 8-week era, whatever comes prior. A concluding debridement and decontamination of the wound was carrying out in the operating room before the surgical process.

Treatment product was evaluated as time in use for manifestation of granulation tissue. Treatment achievement was distinct as manifestation of granulation tissue in a period of 8 weeks and collapse, as non manifestation of granulation tissue in 8 weeks or the require for amputation.

Statistical analysis

The data was coded and entered into Microsoft Excel spreadsheet. Analysis was done using SPSS version 15 (SPSS Inc. Chicago, IL, USA) Windows software program. The variables were assessed for normality using the Kolmogorov-Smirnov test. Descriptive statistics were calculated.

Results

The patient's age was among 35 and 75 years in Group A with a mean age of 56.47 years and between 38 and 69 years in Group B with a mean age of 54.36 years (Table 1). Men constituted 84% and women around 16% in each group. During Week 2, wound discharge disappeared in 8 cases of Group A versus none in the control group. Wound discharge moved out in 2 patients in Group A and 8 in Group B in Week 8.

Granulation tissue emerged in 16 patients by the finish of Week 2 whereas it emerged in 8 patients in Group B. Hundred percent granulation was accomplished in every participants by the finish of Week 6 in Group A compared to barely 55% participants via time in Group B and it was significant statistically ($p < 0.05$).

Wound dimension reduced in 20 patients in Group A as compared to 13 patients in Group B. Management was flourishing in 100% of patients in Group A and 63% of patients in Group B, difference between both groups was significant statistically ($p < 0.05$).

Table 1: Age wise distribution of the patients

Age Group	Group A	Group B
35-45	4	2
46-55	8	10
56-65	9	9
66-75	2	2
Total	23	23

Table 2: Appearance of Granulation tissue in study participants

Week	Group A	Group B
Week 2	16	8
Week 3	2	2
Week 4	1	1
Week 5	2	2
Week 6	2	2
Week 7	0	2
Week 8	0	3
Never During Treatment	0	3

Discussion

Present prospective randomized case-control research was conducted at General surgery department of tertiary care hospital in Kutch, Gujarat, India. VAC therapy has been revealed to create a better decline in wound measurement than conservative dressings [17,18,19]. Eginton et al. mentioned 49% and 59% decrease in the wound profundity and quantity which was, significantly better than the 7.7% lessening in wound profundity and 0.1% decline in wound volume accomplished when the similar wounds were cured with moist gauze dressings [20].

It was noted that the participants on VAC treatment had the premature manifestation of granulation tissue in comparison to treat by moist saline gauze dressings. Complete granulation was accomplished former and in a superior amount of partcicipants in Group A. Analogous findings were observed in a sequence of animal studies utilizing a sub-atmospheric pressure method for wound healing [21]. In addition it was found out that the time of vanishing of wound release was quicker in group A comparable to findings of Prabhdeep SN et al. [22]. Blood culture positivity was fewer with patients in Group A.

Skin grafting was painstaking in the research as method for the management of DFU after VAC therapy or saline soaked dressings. A number of findings have established the efficiency of V.A.C. in endorsing the graft obtain time and provides confirmation of a decrease in replicate skin grafting in participants cured with V.A.C. compare to those cured with conventional therapy [23,24].

Nevertheless, it was observed in the present study that following merely quite a lot of days of treatment with V.A.C., the occurrence of a fine cleansed and granulated tissue were accomplished, yet in those participants on conscription had modest to missing granulation tissue. It is the existence of granulation tissue that is dangerous to formative additional alters in the healing approach and the clinical choice to endorse closure of the wound by first or second meaning, skin graft etc.

Conclusion

VAC therapy is functional in the healing of diabetic foot infections, which after debridement, may present with exposed tendon, fascia or bone. Debridement is gravely significant to the beginning of healing. VAC emerges to be extra effectual, secure, and patient suitable contrast to conventional dressings for the management of DFUs.

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Conflict of interest: None declared

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Original Research Article

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Antenatally Detected Congenital Thoracic Malformations and Its Postnatal Follow-Up in Foetal Surgical Congenital Malformations Counseling Center: A Retrospective Study

Hemanthkumar Boopathy[1], Karrupasamy Nallan[2], Ravikumar Ayyanar[3], Haris Vijila Rani[4], Aravindan Chandrasekaran[5], Srinivasakumar Rajagopal[6], Jayakumar Palanisamy[7].

[1]Professor and Head, [2]Associate Professor [3,4,5,6]Assistant Professors, [7]Resident, Department of Paediatric Surgery, Government Rajaji Hospital & Madurai Medical College, Madurai, Tamil Nadu 625020, India.

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Abstract

Antenatal ultra sonogram detects congenital malformations in utero. Antenatal detection of the malformation will help the Paediatric Surgeons to counsel the parents regarding the outcome and intervene in early postnatal period. Here we analyzed the common Thoracic Congenital Malformations detected in Fetus antenatal USG and followed postnatal in our institution. Congenital diaphragmatic hernia is the common lesion noted in the antenatal scan.

Keywords: Antenatal Ultra Sonogram; Antenatal Anomalies; Congenital Diaphragmatic Hernia; Thoracic Malformation.

Introduction

Thoracic lesions are one of the common congenital malformations detected by routine antenatal ultrasound scan screening. Common thoracic malformation identified by antenatal scan was congenital diaphragmatic hernia (CDH), congenital cystic adenomatoid malformation (CCAM), bronchopulmonary sequestration (BPS) [1]. The early detection might improve the survival of the newborn by preparing the paediatric surgeons for early intervention in the postnatal period and also to give proper counseling to parents regarding the natural course and its consequences.

Corresponding Author: Karrupasamy Nallan, Associate Professor, Department of Paediatric Surgery, Government Rajaji Hospital & Madurai Medical College, Madurai, Tamil Nadu 625020, India.

E-mail: catchkarup@gmail.com

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Materials and Methods

A retrospective study was done by analyzing the data in our fetal surgical congenital malformation counseling center register in our department of Paediatic surgery. In this center, pregnant mothers detected with foetal anomalous ultra sound reports were registered and were followed by promoting institutional delivery in our institution and given appropriate counseling regarding the anomaly. After delivery neonates were planned for follow up and surgical intervention done for appropriate babies. Mothers not returned after due date was called by phone to know the status of the baby. Period of study was January 2016 to June 2018.

A CDH composite prognostic index (CDH-CPI) comprising 10 prenatal parameters have been adapted modified and used when feasible. It was found to have a stronger correlation with survival and need for extracorporeal membrane oxygenator (ECMO) than any one parameter individually as per Le LD., et al. [2] (Table 1). When a parameter is not known, we counted the particular parameter as normal (+1) during the CPI calculation.

Table 1: Composite Prognostic Index (CDH-CPI) scoring chart (Adapted from Le LD., et al.)

parameters	score	
karyotype	Normal = +1	Abnormal =0
Associated Syndromes	Nil = +1	Abnormal =0
Congenital cardiac disease	Nil = +1	Minor = 0 Major= -1
Lt ventricle /Rt ventricle	Normal = +1	Dispropinate = 0
Mc Goon Index	>1.2 = +1	< 1.2 = 0
Sac	Present = +1	No sac = 0
Liver	In abdomen =+1	In Thorax = 0
Lung head ratio	>1 = +1	<1= 0
Total lung volume	>18ml = +1	<18ml =0
PPLV	>15% = +1	<15% = 0

Total score of 8 and above have good survival, Score less than 5 have very poor prognosis.

All fetuses with an antenatal diagnosis of CDH was advised delivery in a tertiary referral center with access to neonatal intensive care and pediatric surgical facilities.

Inclusion Criteria

Antenatal Mothers referred by Obstetric and Gynecology department of our institution after finding anomalies in anomaly screening scan and their babies born in our institution. Thoracic malformations detected antenatal were included in study.

Results

Total antenatal cases screened and registered in our counseling center were 424 (January 2016 to June 2018-{30 months}). Among them Thoracic lesion identified were 37 (8.7%). Most common thoracic lesion noted was CDH, which were 29 (78.4%). (Fig. 1) Mean age of mothers 23.89 years (Minimum age of 18 to maximum age of 35). Three mothers status unknown and two were on still antenatal follow up.

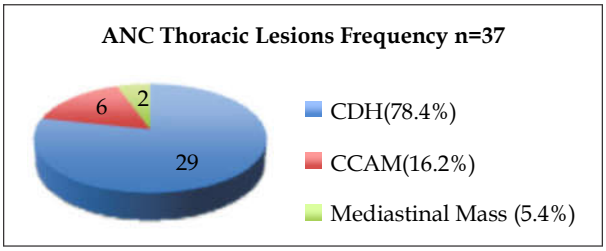

Fig. 1:

Of the thoracic lesions 29 cases of CDH was detected in antenatal screening. More than 80 percent of individuals with congenital diaphragmatic hernia have no known genetic syndrome or chromosomal abnormality. In these cases, the cause of the condition is unknown. Left sided CDH was 26 (89.7%) and right sided CDH was 3 (10.3%). Death/abortion/IUD among CDH was 20 (69%). Among the 29 CDH registered, perinatal gender was known for only 16 babies, 13 (81.2%) were male babies and 3 (18.8%) were female babies (Table 2 & 3).

Table 2: CDH cases detected in our study

Total ANC CDH 29	Post natal finding	Surgery done	On ANC followup	IUD	Post natal death	Not known
CDH	27	2	2	3	17	3
Eventration	2	2				
Left	26					
Right	3					

Table 3: Signs suggesting a poor prognosis include in our study

Poor Prognostic factors	number
large hernia size	6
early gestational age at diagnosis	13
intra-thoracic liver	1
small contra lateral lung	4
bilateral CDH	0
unfavourable lung: head ratio	9

Poor CDH-CPI (modified) score was associated with high mortality (Table 4).

Table 4: CDH-CPI Score in our study

Total CDH	Score above 8	Score between 8-5	Score below 5
27	6	4	17

Next common lesion identified was CCAM, which were 6 (16.2%). And the remaining 2 (5.4%) cases were Mediastinal mass

In our study we had 6 cases of cystic lung disease of which 1 died, 2 cases had CCAM one case was operated with upper lobectomy and one case on observation without any distress with decrease in size and 2 cases still on ANC evalution ,1 case status not known. (Table 5).

Table 5: Other thoracic lesions identified

ANC scan	Number	Surgery done	On ANC Oervation	On PNC obervation	DEATH/IUD	Unknown
Cystic leision of lung (CCAM)	6	1	2	1	1	1
Mediastinal mass	2	1	----		1	----

Of two cases of mediastinal mass 1 baby died and 1 baby underwent surgery and excision of mass done and histopathologically it came as Broncogenic cyst.

Postnatal surgical intervention was carried out in 5 thoracic lesions (13.5%) cases. Thoracotomy was done in 4 cases with an antenatal finding of CDH, among them 2 were found to be eventration of diaphragm. Thoracoscopic approach was used for one mediastinal mass in a female infant (Table 6).

Table 6: Operative approach

Diagnosis	Thorascopy	Thoracotomy
Mediastinal mass	1	
CDH left	---	2
CDH right	---	
Eventration Left (ANC CDH)	---	1
Eventration Right (ANC CDH)	---	1

Discussion

Incidence of CDH is 0.8 to 5 /10,000 births. CDH is the common thoracic lesion encountered in our antenatal study also. Survival rate for CDH in developing countries ranges 50%-65%, whereas in developed countries ranges 85%-90%. Death or IUD noted in CDH in our study was 20 (17 Perinatal Deaths+3 IUD) (69%), which is huge. Left side and male gender was the common finding in CDH, which is consistent with other studies also. High perinatal mortality might be due to prematurity, lung hypoplasia, pulmonary hypertension and cardiac dysfunction. Mean age in our study at diagnosis (23.89 years) was comparable with the study done by Garne E., et al. (24.2 years). Poor CDH-CPI score associated with high mortality in our study also. Large CDH have a poor prognosis, due to pulmonary hypoplasia and perinatal mortality may be as high as 80%. Clearly, successful management was dependent on specialist pediatric facilities, with the ability to offer surgery, ECMO etc. [2-6].

The second most common lesion noted is CCAM. Incidence of CCAM is 1 in 11,000 to 35,000 live births. As per the study by Asmita AM et al., surgery is needed in most of the cases, but none of our cases developed respiratory distress or symptoms immediately after birth which warranted surgery in neonate age after birth [7]. 1 case underwent lobectomy at age of 1 year, 1 case was on observation and the lesion resolved. Two cases on ANC follow up. The live infants are on regular follw-up. These lesions may have an unpredictable growth pattern from 18 to 26 weeks gestation [8,9]. However, after this growth period, the growth curve will plateau and often regress. Although rare, it has been reported that these lesion may regress enough where they even disappear from the pulmonary parenchyma [10-12].

Even though all mothers were followed in person with their babies during follow up or by their primary or secondary phone numbers, Died babies gender was not enquired or the participants were reluctant to talk about the died baby in detail.

High perinatal mortality in this study warrants prospective follow-up of these babies in perinatal period to find the cause and to reduce the mortality.

Conclusion

Antenatal registration of these thoracic lesions will help the paediatric surgeons in early planning of surgery immediately after birth, which might improve the outcome of these anomalous babies. Unnecessary abortion of the pregnancies can

be minimized through this antenatal anomaly screening centre, particularly in precious pregnancies if established in other institutes also.

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Original Research Article

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Treatment of Empyema Thoracis in Paediatric Cases

Mehta Ketan D.[1] Raval Himanshu D.[2]

[1]Professor [2]Third Year Resident, Department of General Surgery, Shri MP Shah Government Medical College, Jamnagar, Gujarat 361008, India.

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Abstract

Context: Empyema thoracic carries significantly morbidity and mortality in paediatric patient, if not properly treated. *Aims:* This study is focussed on treatment according to chronicity of the disease and its outcome. *Methods and Material:* In this prospective study, 22 patients with empyema under age group of 12 were treated according to American Thoracic Society (ATS) staging. 9 patient with ATS stage I were treated by antibiotics. 5 patient with ATS stage II underwent Video assisted thoracoscopy (VATS) while 8 patient with ATS stage III were treated by thoracotomy. *Results:* Average hospital stay of patients with ATS stage I, II and III were 7 days, 16 days and 18 days respectively. The complications rate were lowest among patients with ATS stage I followed by ATS stage II and III. There were no mortality. *Conclusions:* These study suggests treating empyema at early stage has significant favourable outcome in terms of morbidity. So all efforts should be made to detect and treat the disease in earlier stage.

Keywords: Empyema; Decortication; paediatric; American Thoracis Society (ATS).

Introduction

Ever since the days of Hippocrates, Empyema thoracic has been known as pus in the pleural cavity [1]. Empyema thoracic is a pyogenic or suppurative infection of the pleural space. Empyema are the most common exudative type of pleural effusion [2]. Empyema is never a primary disease, though it is often difficult to arrive at primary focus of infection [2]. Most common cause of empyema is sequel of inadequately treated pneumonia [3].

For centuries Empyema thoracic has been recognized as a serious problem. The situation has been made worse by the poor economic state and bad hygienic condition in developing country.In India, the incidence of empyema 5-10% [4].

Early diagnosis and quick treatment must be the aim. Acute empyema is treated by antibiotics, drainage of pus via aspiration or intercostal drainage tube insertion with or without the help of thoracoscopy. In case where there is much thickening of the pleura, Decortication is the treatment of choice.

Treatment of empyema can be planned as per American Thoracic Society (ATS) staging system. We treated patients according to ATS staging and outcome was analysed.

Methods

This study was performed on 22 patients over a period of 2 years. The upper limit of the patients' age was 12 years.

We thoroughly investigated all the patients with proforma based data collection. This include clinical history, haematological investigations, radiological investigations chest x-ray, Ultrasonography (USG) and pleural fluid analysis. CT scan was performed in selected case only.

Corresponding Author: Raval Himanshu D., Third Year Resident, Department of General Surgery, Shri MP Shah Government Medical College, Jamnagar, Gujarat 361008, India.

E-mail: hims02929@gmail.com

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The data was analysed& the patients were segregated in 3 stages, according to ATS staging system which is described as below,

ATS Stage 1: (Exudative Stage)

Criteria for Patient Selection in This Stage Are Given In Table1

Table 1:

Average duration of illness before admission	4 day
Radiological	Minimal to mild pleural fluid effusion Diffuse homogenous opacity
Pleural Fluid Analysis	Culture and gram stain negative
	pH, glucose, protein, and LDH are in normal range

These patients were given broad spectrum antibiotics. Response to therapy was judged by serial evaluation of symptoms & signs, chest x-Ray, USG and overall general condition of patient.

ATS Stage 2: (Fibrino Purulent Stage)

Criteria for patient selection in this stage are given in table 2.

Table 2:

Average duration of illness before admission	10 day
Radiological	Mild to moderate pleural fluid effusion
	Diffuse homogenous opacity
	Multiple loculation
Pleural Fluid Analysis	Ph<7.2
	Glucose<40 mg/dl
	Protein>3gm
	LDH>1000IU/L
	Specific Gravity>1.018

These patients were subjected to VATS (Video Assisted Thoracic Surgery) the technique of which is described below:

Under General Anaesthesia the patients were placed in right/left lateral decubitus position. First port (for 5 mm, 30 degree telescope) was introduced through 5th intercostal space at anterior axillary line. Then additional 2 or 3 ports were introduced according to site of pathology.

Then all fluid were sucked out and all septa were broken with the help on suction cannula. Then the pleural cavity was thoroughly irrigated with normal saline. Any air leak through Broncho -pleural fistula was identified and closed with intracorporeal suturing with polyglactic acid. The procedure was concluded by placing intercostal drainage tube through most dependent port site.

Post operatively all patients were shifted to paediatric intensive care unit , where they received treatment in form of oxygen inhalation, antibiotics, analgesics, intravenous fluids, chest physiotherapy and other supportive treatment as needed. The Intercostal drainage tube (ICD) was removed when it stop functioning. The duration of antibiotic and analgesics was guided by clinical and radiological improvement.

ATS Stage 3: (Organising Stage)

Criteria for patient selection in this stage are given in table 3.

Table 3:

Average duration of illness before admission	15 day
Radiological	Moderate to gross pleural effusion (>1/2 hemi-thorax on chest x-ray)
	Diffuse homogenous opacity
	Loculated pleural effusion with multiple septa
Pleural Fluid Analysis	Culture and gram stain positive

These patients were subjected to intercostal chest drainage and antibiotics followed by open decortications which was performed as follow:

Under general anaesthesia patients were placed in right or left lateral decubitus position. Standard posterolateral thoracotomy (Fig. 1) was performed and thorax was entered through the bed of 5th rib. After entering the thoracic cavity all the fibrous septa were broken and pus, debris were removed (Fig. 2).

Both the parietal and visceral pleura were peeled off. The necrosed lung tissuewas debrided (Fig. 3, 4 and 5) and healthy lung tissue closed with polyglactic acid suture (Fig. 6). Finally, thoracic cavity was thoroughly irrigated with normal saline and Intercostal drainage tube placed in most dependent position. The same post-operative protocol was used as described earlier for stage 2 disease.

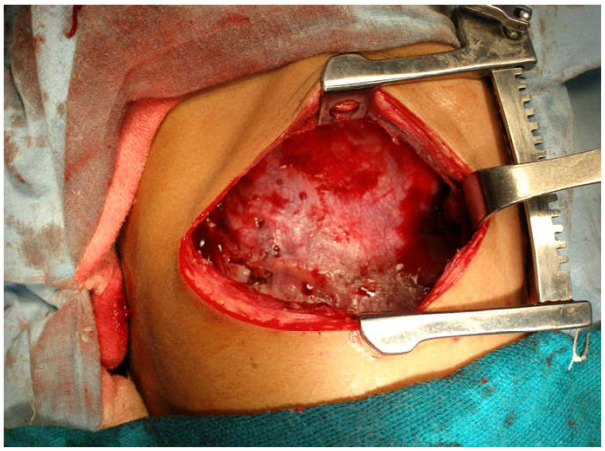

Fig. 1: Standard posterolateral thoracotomy

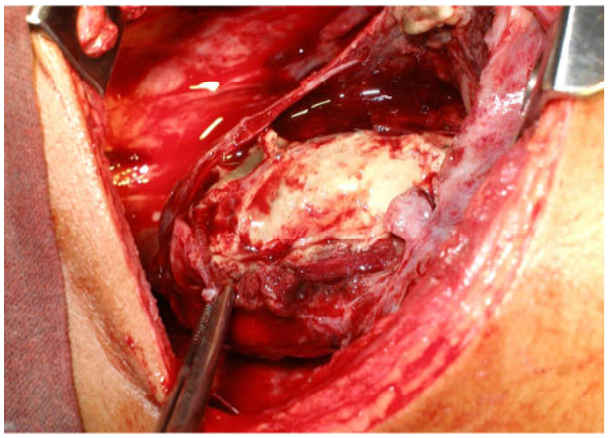

Fig. 2: Slough in Pleural cavity

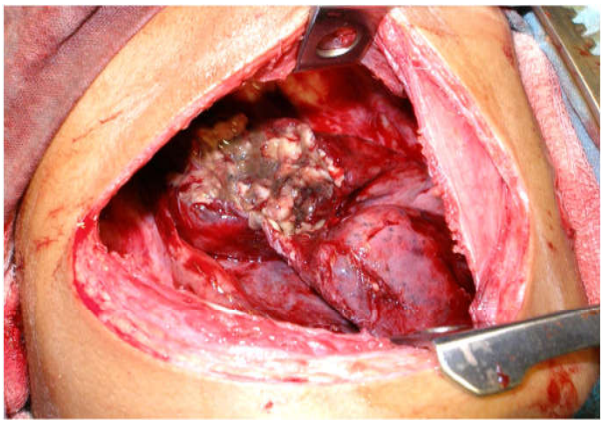

Fig. 3: Dissection of pleural cavity and lung

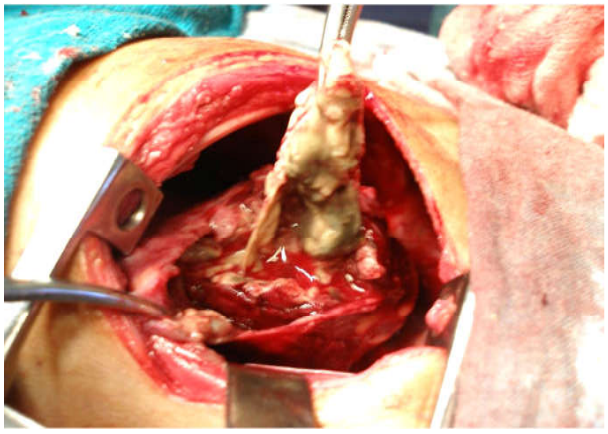

Fig. 4: Slough and necrotic material removed from lung

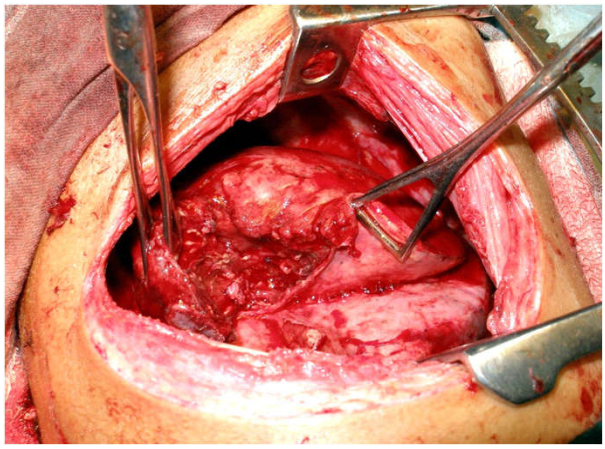

Fig. 5: Lung tissue after debridement

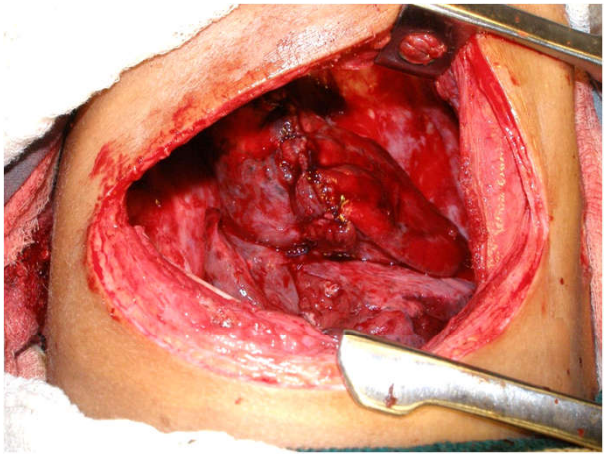

Fig. 6: Suturing of the lung

Results

There were 22 patients, out of which 12 were male (55%) and 10 were female (45%). 9 patients were belong to ATS stage 1. 5 patients were belong to stage 2. 8 patients were belong to stage 3. Their treatment, average duration of hospital stay, complication rate and mortality are depicted in table 4.

Table 4:

Stage	Total no. of patients	Treatment	Average duration of hospital stay	Complication Rate	Mortality
1	9	Antibiotics	7 day	0%	0%
2	5	VATS (video assisted thoracic surgery) + ICD (intercostal drainage tube)	14 day	20%	0%
3	8	Antibiotics + ICD (intercostal drainage tube) + Open Decortication	16 day	33%	0%

Discussion

Empyema was recognized in the time of Hippocrates, but it was only in the middle of 19th century, when Robert Koch and Louis Pasteur established the bacterial nature of infection. [5] Empyema is very grave disease, particularly in children and carries significantly morbidity and mortality, if not properly treated. Though the incidence of empyema thoracic has declined in the west due to effective use of broad spectrum antibiotics, but it still remains a significant health problem in developing countries. The presence of co morbid conditions like malnutrition, pulmonary tuberculosis etc., that alter systemic or pulmonary host defence increase the risk of empyema.

It is most often associated with pneumonia due to streptococcus Pneumoniae (most common), staphylococcus Aureus (common in India). Whereas H.influenze, E.Coli, Klebseillae, pseudomonas and mycobacterium Tuberculosis are the less common etiologic agents. [6]

The aim of management is effective pleural evacuation and re-expansion of the lung. The various modality used to treat empyema are antibiotics, fibrinolytics, VATS and thoracotomy. The application of these modality can be based on stage of disease as describe by American Thoracic Society, 1905. [7] However accurate classification of patient according to staging system is not always possible. Some cases require sound clinical judgment of clinician to select appropriate therapy.

Antibiotic therapy should be the initial treatment protocol in all stages. Initially broad spectrum antibiotics should be started, and then it should be selected on basis of pleural culture and sensitivity. Various thrombolytic used in initial stages are streptokinase, urokinase, and alteplase. However there are insufficient evidence of its efficacy and safety [8,9]. Thoracoscopy is safe, effective and less invasive technique, in experienced hand. It gives tremendous benefits to the patients. However a service of skilled anaesthetist is required as these patients require single lung intubation. Those patients with late presentation should be treated by open decortication. When the decortication is performed in timely manner it provides rapid resolution of the disease.

In present study we found that Patients with earlier stage of empyema can be treated more successfully with less morbidity compared to those with advance stage of empyema.

Conclusion

The treatment of empyema can be planned effectively with ATS staging. Patients with early stage of empyema, if properly treated, can have significant less morbidity. So all efforts should be made to detect and diagnose this disease in earlier stage.

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Declarations

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Ethical approval: Not Required

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Indian Journal of Biology	Semiannual	5500	5000	430	391
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International Journal of Food, Nutrition & Dietetics	Triannual	5500	5000	430	391
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Original Research Article

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Upper and Lower Gastrointestinal Endoscopy Pattern and Record Management in A Rural Medical College in Southern India: An Audit

Kiruthika Dhakshinamoorthy[1], Hemanthkumar Boopathy[2], Jayakumar Palanisamy[3], Karunakaran Kathiresan[4], Jayapriyanka Santharaj[5], Charanya Muthusamy[6]

[1,3]Assistant Professor [4]Professor and Head [5]Resident, Department of General Surgery, Sivagangai Medical College, Sivagangai, Tamil Nadu 630561, India. [2]Professor and Head, Department of Paediatric surgery, Government Rajaji Hospital and Madurai Medical College, Madurai, Tamil Nadu 625020, India. [6]Assistant Surgeon, Government Hospital, Thottiyam, Trichy, Tamil Nadu 621215, India.

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Abstract

Gastrointestinal endoscopies are commonly performed procedures following gastrointestinal symptoms. Endoscopy reporting, data entry and data management are standardized in developed countries. Here we audited the endoscopy reports in a handwritten record of rural medical college hospital. High number of missed data entry warrants digitalization of the reporting system, which might improve the standard of care of these patients and future research.

Keywords: Endoscopy; Primary Finding; Record Management.

Introduction

Gastrointestinal symptoms not subsided with medical therapy will lead to the diagnostic invasive procedures like upper and lower gastrointestinal endoscopies.

Endoscopic procedures and the reporting system are standardized in developed countries. In developing countries, standard reporting may not be possible due to poor resources and to reduce the cost. Here we audited an endoscopy record entry of surgical department in a rural medical college hospital, which caters the rural population primarily [1].

Corresponding Author: Hemanthkumar Boopathy, Department of Paediatric Surgery, Government Rajaji Hospital and Madurai Medical College, Madurai, Tamil Nadu 625020, India

E-mail: drjayakumar1999@gmail.com

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Materials and Methods

A retrospective analysis of the endoscopy records for both upper and lower gastrointestinal scopy available during the period of February 2017 to May 2018 (16 months) in department of general surgery in our institution. Data entry was made from the hand written scopy record for age, sex, clinical diagnosis, endoscopic diagnosis, scope entry level and procedures like biopsy were included. Data analysis was done using excel sheet and when appropriate Fischers exact test was used to compare the variables and the p value <0.05 was considered significant.

Results

Total diagnostic endoscopies done were 456. Oesophagoduodenoscopy (OGD) was 429 (94%) and colonoscopy was 27 (6%). Among the OGD scopy group, males were 263 (61.6%), females 164 (38.4%) and gender entry not available for 2 cases. Among the males < 35 years were 40 and > 35 years were 223. Among the females < 35 years were 34 and > 35 years were 130. Mean age of the patients underwent OGD scopy was 50.7 Years.

Males underwent high number of OGD scopy, while comparing the females and colonoscopy counterparts during the same time. After the age

of 35 years more number of males underwent OGD scopy compared to females of the same age group. But both this association were not statistically significant [Table 1 & 2].

Table 1: Scopy types and sex of the patients analysis.

	Male	Female	Total
Colonoscopy	14	13	27
OGD Scopy	263	164	427
Total	277	177	454

Fisher's exact test

The two-tailed P value equals 0.3172

The association between rows and columns is considered to be not statistically significant.

Table 2: Age group and sex of the OGD scopy patients analysis.

	Male	Female	Total
< 35 Years	40	34	74
> 35 Years	223	130	353
Total	263	164	427

Fisher's exact test

The two-tailed P value equals 0.1500

The association between rows and columns is considered to be not statistically significant.

Clinical diagnosis before doing OGD was Acid peptic disease (APD) or gastritis in 168, Abdominal pain or Mass abdomen in 68, Dyspepsia or Dysphagia in 62, Liver disease or Cholelithiasis or Cholecystitis or Periampullary growth in 30, Anemia or Hematemesis or Melena in 19, Neck Node or thyroid swelling in 9, Pancreatitis in 4, No clinical diagnosis entry noted in 59 and each one case of Epigastric hernia, Umbilical hernia, Foreign body, Irritable bowel syndrome, Gall bladder polyp, hypothyroid, Tuberculosis abdomen, Appendicitis and Ureteric Colic [Fig. 1].

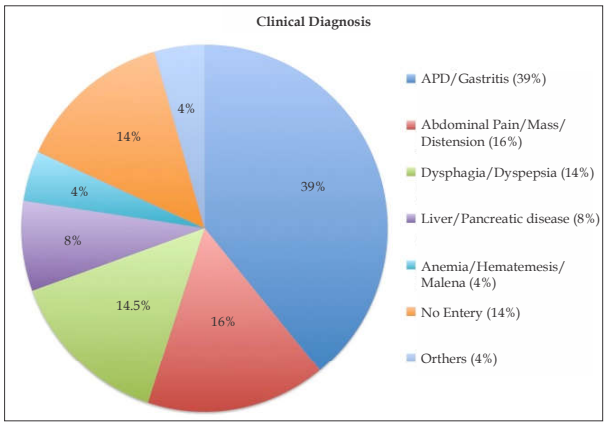

Fig. 1: Clinical diagnosis of the OGD done patients.

Primary OGD scopy finding in relation to stomach were Acute erosive gastritis or Atropic gastritis or Antral gastritis or Biliary reflux gastritis in 138 (32%), Pan-gastritis in 48 (11.2%), Growth or Ulceroproliferative lesion in 54 (12.6%), Ulcer in 12, Hiatus hernia in 4, pyloric stenosis in 3 and distended stomach in 2.

Primary Scopy finding in relation to oesophagus were Lax OG junction with or without esophagitis in 27, Growth esophagus in 9, Barrets esophagus 4, Moniliasis in 2, esophageal varices in 2 and Achalasia cardia in 1.

Duodenal finding primarily noted were Duodenitis in 9, duodenal ulcer in 2 and Worm infestation in 2.

Normal study noted during scopy were 91(21%), scopy abandoned due to uncooperative patient or technical failure in 12 and No entry was made in diagnosis column in 7 [Fig. 2].

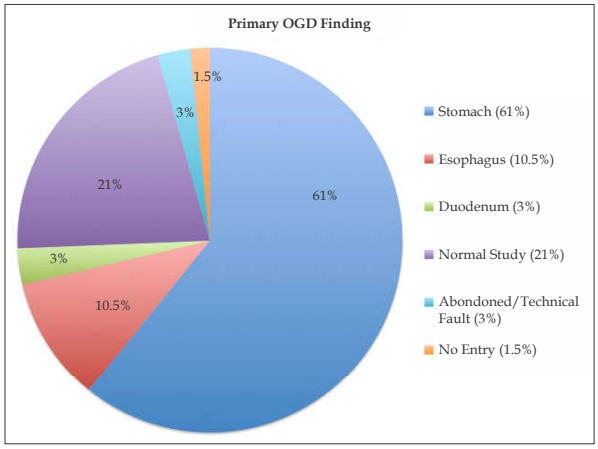

Fig. 2: Primary OGD finding of the patients.

Scopy entered up to duodenum in 58, Not applicable in 12 procedure abandoned cases, Stomach in 11 cases, Afferent and efferent loop of Gastrojejunostomy loop in 1, Upper esophagus in 3 due to postcricoid web or stenosis, OG junction in 1 and No entry available in the register in 343. Biopsy taken during scopy was 44 (10.3%), not applicable as entry in 24, not taken or procedure abandoned in 2, No entry made in 359 and Rapid urease test for H.Pylori positive in 6 cases of biopsy noted.

Among 27 colonoscopy, males were 14 and females 13. Mean age of the patients underwent colonoscopy were 54.7 years. Clinical diagnosis favored colonoscopy were Mass per abdomen or rectum in 9, rectal bleeding or melena in 8, subacute intestinal obstruction or abdominal pain in 7, constipation in 1 and no clinical diagnosis entered in 2.

Primary colonoscopy finding were Normal study in 13 (48%), Growth in 5, polyp in 3, each 1 case of hemorrhoids/Ulcerative colitis/ileal valve thickening, and no entry made in 3.

Colonoscopy entered up to caecum or terminal ileum in 9, transverse colon in 2, Each 1 case of splenic flexure, sigmoid- descending colon junction and anal canal. No entry made for 13 cases.

Bowel preparation noted as fair in 4, poor in 1, not entered in 21 and procedure abandoned in one due to non-cooperative patient. Biopsies taken were 4.

Discussion

OGD scopy done frequently for males compared to the females (1.6:1). Age >35 males were numbered high in OGD scpoy compared to the female counterparts (1.7:1). Abdominal pain/distension/ mass, Acid peptic disease and Gastritis as clinical diagnosis were the most common clinical (55%) presentations for the OGD scopy. Normal study in 21%. These findings correlated with the study done by Taye et al, who mentioned the sex ratio of 2:1 and normal study 28%. But mean age of their patients was 36, which was 50.7 in our population [2].

Common OGD finding noted organ specific was stomach (61%), next common were normal study (21%) and esophagus (10.5%).

Arjun B et al., from south india reported the normal finding of 14% which is comparable with our 21%. But gastritis reported was 79% in their study but it was 43% in our population. Gastritis was the most common finding in both studies. Duodenitis and oesophagitis reported by them was 33.4% and 37.0%, but the primary findings related to duodenum and esophagus was only 3% and 10.5% [3].

Study done by Khurram M et al, from neighboring country shows high Female (58.2%) patients underwent scopy, which is only 38.4% of females in our study. Mean age of patients was 40.5 years, but it is higher in our study (50.7) [4].

Sumathi B et al. from south india reported confirmed malignancy of 8.3% in their study. We too have got similar percentage of suspected malignant lesions like Growth or Ulceroproliferative lesion in 54 (12.6%). Even though with these suspected malignant lesions biopsy was taken only in 44 (10.3%). Gender ratio underwent scopy also 1.5:1, which is similar with our study. But the mean age of the patients was 41.6 years, which is higher in our study [5].

In OGD scopy record, clinical diagnosis was not available or not entered in 59 (14%) cases, Scopy finding was not entered in 7 (1.6%) cases, Scopy entry level or completeness of the procedure was not mentioned in 343 (80%) cases. Biopsy column also not entered in 359 (84%). In the colonoscopy group also missed entry of clinical diagnosis, Scopy findings, Completeness of the procedure and bowel preparation. These missed entries in records can be minimized by standardizing the endoscopy reporting system by digitalizing and following the view points suggested by European Society of Gastrointestinal Endoscopy (ESGE) [6,7].

Conclusion

Although with high number of missed record entry noted, this rural medical college caters high number of poor people in the need for scopy. But better making the records digitalized, using software will reduce the missed records and retrieval of the data when needed for research purpose or for patients review.

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Current Trend of Colorectal Cancer in Young Adults: At Tertiary Care Hospital

Prasad SS[1], Charan Makkina[2], Rajendra Benakatti[3], Vijayendra Kedage[4], Akhilesh Chittineni[5]

[1]Professor [2,5]Senior Resident [3,4]Assistant Professor, Department of General Surgery, Kasturba Medical College, Manipal, Karnataka 576104, India.

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Abstract

Context: Colorectal cancer (CRC) is the most common gastrointestinal cancer worldwide with a low reported incidence in India. There is significant geographical variation in the incidence rates, and the presentation may also vary. There are few studies evaluating the clinical profile of CRC in Indian patients. There is significant geographical variation in the incidence rates, and the presentation may also vary. There are few studies evaluating the clinical profile of CRC in Indian patients. *Aims:* The aim was to access the clinico-pathological details of young patients with CRC in India and compare it with those of the reported literature. *Settings and Design:* single centre tertiary care centre, cohort study, observational study *Methods and Material:* All patients below 50 years of age who are diagnosed with colorectal cancer in surgical units of Kasturba hospital, Manipal. *Statistical analysis used:* SPSS version 16. *Results:* One fifty three patients were studied in period of five years. The mean age was 37.6 years. Sixty percent were males. The commonest symptoms were rectal bleeding (60%), pain (44%), and altered bowel habits (26%), Sixteen percent of the patients had mucinous type. These patients have predominant peritoneal metastasis and right side preponderance. The median CEA level was 35.1 ng/mL. Most patients had localized or locally advanced disease. Twenty-eight percent of the patients had metastatic disease. With liver being the commonest site of metastases (52%) followed by peritoneum and lung. More than eighty percent of the patients received treatment with a curative intent. We had younger patients, higher proportion of mucinous carcinomas, and more patients presenting with an advanced stage. *Conclusions:* Colorectal cancer in India differs from that described in the Western countries. Inadequate access to healthcare and socioeconomic factors may play a role in some of these differences.

Keywords: Colorectal Carcinoma; Young Adults; Adenocarcinoma; Mucinous Carcinoma.

Introduction

Colorectal cancer is the commonest malignancy in the gastrointestinal tract [1]. Fourth leading cancer associated death in the world [1]. In general Colorectal cancer is a disease that concerns mainly aged people [2]. However in recent years , an increasingly significant number of younger patients are being diagnosed as having colorectal cancer [3]. Young adults diagnosis is often delayed due to physicians attributing symptoms to diagnoses other than colorectal cancer [3]. Young adults with colorectal cancer often have more aggressive tumor characteristics [4]. But they tend to have better survival rates when compared with older adults when matched for stage [5]. Majority of these results were obtained from western studies. This is the perception amongst surgeons in India, thatmost cases of CRC in India at younger age, present withmore advanced-stage disease, more signet ring morphology,and more anorectal as compared to colonic site of primary ascompared to that reported worldwide. There are a few published studies from India on patients with CRC. However, there are no recent studies evaluating CRC in younger population. So we planned a clinicopathological profile study of CRC in youngpatients (<50 years) presented to our hospital over a five-year period.

Corresponding Author: Rajendra Benakatti, Assistant Professor, Department of General Surgery, Kasturba Medical College, Manipal, Karnataka 576104, India.

E-mail: dr.rajendra.benakatti@gmail.com

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Materials and Methods

We performed a retrospective observational study of all the maintained databases of colorectal cancer in the younger patients (<50 years) in the Kasturba Hospital, a tertiary referral center in south India. Institutional Ethics Committee (IEC) approval was taken for this study. The aim of this studywas to evaluate the clinico-pathological profile of CRC patients and compare it with those ofthe available reports in Indian as well as Western literature. All patients below 50 years of age who are diagnosed with colorectal cancer in surgical units of Kasturba hospital, Manipal. The profileincluded demographic features, symptoms, primary diagnosis, basic laboratory investigations, and stage information. We also noted the treatment planned.

Results

A total of 201 patients have been studied from Jan 2012 to Aug 2017, of which 48 were excluded (27 were operated before the study period and were on follow up, 8 were operated outside, 10 were advised surgery after workup but lost to follow up, 3 were discharged against medical advice. Majority of the patients were in the age group of 30-49 yrs. Mean age group was 37.6 years (table 1). Ulceroproliferative growth was the most common endoscopic finding (n=104, 93.7%) observed. Total number of patients having synchronous lesions (n-5) [(1.) 47 yr female with i) Tubuloadenomatous polyp in ascending colon, II) adenocarcinoma in cecal lesion, iii) tubulovilus adenomatous polyp with adeno carcinoma in cecal polyp, (2.) 49 yr male with adenocarcinoma in rectal and transverse colon lesion, (3.) 45 yr male with adenocarcinoma in ileocecal and rectum, (4.) 42 yr male with adenocarcinoma in rectal lesion and hyperplastic adenomatous polyp in the sigmoid region, (5.)3 3 yr female with famililal adenomatous polyposis with adenocarcinoma of colon].

CEA was more than the upper limit (>3ng/ml) in 65(53.8%) patients. Rectum (n=67, 43.8%) was the most common site observed followed by right colon (n=52, 34%) (Table 1). Curative procedures were done in most of the patients (n=113, 80.1%) (table 4). Infection was the most common post surgical complication noted. (n=26,17%). A majority of the patients presented in stage III (n=61, 39.8%) followed by stage II (n=50, 32.6%). Sixteen percent of my patients had mucious type of carcinomas which are typically associated with poorer prognosis (Table 3). They were seen more frequently in younger patients (<40 years of age), advanced stages (stage III/IV) (Table 2). All patients who had received neoadjuvant therapy had longterm course, which is upfront CTRT (50.5 Gy 28 fractions for a period of 5.5 weeks + single agent oral Capcetabine 850mg/m^2).

Table 1: Patient Demography and site of Tumor

	N (range/frequency)
Age in years, mean	37.6
Age group	
<20 yrs	2 (1.3%)
20-29 yrs	13 (8.5%)
30-39 yrs	65 (42.5%)
40-49 yrs	73 (47.7%)
Male gender	93 (61%)
Subsite	
Right colon	52 (34%)
Transverse colon	5 (3.3%)
Descending colon	18 (11.7%)
Sigmoid colon	11 (7.2%)
Rectum	67 (43.8%)

Table 2: Stage and site of metastasis

Stage	N=153
I	1 (0.6%)
II	50 (32.6%)
III	61 (39.8%)
IV	41 (27%)
Site of metastasis	N= 25
Liver	13 (52%)
Liver only	9 (36%)
Lung	5 (20%)
Lung only	2 (8%)
Bony	1 (4%)
Ovarian	1 (4%)
Peritoneal	9 (36%)

Table 3: Differentiation of Tumor

Differentiation	N= 150
Well	40 (26.6%)
Moderately	52 (34.7%)
Poorly	11 (7.4%)
Undifferentiated	18 (12%)
Signet ring type	4 (2.6%)
Mucinous	25 (16.7%)

Table 4: Definitive resection, defunctioning stoma

Surgery	N= 141
Elective	103 (73%)
Emergency	38 (27%)
Type of definitive resection	N= 125

Right hemicolectomy	40 (32%)
Left hemicolectomy	21 (16.8%)
Transverse colectomy	4 (3.2%)
Low anterior resection	6 (4.8%)
Abdominoperineal resection	32 (25.6%)
Defunctioning stoma	N= 24
Colostomy	9 (37.5%)
Ileostomy	15 (62.5%)

Discussion

Colorectal cancer [CRC] is a common and lethal disease. Although controversy exists, some authors report that colorectal cancer in the young population appears to be more aggressive, to present with later stages, to have more severe pathological findings, and therefore to have a poorer prognosis [6]. Some studies have suggested that young patients show a longer time interval between onset of symptoms and diagnosis, because they seek medical care later, or because of doctors' delay in diagnosis in this group. In the present study, male preponderance (60%) was seen, which is similar to the previous studies done by Safford et al. (72%), Myers et al. (52%), while females outnumbered males in the studies done by Chandrashekar et al. (55%), and Antelo et al. (45%). However, most of the studies found no significant difference in gender distribution.

The mean age at diagnosis in the present study was 37.6 years, with the majority being in the age group of 40-49 years, while in a study from eastern India on 168 patients with sporadic cancer, the mean age of presentation was 47.01 year [7]. In a study by Hussain et al. [8], on 233 patients over 8 years, the median age at diagnosis was 43 years with 39% less than 40 years. Colorectal carcinoma has a wide range of clinical features from vague symptoms of easy fatiguabilty to pain abdomen, bleeding PR. The possible reason for a wide range of clinical features could be due to the site involved and the stage of the disease [9]. The most common symptom observed in the current study was loss of appetite (n=85) followed by bleeding PR (n=60). Pain abdomen was the predominant symptom in Souza et al. [10], while bleeding PR was noted in 24% of patients in a study done by Hamilton et al. [11]. A majority of the patients in the current study had no significant past history, while a majority of the patients were obese in a study conducted by Blee et al. [12] and 1.2% of the patients had ulcerative colitis in a study by Kim et al. [13]. Most of the subjects (98.6%) in the current study are sporadic, while only 1.4 % of the patients had a positive family history, which was almost similar to a previous study done by Kim et al. which was 2.3%. In the current study, most of the patients were observed to have a low Hb at presentation (33.3%), while in a study done by Logan et al. [14], low Hb was observed in 7.4% of the patients. CEA was found to be elevated in 53.8% of the patients in the present study. CT abdomen and pelvis done at presentation, for staging of the disease showed metastasis in 19.6% of the patients in the current study, it was much more higher (37.6%) in a study done by Souza et al. On endoscopic examination, 93.7% of the subjects had ulceroproliferative growth, and synchronous lesion was observed in 4.7% of the patients. The site of the tumor was most frequently noted in rectum (43.8%) followed by right colon (34%). Similarly, left sided cancer was noted in 66% of the patients in a study done by Ganapathi et al. [15]. Adenocarcinma was noted on histopathological examination in a majority of the patients in the current study (98%). Majority of the patients had moderate differentiation (34.7%) followed by well differentiated carcinoma in 26.6% in the current study. Sixteen percent of patients had mucious type of carcinomas which typically has a poor prognosis and was seen more frequently in younger patients (<40 years of age) in the present study. In a study done by Ganapathi et al, the mucinous tumours constituted 32% of young CRC, and 43% of tumours were found to have poor differentiation. Previous studies have shown the presence of signet rings in 1.7–11.1% of young CRC. These differences could either be due to differences in histopathology reporting methods or young CRC evolving into a more aggressive disease than in the past. Elective surgery procedure was done in 73% of the patients, while 27% patients present with acute abdomen/ bleeding PR warranting emergency intervention. A majority (80%) underwent curative procedure in the current study. Right hemicolectomy was done in 40% of the patients, followed by low anterior resection (32%). Infection was the most common post surgical complication, noted among 17% of the patients followed by anastamoticleak (4%) in the present study. Similar results of post operative complications were noted among 22% of patients in Logan etal. A large number of patients presented at an advanced stage (stage III). Stage III was noted in 39.8% of patients, and the next being stage II, observed in 32.6% of the patients. It was also observed that only 0.6% of the patients presented at stage I in the present study. As per Modified Astler Coller study, 48.4% of the patients belonged to stage C2, with node positivity in 58.3% of the patients. Similar results were observed in the previous studies also [13,14,15]. All patients

who received neoadjuvant therapy had longterm course, which is upfront CTRT (50.5 Gy 28 fractions for a period of 5.5 weeks + single agent oral Capcetabine 850 mg/m^2), while 22% of patients received neo adjuvant chemotherapy in a study by Chandrashekar et al, and 11% of the patients in de Souza etal. Adjuvant chemotherapy was given in 82 (69.5%) patients, while adjuvant radiotherapy was given in 36 (30.5%) of the patients. In a study done by de Souza et al, 68% of the patients received adjuvant chemotherapy, and radiotherapy was given in 28% 0f the patients.8 out of 14 patients had recurrence within 1 year, and the median recurrence time observed for 6 months. 4 patients were noted to have a local recurrence and 2 (50%) patients underwent surgery in the present study.

Conclusion

Colorectal cancer in India differs from that described in the Western countries. We had younger patients, higher proportion of mucinous carcinomas, and more patients presenting with an advanced stage.

Conflict of interest

All authors declare that they have no conflict of interest.

Source(s) of support: NIL

Presentation at a meeting: NIL

Conflicting Interest (If present, give more details): NIL

Key Messages

Colorectal cancer in India differs in their presentation and nature of disease as compared to western countires. Need for adequate healthcare facilities is stressed upon.

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Original Research Article

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Retrospective Study of Open Surgical Suture for Duodenal Ulcer Perforation in 8 Years

Sadagar Deuri

Assistant Professor, Department of Surgery, Jorhat Medical College & Hospital, Jail Road, P.O & P.S Jorhat, Jorhat, Assam 785001, India.

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Abstract

Du perforation is common complication of PUD. Patients needs prompt resuscitation and surgical suturing of perforation. Mortality rate [1] is 15.2% and morbidity [1] is 5.2%. But mortality is low in early diagnosis & prompt treatment. Again operative outcome depends on skill, experience and procedure.

Materials: This is retrospective study in Jorhat Medical College & Hospital where total 75 numbers of patients from January 2010 to December 2017 were analysed to evaluate effective and save open surgical suture.

Result: In one layer repair two patients had bile leak and both expired. 3 patients had symptoms of APD. In one layer suture two patients had bile leak and both died. Definitive surgery is always restricted to its complication. In follow up, three patients were assessed to have clinical feature of APD. It responded to PPI. Laparoscopic repair has no provent advantage in PPU. Mean Age is 39.61 in Group A and 36.37 in Group B. Standard Deviation is ± 3.09 in Group A and ± 5.86 in group B. Chi-Square Test is 4.022 and P-value is 0.0525. So P value is just significant at 5% or not significant. Gender is not related to age for diseases as P-value is high.

Conclusion: Two layer open surgical suture in PPD is found safe and secured than one layer suture.

Keywords: DU (Duodenal Ulcer); PUD (Peptic Ulcer Disease); APD (Acid Peptic Disease); GOO (Gastric Outlet Obstruction); PPU (Perforated Peptic Ulcer).

Corresponding Author: Sadagar Deuri, Assistant Professor, Department of Surgery, Jorhat Medical College & Hospital, Jail Road, P.O & P.S Jorhat, Jorhat, Assam 785001, India.

E-mail: sadagardeurijmch@gmail.com

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Introduction

The PPU is surgical emergency which needs prompt resuscitation and surgical closure. Definitive surgery is restricted to its complication. Prognosis depends on duration of perforation. Outcome of Surgery depends on skill, procedure and experience. Minimally invasive Laparoscopic Surgery has no proven advantage in PPU. The annual incidence of APD from physician diagnosis is 0.10% to 0.19% but 0.03% to 0.17% in hospital data [2]. The first part of duodenum is common site which accounts for 98% 3. Mortality rate is related to age time of diagnosis and initiation of treatment. The overall mortality and mobidity are 15.5% and 5.2% respectively [1]. In acute PPU cure rate is 85% and in chronic 25% [1].

Aims

To evaluate the effective and safe open surgical suture in PPU.

Materials and Methods

It is retrospective study carried out in Jorhat Medical College, Jorhat, where total 75 patients of PPU had undergone open surgical closure in January, 2010 to December, 2017 were analysed. They were categorized into two groups:-

A. Single layer closure with omental fold. *(47 Patients)*

B. Two layer closure with omental fold *(28 Patients)*

Methods

Andomen is opened through upper midline incision. PPU is trimmed and repaired with single or double layers with omental fold. Through peritoneal toilet is done. Two drains, one in hepatorenal pouch and another in pelvic are inserted.

Investigation

Specific: Chest X-ray in erect, sitting position shows gas under diaphragm in 75% [4].

USG Abdomen reveals free fluid with debridge and gas under diaphragm.

Post operative day: Liquid diet was allowed on 7th Day. On 10th Day patients were discharged. Stitches were removed after 2 (two) weeks.

Results

In one layer repair two patients had bile leak and both expired. 3 patients had symptoms of APD.

Follow up

Post operative patients were followed up monthly upto 3 months. All patients were assessed for APD, ± GI bleed and GOO.

Discussion

In one layer repair, when sutures are tied on omentum, suture may cut through or become loose under cover of omentum. In two layer, when omentum is tied inner layer remains unaffected. Serosal layer gives tension releasing support tio inner layer and becomes impervious covering to leak. Two layer repair does not impair vascularity. Laparoscopic surgery has no proven advantage in PPU.

Table 1: Demographic and follow up details

Parameter	Group A	Group B
Age (Mean)	39.61	36.39
Male	46	26
Female	1	2
Death	2 (4.2%)	0
Gastric Outlet Obstruction	0	0
Recurrent APD Symptoms	3 (6.3%)	0
Recurrent APD Bleed	0	0
Elective TV, GJ	0	0

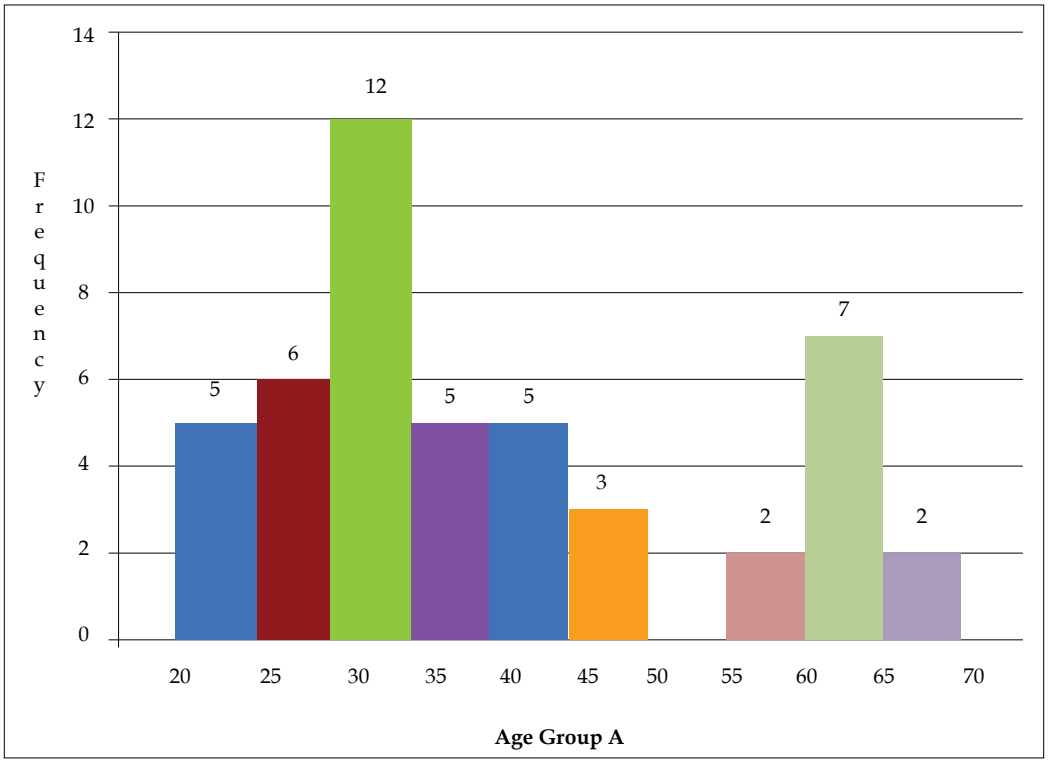

Fig. 1: Histogram of Age and frequency of Group A

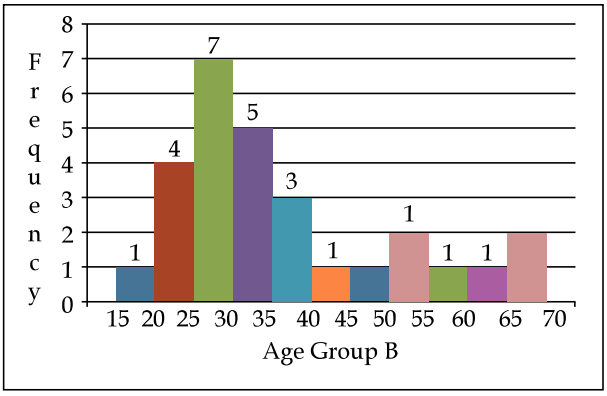

Fig. 2: Histogram of Age and frequency of Group B:

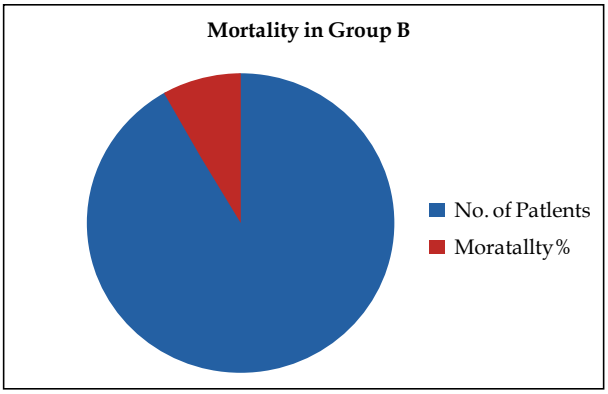

Fig. 3: Mortality in Group B

Statistics

Table 2:

Group	Mean	Median	Mode Mo	Range	Mean Deviation	SD σX	SD Error Mean	S E Proportion	S E Difference	Gender Age P-value	Chi-square $\chi^2(k)$	p Value
A	39.61	35	35	48	± 37.96	± 3.09	0.06	2.88	1.19	1.17	4.022	0.052
B	36.39	30	30	45	± 34.40	± 5.86	0.11	1.85	1.19	2.8		

Conclusion

Two layer repair in PPU is safe and effective.

Compliance with ethical standards:

It is retrospective study.

Conflict of Interest:

The author declares that he has no conflict of interest.

Funding Source:

None

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Original Research Article

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Outcome of Single Layer Gastrointestinal Anastomoses in Pediatric Age Group

Shankar Mohan[1], Saravanan Natarajan[2]

[1,2]Assistant Professor, Department of Pediatric Surgery, Government Mohankumaramangalam Medical College Hospital, Salem, Tamil Nadu 636002, India.

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Abstract

Background and objectives: Many different techniques are currently used to join segments of the gastrointestinal tract following resection. This study is intended to study the feasibility of single layer technique in our setup, to study the disease groups undergoing gastrointestinal resection and anastomoses, and to study safety and efficacy of polyglactin in single layer gastrointestinal anastomoses in terms of early postoperative leak. *Methods:* A total of 50 patients were selected randomly to represent different disease groups from 312 gastrointestinal anastomoses performed Govt Mohan Kumaramangala Medical College Hospita (GMKMCH) l, Salem, Tamilnadu during October 2012 to September 2017. Patient underwent laparotomy, resection and end to end anastomoses of gastrointestinal tract at various levels with single layer technique using polyglactin as suture material. *Results:* In upper GI tract most common disease in our study requiring resection and anastomoses was Meckels diverticulum 9 (18%) and lower GI tract was Intussusception 14 (28%). Out of 50 resection and anastomoses there were 2 anastomotic leaks, 1 anstomotic stricture, and 2 deaths (not related to anastomoses). *Interpretation and Conclusion:* Anastomoses performed in elective surgeries healed well with less complications as compared to emergency surgeries. Single layer anastomoses with vicryl is the method of choice throughout the gastrointestinal tract for various diseases with less complications in pediatric age also.

Keywords: Single Layer; Anastomoses; Disease Groups; Gastrointestinal; Anastomotic Leak; Complication.

Introduction

The technique of resection and anastomoses since the inception have been experimentally evolved for better and efficient healing of the anastomotic site. The evolution includes various methods [1] like hand sutured anastomatic techniques with various suture materials [2,3] and the use of stapling devices [4], suture less biofragmentable rings, laser welding and fibrin glues. But sutures remains the main stay for anastomoses in developing countries like India because these devices are very costly. Although these local factors [5] are vitally important in the healing of an intestinal anastomoses the technique of performing the anastomoses [6,7] must also be regarded as a significant determinant of its outcome.

Methodology

The study was conducted in patients who came to Govt Mohan Kumaramangala Medical College Hospita (GMKMCH), Salem, Tamilnadu for treatment during the period from October 2012 to September 2017 (which included the follow up of 3 months). A total of 312 gastrointestinal anastomoses performed during this period. Out of which a total of 50 patients, who underwent

Corresponding Author: Shankar Mohan, Assistant Professor, Department of Pediatric Surgery, Government Mohankumaramangalam Medical College Hospital, Salem, Tamil Nadu 636002, India.

E-mail: mshankar@doctor.com

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single layer gastrointestinal anastomoses during this 5 year were prospectively selected randomly to represent different disease groups from oesophagus to rectum in different age groups (1 month to 12 years). The patients were subjected to detailed history, through clinical examination, relevant laboratory investigations, feasible radiological, sonological investigations to confirm diagnosis. Bowel preparation if possible achieved, antibiotics were given at induction of anaesthesia. Patient underwent laparotomy, resection and end to end anastomoses of gastrointestinal tract at various levels with single layer technique using polyglactin as suture material. All patients remained on intravenous fluids with no oral intake until evidence of gastrointestinal motility was present. Abdominal wound assessed in inpatients stay and follow up.

Inclusion criteria

- Patients of various gastrointestinal diseases of age from 1 month to 12 years age groups requiring resection and anastomoses at various levels.
- Anastomoses performed by single-layer technique using polyglactin suture .
- Only end to end anastomoses cases are included.
- Patients undergoing single anastomoses.

Exclusion criteria:

- Patients undergoing double-layer anastomoses.
- Patients undergoing end to side and side to side anastomoses
- Patient undergoing anastomoses with suture material other than polyglactin.
- Patients undergoing multiple anastomoses.
- Neonates and age above 12 years.
- As a part of staged procedure

The disease group undergoing gastrointestinal anastomoses, factors influencing healing, anastomotic leak and surgical procedures were studied in association with complications. The patients were followed up for 3 months after discharge once in every 2 weeks on OPD basis.

Results

The results obtained were analysed as follows -

Table 1: Indication for surgery in 50 patients

Indications	No.of patients	Percentage
A. Upper gastrointestinal tract		
Congenital oesophagus stricture	2	4
Oesophageal Duplication	2	4
Malrotation Mid gut	2	4
Duplication small bowel	3	6
Small bowel perforation	3	6
Strangulated hernia	7	14
Mesentric cyst	3	6
Meckels diverticulum	9	18
B. Lower gastrointestinal tract		
Ileocaecal TB	1	2
Traumatic colonic perforation	2	4
Intussusception	14	28
Sigmoid volvulus	2	4

Table 2: Preoperative factors that influence Anastomotic healing

Factors	No.of patients
Anaemia	21
Congenital anomalies	20
Sepsis	9
Malnutrition	8
Hypotension	2

In our study the most common variable that influenced anastomotic healing is anaemia which was present in 21 patients. Other factors that are present are congenital anomalies in 20 patients, sepsis in 9 patients, malnutrition in 8 patients and hypotension in 2 patients.

In total there were 2 leaks, one in upper and one in lower GI tract, both in emergency. Wound complications were more common in emergency operations (8 patients), then in elective (3 patients) wound complications were more common in small bowel resection (6 patients) than any other procedures. There were in total two death one in emergency and one in elective (one in upper and other in lower GI tract). These two deaths are due to pulmonary and cardiac complications.

In our study there were 2 (4%) leaks 9 (18%) wound infection, 2 (4%) seroma, 1 (2%) prolonged ileus 1 (2%) structure and 2 (4%) death. Out of two deaths 1 (2%) due to cardiac and 1 (2%) due to pulmonary complications.

Table 3: Operations performed and their outcome

		Emergency				Elective			
	Levels	No. of patients	Leak	Wound complication	Death	No.of patients	Leak	Wound complication	Death
A) Upper GI tract									
Oesophageal resection and anastamosis	OO					3		1	
Gastric pullup	OG					1			
Small bowel resection	JJ, II	18	1	5		9		1	1
B) Lower GI tract									
Ileocolic anastomoses	IC	7		1		2			
Rt. Hemicolectomy	IC	5	1	2		1		1	
Lt. Hemicolectomy	CR	1			1				
Segmental resection and colocolic anastomosis	CC	2							
Segmental resection and colorectal anastomoses	CR	1							
Total		34	2	8	1	16		3	1

Table 4: Complications

Complication	No.of patients	Percentage
Anastomotic leak	2	4
Wound complications		
a. Wound infection	9	18
b. Seroma	2	6
Prolonged ileus	1	2
Stricture / obstruction	1	2
Death	2	4

Table 5: Factors influencing complications

	No.of cases	Anaemia	Congenital malformations	Sepsis	Malnutrition	Hypotension	Abdominal fattyness
Anastomotic leak	2	1	2	1	-	1	-
Wound complication							
Infection	9	5	5	3	-	1	-
Seroma	2	1	-	-	-	-	1
Prolonged ileus	1	1	-	-	1	-	-
Stricture	1	-	-	-	-	-	-
Death	2	2	2	-	-	-	-

In our study in anastomotic leak, contributing factors are congenital malformations in 2 patients, anaemia, sepsis, hypotension, each in 1 patient. In wound infections contributing factors are congenital malformations in 5 patients, anaemia in 5 patients, sepsis in 3 patients and hypotension in 1 patient. In prolonged ileus contributing factors are anemia in 1 patient and malnutrition in 1 patient. In death contributing factors are anaemia in 2 patients, congenital malfofmations in 2 patients.

Discussion

A total of 50 patients who underwent single layer gastrointestinal anastomoses at various sites were studied and results are compared with the previous available studies. There are certain disparities in the results, since our study is in small series.

The safety and effectiveness of a technique of the single layer anastomoses may be measured by the number of postoperative complications, especially the clinically suspected anastomotic leak. In Matheson and Irving series [8], there were 313 anastomoses in the upper gastrointestinal tract. Out of which the leaks were 5 (1.6%). In our study there were 31 anastomoses with one (3.2%) leaks. In lower gastrointestinal tract, there were 96 anastomoses in Matheson and Irwing series with leak of 5 (5.2%) anastomoses. In our study there were 19 anastomoses with leaks in 1 (5.3%). As both leaks were minimal they were managed conservatively with daily dressings, appropriate antibiotics and by improving the nutritional status. They healed spontaneously after 3-4 weeks. In Serin and Lightwood series [9] there were 66 patients in upper gastrointestinal tract and 65 in lower gastro intestinal tract with leak of 3 (4%) and 4 (6%) respectively. In our study there were 31 patients in upper gastrointestinal tract and 19 in lower gastro intestinal tract with leak of 1 (3.2%) and 1 (5.3%) respectively. Comparison with Ernest Max [10] series of 1000 patients there were obstruction rate of 2% and leake rate of !%. In our study of 50 patients there were obstruction rate of 2% and leake rate of 4%. The wound infection rate in our series is 18% which is attributed to improper sterilization of the instruments, unhygienic condition of the patients, nutritional status, cross infection in the wards, and also the type of surgery i.e., whether it is elective or emergency surgery, since, surgery on an unprepared bowel or the presence of intra abdominal sepsis have a high incidence of wound infection and wound dehiscence.

Conclusion

1. Anastomoses performed in elective surgeries heal well without complications as compared to those performed in emergency surgeries.
2. Clean bowel is the key to success of gastrointestinal anastomoses. Anastomoses performed on an unprepared bowel met with higher incidence of complications.
3. There was also demonstrable relationship between the general status of the patient on anastomotic healing like anaemia, congenital malformations, malnutrition, sepsis and Hypotension, which increases the incidence of leak and wound infection. However, the effect of jaundice and uremia could not be studied in the present series.
4. Wound infection is the commonest complication followed by seroma, anastomotic leak and death (which is not due to anastomotic complication) in our serie.

Our study included 50 patients who underwent single layer gastro intestinal anastomoses. I conclude that single layer anastomoses of gastro intestinal tract is simple and safe method which can be done quickly. It maintains a water tight and normal sized lumen with less tissue trauma and early vascularization, hence restored normal anatomy with less complications.

Abbreviation

TB	Tuberculosis
Lt.	Left
Rt.	Right
JJ	Jejuno Jejunal
II	Ileo Ileal
IC	Ileo Caecal
CC	Colo Colic
CR	Colo Rectal
CA	Colo Anal

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Original Research Article

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Prevalence of *Helicobacter Pylori* in Patients with Peptic Ulcer Disease Undergoing Upper Gastrointestinal Endoscopy in A Rural Medical College

Sharath Kumar V[1], Dhruva G Prakash[2], Raghavendra S.K[3], Hanumantha Basappa Vaggara[4]

[1,2]Assistant Professor [4]Junior Resident, Department of General Surgery, [3]Assistant Professor, Department of Community Medicine, Adichunchanagiri Institute of Medical Sciences, B.G. Nagar, Nagamangala Taluk, Mandya, Karnataka 571448 India.

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Abstract

Introduction: Up to 85% of people infected with *H. Pylori* never experience symptoms or complications. Acute infection may appear as an acute gastritis with abdominal pain or nausea. Where this develops into chronic gastritis, the symptoms, if present, are often those of non-ulcer dyspepsia, stomach pain, nausea, bloating, belching, and sometimes vomiting or black stool. Inflammation of the pyloric antrum is more likely to lead to duodenal ulcers, while inflammation of the corpus is more likely to lead to gastric ulcers and gastric carcinoma. *Materials & methods:* A retrospective study was done in 310 patients diagnosed to have peptic ulcer disease by upper gastrointestinal endoscopy in Adichunchanagiri Institue of Medical Sciences, B.G. Nagar. The study was from August 2018 to January 2019. All the patients were subjected to upper gastrointestinal endoscopy during which biopsies, each from the antrum and the pathological areas were taken. The two biopsy specimens were sent for routine histopathology and staining with Giemsa stain. The case was taken as H.pylori positive when the histopathological examination was positive. *Results:* Out of 310 patients, 246 patients were diagnosed to have been infected with H.pylori infection (79.4%). Out of 310, the duodenal ulcer were present in 204 (65.8%) patients, gastric ulcer were present in 88 (28.4%) patients and both duodenal and gastric ulcers were present in 18 (5.8%) patients. *Conclusion:*In this study, we found that in peptic ulcer disease, *H. Pylori* was consistently associated. Thus we conclude *H. Pylori* infection definitely have role in the etiopathogenesis of peptic ulcer disease. The study also gives information that *H. Pylori* is more common in rural and lower socioeconomic group. Hence, we recommend eradication of the bacteria only in patients positive for the bacterium, who have peptic ulcer disease. Our study implies that *H.pylori* infection has an overall prevalence of around 79.4% in peptic ulcer patients in our AIMS hospital. Its presence is more with ulcerative dyspepsia patients and its prevalence increases with age.

Keywords: *Helicobacter pylori*; Peptic Ulcer Disease; Duodenal Ulcer; Gastro-Intestinal Endoscopy.

Introduction

Helicobacter pylorus (H. pylori) is a bacteria responsible for most ulcers and many cases of chronic gastritis. This organism can weaken the protective coating of the stomach and duodenum, allowing damaging digestive juices to irritate their sensitive linings [1]. About half of the world's population is infected with *H. pylori.* However, many people who have this organism in their gastrointestinal tract don't get an ulcer or gastritis [2,3]. Research suggests that other factors must also be present for the damage to take place. The factors that increase the risk for an ulcer from *H. pylori* include: 1) Inheritance of certain strains of the bacteria that are more dangerous than others 2) Abnormal immune response in the intestines and 3) Certain lifestyle habits, like coffee drinking, smoking, and ongoing stress [4,5]

If an ulcer is found, will test a patient for H. pylori. While the most common test for the presence of *H.*

Corresponding Author: Dhruva G Prakash, Assistant Professor, Department of General Surgery, Adichunchanagiri Institute of Medical Sciences, B.G. Nagar, Nagamangala Taluk, Mandya, Karnataka 571448, India.

E-mail: skvgowda7@gmail.com

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pylori is a blood test, stool and tissue samples may also be taken [5,6]. An upper GI endoscopy can also be used as a method of diagnosis [7]. During endoscopy, biopsy specimens of the stomach and duodenum are taken8. The diagnosis of *H. pylori* can be made by histopathologic examination [9,10].

Materials and Methods

This is a Retrospective study done in 310 patients presenting to us with abdominal pain, symptoms of dyspepsia and diagnosed to have peptic ulcer disease by upper gastrointestinal Endoscopy at Adichunchanagiri Institue of Medical Sciences, B. G. Nagar. The study was done from August 2018 to January 2019.

Inclusion criteria: Patients having chronic upper abdominal pain, symptoms of dyspepsia. Patients with age more than 18 years. Patients diagnosed to have gastric/duodenal ulcers on upper G.I. Endoscopy.

Exclusion criteria: Patients on NSAIDs for more than one month duration, patients with oesophageal/gastric growths on endoscopy, pregnant and lactating women, patients with bleeding disorder, patients with hematemesis and malena were excluded from the study.

The patients were subjected to upper gastro-intestinal endoscopy under topical anaesthesia, biopsies each from the antrum and the pathological areas were taken. The biopsy specimens were sent for routine histopathology and staining with Giemsa stain. The case was taken as *H. pylori* positive when the histopathological examination was positive. All the patients underwent upper gastro-intestinal endoscopy and after applying the inclusion and exclusion criteria's, the patients were divided into following groups.

1. Gastric ulcers
2. Duodenal ulcers
3. Both gastric and duodenal ulcer

Statistical Methods: Results on categorical measurements are presented in frequency and percentage. The data was entered in MS Excel sheet and analysis was done using SPSS software version 15.

Results

In our study, Out of 310 patients 100 were females, that is 32.3% and 210 were males that is 67.7% (Table 1). Duodenal (D) ulcers were seen in 204 patients, followed by gastric (G) ulcers in 88 patients and D+G ulcers are seen in 18 patients, so majority are duodenal ulcers followed by gastric ulcers (Table 2).

Table 1: Gender distribution of patients studied

Gender	Frequency	Percent
Male	210	67.7
Female	100	32.3
Total	310	100

Table 2: Site involved distribution of patients studied

Site	Frequency	Percent
D	204	65.8
D+G	18	5.8
G	88	28.4
Total	310	100

Out of 310 patients smoking habit was seen in 196 patients and alcoholism in 172 and drug intake in 18 people (Table 3). Abdominal pain was the main symptom in 272 patients, followed by vomiting in 196 and dyspepsia in 190, nausea in 126, regurgitation in 118 and lastly bloating in 80 patients (Table 4).

Table 3: Habits distribution of patients studied

Habits	Frequency	Percent
Smoking	196	63.2
Alcoholism	172	55.5
Drugs intake	18	5.8

Table 4: Clinical features of patients studied

Clinical features	Frequency	Percent
Pain abdomen	272	87.7
Vomiting	196	63.2
Nausea	126	40.6
Dyspepsia	190	61.3
Bloating/belching	80	25.8
Regurgitation	118	38.1

In our study out of 310 patients, 202 (65.2%) were in rural locality and 108 (34.8%) in urban locality (Table 5).

Table 5: Urban/Rural (Locality) distribution of patients studied

Urban/Rural	Frequency	Percent
Rural	202	65.2
Urban	108	34.8
Total	310	100

On histopathological examination *H. pylori* was seen in 246 patients out of 310 (79.4%) and negative in 64 (20.6%) patients (Table 6).

Table 6: Histopathology distribution of patients studied

Histopathology	Frequency	Percent
Negative	64	20.6
Positive	246	79.4
Total	310	100

Discussion

In our study, majority were males that is 210 (67.7%). Duodenal (D) ulcers were seen in 204 patients. It has been proposed that gastric metaplasia in theduodenum seves as a precursor ofduodenal ulceration by providing a nidus for *H. pylori* colonization and subsequent inflammation. [11,12,13]. Out of 310 patients smoking habit was seen in 196 patients and alcoholism in 172 and drug intake in 18 people. Abdominal pain was the main symptom in 272 patients, followed by vomiting in 196 and dyspepsia in 190, nausea in 126, regurgitation in 118 and lastly bloating in 80 patients. In our study out of 310 patients, 202 (65.2%) were in rural locality and 108 (34.8%) in urban locality. Thus *H. pylori* is more common in rural and lower socioeconomic group. On histopathological examination *H. pylori* was seen in 246 patients (79.4%). The high positivity was in comparison to other studies. [14] The study also gives information that there was linear increasing trend in prevalence of *H. pylori* with age. Our study implies that *H. pylori* infection has an overall prevalence of around 79.4% in ulcer patients in our AIMS hospital. Its presence is more with ulcerative dyspepsia patients. The prevalence increases with age in comparion to other epidemiological studies. [15,16].

Conclusion

We conclude *Helicobacter pylori* infection definitely have role in the aetiopathogenesis of peptic ulcer disease. *H. pylori* infection is chronic disease with serious complications. Hence, we recommend eradication of the bacteria only in patients positive for the bacterium, who have peptic ulcer disease.

Limitations of the Study

The study requires to prove actual prevalence of all patients with peptic ulcer disease in the defined area and must be evaluated with endoscopy for true prevalence of *H. pylori* in that geographic area. *H. pylori* epidemiological change and antibiotic resistance needs to be evaluated

Scope for Further Research

Antibiotic resistance and response to present and newer regimens has to be assessed regularly in the region specially with high prevalence.

Prlor publication: No

Conflicts of Interest- nil

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Comparison of Laparoscopic and Open Repair for Ventral Hernias Using Quality of Life Index

Yogesh V. Velani[1], Attman P. Velani[2]

[1]Associate Professor, Department of Surgery, Gujarat Adani Institute of Medical Science, Bhuj, Kutch, Gujarat 370001, India.
[2]Second Year Resident, Department of Surgery, Dr. DY Patil Medical College, Navi Mumbai, Maharashtra 400706, India.

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Abstract

Background and Aim: Millions of patients are affected each year presenting with most commonly with primary ventral, incisional, and inguinal hernias. In this study we have made an attempt to study 200 cases of ventral hernias selected randomly from cases admitted to our hospital and compare quality of life between open and laparoscopic repair group during the post-operative period. *Material and Methods:* present study was the patients admitted to the medical institute in Gujarat in the department of Surgery. Patients underwent polypropylene mesh repair either Inlay repair or Onlay repair by open method. Laparoscopically mesh (dual layer mesh) was placed intraperitoneal after reduction of hernia. Both the group patients were followed up for 2months. SF-8 scoring card was filled by the patient during follow-up at 1st month and 2nd month. *Results:* Paraumblical hernia was present in 90 patients, incisional hernia was present in 36, epigastric hernia was present in 20 patient and 14 had umbilical hernia. However seroma was developed in 6 patients treated by laparoscopic means as compared to 18 patients in open repair wound. Surgical site infection was seen in 28 patients, 24 patients did underwent open mesh repair. There was post operative chronic pain at the operated site at the end of 2 months follow up. *Conclusion:* Laparoscopic ventral hernia repair provides lesser post-operative pain, lesser complications, shorter hospital stay and lesser economic impact as they returned to returned to work early. Thus patients have less morbidity and improved quality of life.

Keywords: Hernia; Laparoscopic; Quality of Life; Ventral Hernias.

Corresponding Author: Attman P. Velani, Second Year Resident, Department of Surgery, Dr DY Patil Medical College, Navi Mumbai, Maharashtra 400706, India.

E-mail: researchguide86@gmail.com

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Introduction

Hernia is a word derived from a Greek word herons, meaning a branch or protrusion. A hernia is a protrusion of a viscus or part of a viscus through an abnormal opening in the walls of its containing cavity [1]. Abdominal wall hernias are familiar surgical problem. Millions of patients are affected each year presenting with most commonly with primary ventral, incisional, and inguinal hernias. Hernia may be either symptomatic or asymptomatic, and commonly cause pain or are aesthetically distressing [2]. These problems, coupled with the risk of obstruction & incarceration, are the most common reasons for patients seeking surgical repair of hernias [3].

Ventral and incisional hernia repair is one of the most mutual operations implemented in daily clinical practice. Incisional hernia is a common long-term complication of abdominal surgery and is estimated to occur in 11–20% of laparotomy incisions [4]. Almost 50% of incisional hernias develop within the first 2 years after the primary surgery, and 74% develop after 3 years. The reappearance rate of incisional hernia after primary suture repair is more than 50% and has been reduced to 10–23% after the introduction of prosthetic materials (meshes) in hernia repair [5].

As the result of surgical innovation, the field of

hernia has improved and evolved and has been benefited significantly from technologic improvements. The tension-free repair of hernia is one of the key concepts in revolutionizing the hernia surgery [6]. The use of prosthetic mesh to repair the fascial defect has decreased in the recurrence rates of ventral and incisional hernias. Recently, the laparoscopic approaches for hernia have increased the options and approaches for repairing the defect [6].

Open hernia repair can be a main operation with significant morbidity affected by infectious complications. An increasing interest in laparoscopic surgery and the availability of new materials have encouraged the adoption of laparoscopic techniques in ventral hernia repair. In order to improve upon the recurrence rate of open mesh repair of incisional hernia, LeBlanc, in 1993, reported the first case of laparoscopic incisional hernia repair using a synthetic mesh [7].

To achieve outcomes incomparision with the open repair, laparoscopic repair of hernia demands for significant expertise. Placement of mesh in a sublay position has found to be effective and to have a low recurrences in ventral and incisional hernias, although randomized trials are limited [8]. In this study we have made an attempt to study 200 cases of ventral hernias selected randomly from cases admitted to our hospital and compare quality of life between open and laparoscopic repair group during the post-operative period.

Materials & Methods

The present study was conducted on the patients admitted to the medical institute in Gujarat. The present study was undertaken in the department of the surgery for the period of two year. The study was approved by ethics committee of the hospital and informed written consent was obtained from all patients. A simple random sampling was done for selecting the patients.

Patients with age between 18 years and 60 years were included in the study. Patients with severe comorbid conditions (severe cardiopulmonary disease, uncontrolled ascites), with pre-existing skin infection at surgical site, with multiple post-op scars, and patients undergoing emergency surgery were excluded from the study.

All patients underwent surgical procedure after following preoperative preparation. Informed written consent was obtained after explaining the surgical procedure and its results. Nil by mouth after 10:00 pm on the previous night of surgery. IM Injection tetanus toxoid 0.5ml Injection xylocaine test dose. Preparation of the parts by shaving.

All patients received one dose of preoperative antibiotic, 1gm of 3rd generation cephalosporins during immediately after induction of anaesthesia. Patients were operated either under spinal anaesthesia or general anaesthesia. On operative table betadine scrub given to anterior abdominal wall. Patients underwent polypropylene mesh repair either Inlay repair or Onlay repair by open method. Laparoscopically mesh (dual layer mesh) was placed intraperitoneal after reduction of hernia. Both the group patients were followed up for 2 months. SF-8 scoring card was filled by the patient during follow-up at 1st month and 2nd month.

Statistical Methods

The Chi square and Fisher Exact test has been used for qualitative parameters. Student t-test has been used to find the significance of quantitative paramters. Mann Whitney U test is used for pain scoring comparision.

Results

When the age distributions of the patients were done in the study, the results showed that majority of the patients were in the age group of 30-50 years accounting to 65% of total cases. Youngest patient in the study was 24 years old and eldest patient was 68 year old. There were total of 100 male patients were included in our study corresponding to 50% of cases and there were 100 female patients participated in the study that account to 50%.

Distribution of patient in the present study was as followed: paraumblical hernia was present in 90 patients, incisional hernia was present in 36, epigastric hernia was present in 20 patient and 14 had umbilical hernia. When the post operative movement was matched in both the groups it was found to be 1.5 days in laproscopic group and 2.5 days in open repair group. In term of complications, there was no post operative death, no pulmonary complications and no major cardiovascular. However seroma was developed in 6 patients treated by laproscopic means as compared to 18 patients in open repair wound. Surgical site infection was seen in 28 patients, 24 patients did underwent open mesh repair. There was post operative chronic pain at the operated site at the end of 2 months follow up.

Quality of life of patient was assessed using SF-8 scoring card given to the patient at the 1st month. The quality of life was assessed with 8 parameters.

Postoperatively there was significant improvement in the quality of life using SF-8 scoring system in laparoscopic group compared with the open group, in general health, in physical functioning of the patient, in economic impact, with respect to bodily pain, vitality of the patient and mental health of the patient.

Discussion

Laparoscopic ventral hernia repair was started by Le Blanc I 1993 [9]. After that, evaluations were done to make laparoscopic surgery easier and safer for ventral hernia repair. In this clinical study, 200 patients with ventral hernia were admitted and treated with different surgical procedures. The patients were randomized into two groups, laparoscopic and open. Patients were studied for clinical features, treatment, postoperative complications and quality of life pertaining to study period. Discussion is mainly concentrated on comparing quality of life between patients who underwent laparoscopic repair and open repair. The majority of the patients in the study were in the age group of 30-50 years accounting to 55% of total cases. Youngest patient in the study was 20 years old and eldest patient was 70 year old. Sex incidence in the study was matched between the two groups. 100 male patients were included in our study corresponding to 50% of cases (50 male patients in each group) and 100 female patients participated in the study accounting to 50% (50 female patients in each group). Paraumbilical hernia was the most common presentation in the patients, others being incisional hernia, epigastric hernia, umbilical hernia. Mean post-operative day of movement in laparoscopic group was 1.5 days and in open repair group was 2.5 days.

There were no post- operative deaths, no major cardiovascular, pulmonary complications. The main complicatin encountered were seroma, surgical site infection and chronic pain. Post-operatively patients of laparoscopic group returned back to the work early (mean 12.8 days) compared to open group (mean 18.5 days). Raftopoulos et al study showed mean day of return of work 25.95 vs 47.8 days which was higher compared to Kamal Itani et al study which showed mean of 23 vs 28.5 days [10].

Conclusion

Laparoscopic ventral hernia repair provides lesser post-operative pain, lesser complications, shorter hospital stay and lesser economic impact as they returned to returned to work early. Thus patients have less morbidity and improved quality of life. As most of our patients involved in the study were working class involving moderate to heavy work, laparoscopic repair meant lesser economic impact and decreased loss of man-power hours.

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Low-Pressure Pneumoperitoneum Versus Standard Pneumoperitoneum in Laparoscopic Cholecystectomy: A Prospective Randomized Clinical Trial

Jaswant Meena[1], Manohar Lal Dawan[2], Sharada Dawan[3]

[1]Resident [2]Associate Professor Department of General Surgery [3]Associate Professor, Department of Pathology, S.P. Medical College and A.G. of P.B.M. Hospitals, Bikaner, Rajasthan 334001, India.

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Abstract

Background: Laparoscopic cholecystectomy is the treatment of choice for symptomatic colelithiasis, it is also the most common laparoscopic procedure performed all over the world and in U.S.A. *Methods:* This is a prospective, randomized study comparing the (Group A) low pressure pneumoperitoneum (8-10 mmhg) with preemptive analgesia versus (Group B) standard pressure pneumoperitoneum (12-14mmhg) without preemptive analgesia. *Results:* Mean age in group A was 39.14 ± 6.12 Yrs and in group B was 40.34 ± 6.48Yrs. 14 male & 36 female were in group A and 13 male & 37 female were in group B. 58.00% patients in group A and 62.00% patients in group B were from rural area. Mean duration of surgery 46.2 ± 2.80 Mint in group A and Mean duration of surgery 44.90 ± 2.60 Mint in group B. The duration of surgery was less in group B compare to group A. VAS score at 4 hours in group-A was 6.2 ± 0.82 and in group-B was 6.8 ± 0.98. The difference in both group was statistically highly significant (p-value<0.001). VAS score at 12 hours in group-A was 4.1 ± 0.61 and in group-B was4.3 ± 0.52. The difference in both group was statistically highly Insignificant (p-value>0.05). VAS score at 24 hours in group-A was 2.52 ± 0.22 and in group-B was 2.6 ± 0.20. The difference in both group was statistically highly Insignificant (p-value>0.05). The need of analgesia in group A was 70mg/day and group B was 110mg/day. The difference in both group was statistically highly significant (p-value<0.001). Mean time of hospital stay in group B was 53.2 ± 2.40 Hrs and in group A was 51.8 ± 2.38 Hrs. The difference in both group was statistically highly significant (p-value<0.001). *Conclusion:* low pressure pneumoperitoneum (8-10 mmhg) with preemptive analgesia to be better than standard pressure pneumoperitoneum (12-14mmhg) without preemptive analgesia in terms of duration of surgery, lower incidence of pain and hospital stay.

Keywords: Pneumoperitoneum; Laparoscopic cholecystectomy; Colelithiasis.

Corresponding Author: Manohar Lal Dawan, Associate Professor Department of General Surgery, S.P. Medical College and A.G. of P.B.M. Hospitals, Bikaner, Rajasthan 334001, India.

E-mail: drmanohar_dawan1234@yahoo.com

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Introduction

Cholelithiasis continues to be national and international health disorder. Gall stones found in a young Egyptian mummy have confirmed that cholelithiasis plagued mankind for over 2000 year [1]. Laparoscopic cholecystectomy is the treatment of choice for symptomatic colelithiasis, it is also the most common laparoscopic procedure performed all over the world and in U.S.A. It has been performed as a day-care procedure for over a decade [2]. Nevertheless laparoscopic approach, post-operative pain still remains the most important patients complain after cholecystectomy, in fact pain can prolong hospitalization and can leads to increase post-operative morbidity, for example pulmonary complications. Now, that a lot of this operations are performing as a day-care procedure, it is particularly important to prevent and reduce as much as possible post-operative pain, preemptive analgesia may gain additional benefit. Adequate working space is a major requirement in every surgery and its abdomen is a closed space while performing laparoscopic procedure, this assumes a top requisite for better ergonomics

and patient safety. With the introduction of pneumoperitoneum as one of the methods to create abdominal working space, it has resulted in a big advancement in the field of minimal invasive surgery. Pneumoperitoneum for laparoscopic cholecystectomy is most often created by insufflating carbon dioxide gas into the peritoneal cavity and then holding it at constant pressure till the end of surgery when it is released at the time of withdrawal of the ports [3]. Literature is abundant that standard pressure pneumoperitoneum, employing a pressure range of 12-14 mm Hg, over prolonged periods has been associated with adverse effects such as decreased pulmonary compliance altered blood gas parameters, impaired functioning of the circulatory system raised liver enzymes and renal dysfunction and even increased intra-abdominal venous pressures [4-8]. Therefore a rising trend has been the use of low pressures for pneumoperitoneum in the range of 8-10 mm Hg in an attempt not to alter the human physiology and also providing adequate working space at the same time. Effective post-operative pain control is an essential component of care of surgical patients. Various analgesic regimens have been used to ensure adequate post-operative pain relief. We conducted this study to a randomized controlled study to compare pain in post laparoscopic cholecystectomy patient in low pressure pneumoperitoneum with preemptive analgesia versus standard pressure pneumoperitoneum without preemptive analgesia.

Materials & Methods

This is a hospital based study to be conducted in department of general surgery, PBM hospital, Bikaner, Rajasthan. This is a prospective, randomized study comparing the (Group A) low pressure pneumoperitoneum (8-10 mmhg) with preemptive analgesia versus (Group B) standard pressure pneumoperitoneum (12-14 mmhg) without preemptive analgesia.

Duration of study: From 01/04/2017 till sample size is reached.

Sample size: 50 cases in each group.

Inclusion criteria

All age group fit for laparoscopic cholecystectomy under general anesthesia.

Exclusion criteria

Patient not fit for laparoscopic cholecystectomy under general anesthesia.

Patient with acute cholecystitis and history of pancreatitis/ ERCP.

After taking written informed consent by patient. Elective laparoscopic cholecystectomy was done after overnight of fasting. All surgeries to be done under general anesthesia (GA). The patient is then placed in a reverse Trendelenburg position of 30 degrees while rotating the table to the left by 15 degrees. Abdominal skin will be prepared by povidone iodine solution (10%).

Patients are to be randomized in two groups of equal size with simple randomization technique. Patients in the (Group A) low pressure pneumoperitoneum (8-10mmhg) with preemptive analgesia versus (Group B) standard pressure pneumoperitoneum (12-14 mmhg) without preemptive analgesia.

Data analysis

After entering data into Excel worksheet, it was analyzed with the help of frequency, proportion and tests of significance wherever applicable.

Observations

This is a hospital based study to be conducted in department of general surgery, PBM hospital, Bikaner, Rajasthan. This is a prospective, randomized study comparing the (Group A) low pressure pneumoperitoneum (8-10 mmhg) with preemptive analgesia versus (Group B) standard pressure pneumoperitoneum (12-14 mmhg) without preemptive analgesia. 50 cases in each group were included.

Mean age in group A was 39.14 ± 6.12 Yrs and in group B was 40.34 ± 6.48Yrs. 14 male & 36 female were in group A and 13 male & 37 female were in group B. Both group were comparable.

Table 1: Duration of surgery wise distribution of patients

Duration of surgery (Mint)	Group A	Group B
Mean time	46.2	44.90
SD	2.80	2.60
t-value	1.86	
p-value	0.067	

Mean duration of surgery 46.2 ± 2.80 Mint in group A and Mean duration of surgery 44.90 ± 2.60 Mint in group B. The duration of surgery was less in group B compare to group A. The difference in both group was stastically insignificants (Table 1).

Table 2: VAS score wise distribution of patients

VAS score	Group A	Group B	t-value	p-value
4 hours	6.2 ± 0.82	6.8 ± 0.98	3.33	0.001
12 hours	4.1 ± 0.61	4.3 ± 0.52	1.74	0.081
24 hours	2.52 ±0.22	2.6 ± 0.20	1.90	0.060

VAS score at 4 hours in group-A was 6.2 ± 0.82 and in group-B was 6.8 ± 0.98. The difference in both group was stastically highly significant (p-value<0.001) (Table 2).

VAS score at 12 hours in group-A was 4.1±0.61 and in group-B was 4.3 ± 0.52. The difference in both group was stastically highly Insignificant (p-value>0.05).

VAS score at 24 hours in group-A was 2.52 ± 0.22 and in group-B was 2.6 ± 0.20. The difference in both group was stastically highly Insignificant (p-value>0.05).

Table 3: Analgesic consummation wise distribution of patients

Analgesic consummation (mg/day)	Group A	Group B
Mean time	70 mg /day	110mg/day
SD	20 mg /day	30 mg/day
t-value	7.84	
p-value	0.001	

The need of analgesia in group A was 70mg/ day and group B was 110mg/day. The difference in both group was stastically highly significant (p-value<0.001) (Table 3).

Table 4: Hospital stay wise distribution of patients

Hospital stay (Hrs)	Group A	Group B
Mean time	51.8	53.2
SD	2.38	2.40
t-value	2.29	
p-value	0.001	

Mean time of hospital stay in group B was 53.2 ± 2.40 Hrs and in group A was 51.8 ± 2.38 Hrs. The difference in both group was stastically highly significant (p-value<0.001) (Table 4).

Discussion

Mean duration of surgery 46.2 ± 2.80 Mint in group A and Mean duration of surgery 44.90 ± 2.60 Mint in group B. The duration of surgery was less in group B compare to group A. The difference in both groups was stastically insignificants.

In the 2015 Aman Ahmad et al. [9] conducted a study and they observed that mean operating time of surgery was not significantly different among the two groups (45.8 and 46.0 min in group-II and group-I respectively).

The duration of surgery was not change in patient with low pressure pneumoperitoneum with preemptive analgesia versus standrad pressure pneumoperitoneum without preemptive analgesia.

In our study VAS score at 4 hours in group-A was 6.2 ± 0.82 and in group-B was 6.8 ± 0.98. The difference in both group was statistically highly significant (p-value<0.001). VAS score at 12 hours in group-A was 1 ± 0.61 and in group-B was 4.3 ± 0.52. The difference in both group was statistically highly Insignificant (p-value>0.05).VAS score at 12 hours in group-A was 2.52 ± 0.22 and in group-B was 2.6 ± 0.20. The difference in both group was statistically highly Insignificant (p-value>0.05).

In the 2015 Aman Ahmad et al [9] conducted a study and they observed that The mean pain scores as calculated from the VAS were significantly less for bupivacaine Group, compared to saline Group at 4 h (p = 0.0005) and at 12 h (0.022), while the difference at 24 h was not significant (p = 0.57).

Verma et al. [10]. noted a mean difference in the VAS of more than 10 between the case and control group, but this difference was not significant at 4 or 8 h after surgery. This could be due to a small sample size with a large variation in the VAS at 4 h.

Sandhu T et al. [11] observed that the procedure was successful in 68 of 70 patients in the low-pressure group compared with in 70 patients in the standard group. Operative time, number of analgesic injections, visual analogue score and length of postoperative days were similar in both groups. Incidence of shoulder tip pain was higher in the standard-pressure group, but not statistically significantly so (27.9% versus 44.3%) (p = 0.100).

Khan [12] and coworkers also report bupivacaine at the gall bladder bed and infiltration at the port site to be an effective way to control postoperative pain.

The need of analgesia in group A was 70mg/ day and group B was 110mg/day. The difference in both group was statistically highly significant (p-value<0.001) in our study. Wasana Ko-iam et al13was also observed the result.

Mean time of hospital stay in group A was 53.2 ± 2.40 Hrs and in group B was 51.8 ± 2.38 Hrs. The difference in both group was statistically highly significant (p-value<0.001) in our study.

In the 2015 Aman Ahmad et al [9] conducted a study and they observed that mean time of hospital

stay less in group I as compared to group-II. The difference between both groups was statistically highly significant.

Conclusion

Low pressure pneumoperitoneum (8-10 mmhg) with preemptive analgesia to be better than standard pressure pneumoperitoneum (12-14 mmhg) without preemptive analgesia in terms of duration of surgery, lower incidence of pain and hospital stay.

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Original Research Article

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Efficacy of Ultrasound Guided Hydrostatic Reduction of Intussusceptions in Children

Ravindra Devani[1], Nandkishor Shinde[2], Abu Hasim Abdul Aziz[3]

[1]Professor [2]Assistant Professor, Department of Pediatric Surgery [3]Junior Resident, Department of Surgery, Khaza Banda Nawaz Institute of Medical Sciences, Kalaburagi, Karnataka 585104, India.

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Abstract

Aim: To study the efficacy of hydrostatic reduction of childhood intussusception using normal saline under US guidance. *Materials and Methods:* This prospective study was conducted over a period of 3 years from February 2016 to January 2019. All Children between three months to five years whose ultrasound scan shows Intussusception, symptoms of intussusception less than 48 hours and no features of peritonitis or intraperitoneal free gas were included in the study. Informed written consent was taken from the patient's guardian for hydrostatic reduction. The child was sedated with midazolam and ketamine. A Foley's catheter of size 14 Fr to 18 Fr were used according to the age of the child. Catheter was lubricated with 2% lignocaine gel and introduced into the rectum. The balloon of Foley's catheter inflated with 10-15 ml distilled water, Catheter was connected with warm normal saline bag and flow of saline was allowed into the rectum. The saline bag was suspended on a drip stand at approximately 100 cm from the patient's bed level. The ultrasound was then used to guide the reduction till the intussusception went beyond the ileocaecal valve. Complete reduction was assumed once intussusceptum was disappeared and passage of saline through the ileo-caecal valve into the ileum seen. *Results:* This study was done on total 35 patients diagnosed with intussusceptions, 21 males (60%) and 14 females (40%), the age ranged between 3 month and 5 years. Abdominal USG and plain X-ray were done for all patients. Abdominal pain was seen in 32 patients (91.4%), bilious vomiting in 30 patients (85.7%), rectal bleeding in 12 patients (34.3%), abdominal distension in 18 patients (51.4%), palpable abdominal mass was seen in 14 patients (40%) and absent bowel sound was seen in 12 (34.3%) patients. Volume of Normal saline required for reduction ranged from 300ml to 1300ml. Three of the children had recurrent intussusceptions. Two occurred a day after the procedure and one recurrence was noted four months later. In three patients (8.6%), US Guided hydroreduction of intussusception failed and they underwent surgical exploration. *Conclusion:* Ultrasound guided reduction of intussusception with saline is safe and effective method with high success rates with minimal morbidity or mortality due to the procedure.

Keywords: Intussusception; Hydrostatic Reduction; Ultrasound.

Corresponding Author: Nandkishore Shinde, Assistant professor, Department of Pediatric Surgery Department of Surgery, Khaza Banda Nawaz Institute of Medical Sciences, Kalaburagi, Karnataka 585104, India.

E-mail: drnandkishorshinde@gmail.com

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Introduction

Intussusception is the telescoping of the portion of intestine into the adjacent portion of the intestine. It is one of the common causes of bowel obstruction in children [1,2,3].

The triad of vomiting, pain abdomen and per rectal bleeding occurs in every third case. There are no signs and symptoms that are classic to the all the patients of intussusception, which may leads to delay in the diagnosis [4].

Ultrasound has been used to diagnose this condition with a high specificity and sensitivity of nearly 100% [2]. In 1982, Kim and his group did the first ultrasound guided hydrostatic reduction (USGHR) with normal saline [2].

Operative and non-operative reduction used for the management of intussusception, there is a long history supporting non-surgical reduction of intussusceptions [5]. With widespread of ultrasonography (USG), many centres start using hydrostatic reduction with ultrasound guide for treatment of intussusception, the perforation risk of hydrostatic reduction has been reported as 0.1%–3% [5,6].

Liquid reduction of intussusception is done with barium, iodinated contrast material, or saline and having the risk of electrolyte disturbances and contamination [7,8,9].

Pneumatic reduction is performed with air, CO2, or oxygen through a rectal catheter at a mean pressure ranging between 80 to 120 mm Hg. This type of reduction causes less radiation exposure and lower risk of peritoneal contamination if perforation occurs [10,11].

Pneumatic reduction perforation causes less morbidity than Ultrasound guided hydrostatic reduction which causes significant peritoneal soiling following perforation. However, the benefits of using air for treatment of intussusception has been questioned recently, with a greater risk of perforation and the possibility of developing a tension pneumoperitoneum [2,10,11].

We studied Ultrasound guided hydrostatic reduction of childhood intussusception with normal saline, with the idea of reducing exposure to radiation and decreasing the risk of peritoneal contamination if iatrogenic perforation occurs during reduction.

Materials and Methods

This prospective study was conducted over a period of 3 years from February 2016 to January 2019.

All Children between three months to five years whose ultrasound scan shows Intussusception, symptoms of intussusception less than 48 hours and no features of peritonitis or intraperitoneal free gas were included in the study.

Children with symptoms of intussusception more than 48 hours, recurrent intussusceptions, features of peritonitis or intraperitoneal free gas and haemodynamically unstable were excluded from the study.

Informed written consent was taken from the patient's guardian for hydrostatic reduction. An intravenous line was set up and blood samples were taken for electrolytes and cross-matching. Then the patient was resuscitated and the naso-gastric tube was inserted. Blood pressure and pulse rate were monitored during the procedure. Intravenous antibiotics (Ceftriaxone & Metronidazole) were administered and all the preparations needed for the surgery was made as a safety, in the case of emergency, when the procedure failed. Vital signs were recorded. The children were sedated with midazolam and ketamine.

A Foley's catheter of size 14 Fr to 18 Fr were used according to the age of the children. Catheter was lubricated with 2% lignocaine gel and introduced into the rectum (5 cm. from the anal verge). The balloon of Foley's catheter inflated with 10- 15 ml distilled water, Catheter was connected with warm normal saline bag and flow of saline was allowed into the rectum. The saline bag was suspended on a drip stand at approximately 100 cm from the patient's bed level.

The ultrasound was then used to guide the reduction (Fig. 1) till the intussusception passed beyond the ileocaecal valve. Complete reduction was cosidered once intussusceptum was disappeared and passage of saline through the ileo-caecal valve into the ileum seen.

Fig 1: USG showing Target Sign of Intussusception.

Successful reduction was evaluated as the saline administrated through Foley's catheter being visualised under USG passed to the proximal of the invaginated segment. In unsuccessful cases, if some movement of the mass was present and child had no abdominal signs 2nd attempt was taken after minimum 30 min interval. Afterwards, Foley's catheter was removed and saline drained through the anus.

Clinical condition of the patient was closely and carefully monitored throughout the procedure. After 48 hours review US was done for follow-up and if no intussusceptions, oral feed started.

Antibiotic was administrated to all patients before and after hydrostatic reduction to prevent bacterial translocation; IV administration was done before hydrostatic reduction and the patients continued on oral antibiotics for 5 days.

Statistical analysis was performed using SPSS software.

Results

This study was done on total 35 patients diagnosed with intussusception in Paediatric Surgery Unit, 21 males (60%) and 14 females (40%), the age ranged between 3 month and 5 years (Table 1). Abdominal USG and plain X-ray were done for all patients. Abdominal pain was seen in 32 patients (91.4%), bilious vomiting in 30 patients (85.7%), rectal bleeding in 12 patients (34.3%), abdominal distension in 18 patients (51.4%), palpable abdominal mass was seen in 14 patients (40%) and absent bowel sound was seen in 12 (34.3%) patients (Table 2).

Table 1: Age Distribution

Age group	Number	Percentage
3months to 1 years	10	28.57%
>1 years to 3 years	16	45.71%
>3 years to 5 years	9	25.71%

Table 2: Presenting complaints

Presentation	Number	Percentage
abdominal pain	32	91.4%
Vomiting	30	85.7%
Blood in stool	12	34.3%
Abdominal distension	18	51.4%
Abdominal mass	14	40%
Absent bowel sound	12	34.3%

In three patients (8.6%) the intussusception was seen up to the descending colon,12 of the patients (34.3%) up to the transverse colon, 14 patients (40%) up to the hepatic flexure, and 6 patient (17.1%) had the intussusception up to the ascending colon. The duration of the procedure were ranged between five minutes to twenty minutes. Volume of Normal saline required for reduction ranged from 300ml to 1300ml (Table 3).

Table 3: Volume of fluid needed for reduction

Volume	Number	Percentage
300- 500ml	12	34.3%
500-1000ml	20	57.14%
1000-1300ml	3	8.6%

Three children had recurrent intussusception. two occurred within 24 hours after the procedure and both on surgical exploration found Meckles diverticulum as leading point and one recurrence was four months later which on surgical exploration found intraluminal polyp as leading point.

In three patients (8.6%), US Guided Hydroreduction of intussusception failed and underwent surgical exploration (Fig. 2). Of these three patients two had meckles diverticulum as leading point with ischemic changes in bowel which was managed by bowel resection and anastomosis. For the remaining one had inflamed payer's patches as leading point which was reduced manually during surgery. In all of these patients the intussusception was up to the transverse colon.

Fig. 2: Intraoperative showing telescoping of small bowel into the colon.

Discussion

It is commoner in males than females. In our study the male to female ratio was 1.5:1 which

compares with other studies [2,3].

The majority of findings in intussusception patients are non-specific, but in our study, most of the patients presented by abdominal pain, bilious vomiting and abdominal distension. These results match with other results in literature [4,12].

Ileocolic intussusception is the most common type of intussusception in our study, There were no case of colo-colic, ileo-ileo-colic intussusceptions, this compares with other studies [2,13].

For diagnosis and guidance for hydrostatic reduction of intussusceptions, most institutes use high resolution ultra-sound. It has sensitivity between 98–100% in various series [14]. On ultrasound signs like target sign, pseudokidney sign and doughnut sign are described in intussusception. The absence of blood-flow in mesenteric vessels on Doppler and presence of free fluid in abdomen suggest intestinal ischemia and perforation respectively; hydrostatic reduction should be avoided in such cases. The small amount of fluid within the head of intussusceptum ('crescent' sign) and thickness of the outer portion of intussusceptum measuring more than 14 mm suggest unsuccessful reduction [14]. The use of barium enema under fluoroscopic guidance for reduction has the disadvantage of radiation exposure. Sonography has no risk of radiation, is cheaper than costly barium, it can be done at bedside and is repeatable [14].

Duration of symptoms and success of hydrostatic reduction has been studied previously; which has concluded that the duration of symptoms does not influence the success rate with hydrostatic reduction [5]. In our study, we found that short duration of symptoms were associated with better outcome.

In our study, successful reduction was 91.4%. which was similar with the findings of the other studies [8,15,16,17,18] where ultrasound guided hydrostatic reduction had the success rate more than 82% [8,15,16,17,18].

Recurrence rate after non-operative reduction of intussusceptions were between 5 to 20% with a mean of 10% [19,20]. Recurrent intussusceptions due to pathologic lead point had higher incidence of recurrence about 8 to 9%. Most of the recurrent intussusceptions occured within 48 hours but recurrences up to 1.5 years had been documented [19,20]. In our study also recurrence rate was 8.5%, which was similar with the other studies [8,15,16,17,18] .

Surgery is indicated for recurrence of intussusception, many surgeons would only operate on second recurrence [21]. In our study, we also operated all cases of recurrence within one year follow up.

There is a risk of bacteremia and sepsis after nonsurgical reduction of intussusceptions [22] but in our series no child had developed sepsis. A course of antibiotic was administered post–reduction as a precaution.

Hydrostatic reduction using normal saline for intussusceptions in children was a safe, simple, cost-effective, prevents the exposure of children to radiation and was associated with almost no complications and a less hospital stay.

We reported 91.4% success rate, with no morbidity or mortality due to the procedure. This procedure is recommended as the preferred treatment over surgery in selected patients which avoids surgery related complications.

Conclusion

Ultrasound guided reduction of intussusception with saline is safe and effective method with high success rates with minimal morbidity or mortality due to the procedure.

Conflict of Interest: Nil

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Case Report

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Role of Cadaveric Allograft Transplantation in a Tertiary Burns Centre

Preethitha Babu[1], Ravi Kumar Chittoria[2], Konda Sireesha Reddy[3]

[1,2]Senior Resident [2]Professor & Head, Department of Plastic Surgery, Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Pondicherry 605006, India.

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Abstract

Non healing wounds are a major functional and financial burden to the patient and treating surgeon alike. Many methods of adjuvant wound therapy and wound bed preparation exist like Autologous Platelet Rich Plasma injection (APRP), Autologous Lipoaspirate injections (ALA), Bone marrow aspiration therapy (BMAT) etc. Several methods of temporary wound cover are available nowadays like integra, apligraf, collagen etc. Though such temporary dressing materials are available none can meet the biological properties of an allograft. Cadaveric allografts have long been used as a temporary wound cover in patients with extensive burns to reduce the morbidity and mortality in patients. In this article we describe the use of cadaveric allograft as a method for wound bed preparation in patients with non-healing ulcers in a tertiary burns centre.

Keywords: Allograft; Non-Healing Ulcer; Wound Bed Preparation.

Introduction

Chronic wounds represent a major portion of the general surgeon's as well as plastic surgeon's practice. Though often neglected, they continue to be a major functional and economic burden to the patient and the treating surgeon alike. Chronic wounds are those wounds that do not show a 20-40% reduction in surface area with optimal treatment after a period of 2-3 weeks [1]. Post infectious raw areas, venous ulcers, diabetic ulcers and post burns raw areas all form a part of the spectrum of chronic wounds.

Many biological skin substitutes are available for the temporary cover of chronic wounds and for wound bed preparation. These include integra, collagen, biobrane, apligrafetc. Though many such materials have been used regularly for the management of chronic wounds, no better alternative has been found that can match the biological properties of cadaveric skin [2]. To make these materials less immunogenic, the cellular component needs to be removed from them leaving behind only the matrix or the immunogenic components of the skin like dendritic cells need to be removed if the epidermal – dermal components need to be used [3]. Cadaveric skin graft remains the standard method for temporary skin replacement in patients with extensive burns [4].

The tissue transplantation program was started by the Department of Plastic JIPMER in August 2016 with the purpose of providing an immediate source of cover for patients with major thermal burns and other chronic non healing wounds and to reduce their mortality and morbidity. In this article, the authors describe the use of allograft for the preparation of wound bed in 2 patients with chronic non healing wounds.

Case Report

Case 1:

A 15 year old male patient , a known case of

Corresponding Author: Ravi Kumar Chittoria, Professor & Head, Department of Plastic Surgery, Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Pondicherry 605006, India.

E-mail: drchittoria@yahoo.com

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40% electrical burns with bilateral below elbow amputation and multiple hypertrophic scars and keloids presented to the plastic surgery outpatient department with fever, pain and swelling over the pre-sternal region and a discharging sinus for two weeks. On examination the patient was found to have diffuse swelling measuring approximately 6x5 cm over the pre-sternal region with overlying skin erythema which was severely tender and fluctuant on palpation. After routine investigations incision and drainage of the abscess was done, 30 ml of pus evacuated, wound was packed and the patient was placed on negative pressure dressing. A week after the incision and drainage the patient developed a raw area of size 8x6 cm on the pre-sternal region which was covered with healthy granulation tissue.

Fig. 1: Post autografting picture showing 80% graft loss

The patient underwent split skin grafting for covering the raw area. Check dressing done one week later showed graft loss of 80% (Fig. 1).

Fig. 2: Allograft applied over the pre sternal raw area.

The patient was placed on negative pressure dressings and adjuvant therapies like autologous platelet rich plasma (APRP) was given but the wound showed no evidence of contraction or epithelisation. Three weeks following this patient underwent allografting from a brain dead patient for cover of the pre-sternal raw area (Figure 2). The graft was harvested from the brain dead donor after doing all routine serological and microbiological investigations and transplanted onto the patient immediately after harvest.

Fig. 3: Contracting wound following application of autograft.

Fig. 4: Completely healed wound.

Check dressing done five days later showed 40% graft loss but the wound had contracted by around 20% (Fig. 3). A wedge biopsy was taken from the edge of the wound and sent for histopathological examination. A Masson's trichome staining was done which showed evidence of neo-epithelisation and granulation tissue formation below the epithelium. The wound continued to contract and completely healed after two weeks (Fig. 4). The patient was followed up for a period of one month with no post-operative complaints.

Case 2:

A 25 year old female patient presented to the casualty with history of 35% self-inflicted thermal burns over the lower part of the face, neck, bilateral upper limbs, chest and abdomen. The patient was resuscitated and placed on collagen dressing

and negative pressure wound therapy for wound management. Regular wound debridement and collagen dressings were done (Figure 5). Four weeks after admission the patient underwent allografting from a brain dead patient (Figure 6) and the wound over the neck and the right arm were covered. The graft was harvested from the brain dead donor after doing all routine serological and microbiological investigations and transplanted onto the patient immediately after harvest.

Fig. 5: Wound before allograft application.

Fig. 6: Allograft applied over the neck and right arm

Fig. 7: Healthy granulation after application of allograft with complete lysis of allograft

Check dressing done five days after allografting showed 80% graft uptake. Regular wound dressings were done and complete lysis of the allograft was noted 20 days after application with healthy red granulation tissue present over the areas where the allograft was applied (Fig. 7). The patient underwent autologous split skin grafting for the residual raw areas (Figure 8) and complete wound healing was achieved two weeks later. The patient was followed up for a period of 3 weeks with no further complaints and complications.

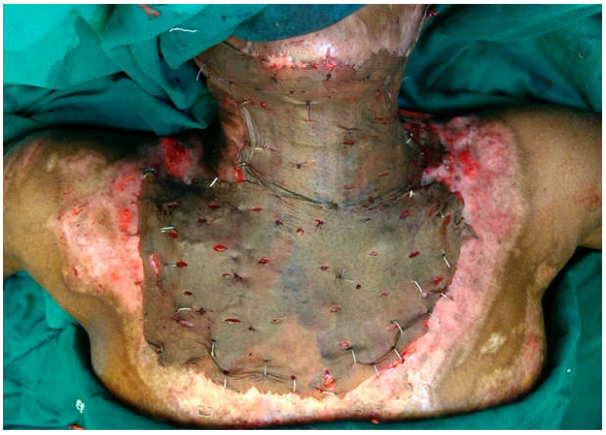

Fig. 8: Post autografting

Discussion

The term 'allograft' refers to a graft taken from the same species, from a source that is not genetically identical. George Pollock first described the concept when he donated his own skin along with the patient's skin to treat burns wounds [5]. Though both grafts initially took, the allograft eventually disappeared from the wound. Ten years following this, it was Girdner who first described the use of cadaveric skin to cover burns wounds [6]. Following this many studies have been published about the use of cadaveric skin for the cover of burns wounds and other non-healing ulcers.The allograft limits wound infection and prevents protein, fluid and electrolyte loss from the wound decreasing the energy spent by the patient. It also reduces pain, improving the general welfare and psychological status of the patient and conserves autograft [7].

Though traditionally cadaveric skin has been used only for the cover of extensive burns wounds, many studies have been published regarding the use of cadaveric skin for wound bed preparation. Snyder et al. [3] reported the use of cadaveric allograft for the treatment of diabetic, venous, arterial, post traumatic, post scleroderma ulcers etc. the benefits noted by him include a substantial decrease in wound infection, desiccation and patient symptoms such as pain. Another study showed that following Mohs micrographic surgery, cadaveric skin may induce the formation of granulation tissue from the bed [8].

In our study, the cadaveric skin was transplanted on two patients for temporary wound cover and for wound bed preparation. In the first patient, there was no need for a permanent wound cover as the wound contracted rapidly following application of the allograft. The second patient had a wound that was unfit for grafting. The application of the cadaveric allograft enabled the formation of a bed of granulation tissue enabling the wound to be covered early with a skin graft reducing the morbidity that would have otherwise ensued.

Conclusion

The use of cadaveric skin as a temporary biological cover for chronic non healing wound is an efficacious method to prepare the wound bed enabling a more permanent solution for wound cover. It reduces the morbidity associated with the chronic wounds enabling the surgeon to obtain early coverage of these difficult to treat wounds.

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