

Laparoscopic Inguinal Hernia Repair Tapp Without Mesh Fixation

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Abstract

Introduction: Laparoscopic repair of hernia can be done by 2 ways with mesh fixation and without mesh fixation. Laparoscopic hernia repair can be by two approaches:

1. Total Extra Peritoneal (TEP) Repair
2. Trans Abdominal Pre Peritoneal (TAPP) Repair.

Postoperative complications like pain are one of the most common complications that occur after performing a TAPP.

Material And Methods: 31 patients who underwent laparoscopic inguinal hernia repair without mesh fixation for uncomplicated inguinal hernia at Dhiraj hospital were included in my study. All patients were assessed by thorough clinical examination and consent was taken. After proper dissection of the tissue and cord, mesh of size 15*12 cm size was placed without fixation. The peritoneum closed with vicryl 2,0 RB in continuous manner.

All patients were assessed during the first post-operative day, day of discharge, and at follow up visits at 1st week, 1 month, 3 months and 6 months post operatively.

Results: A total of 31 elective TAPP were performed in my study.

Out of 30 patients, 7 patients developed pain in post operative period, so 23.33%.

Out of which 5 developed pain over the operative site (16.67) and 2 developed pain in the testicular pain (6.67).

Conclusion: In our study the most common complication seen was postoperative groin pain and testicular pain. It was seen in total 7 patients (22.57%) whereas in Wang et. al. it was seen in 2.6% of patients without mesh fixation and 23.68% of patients with mesh fixation. So this suggests pain is due to mainly extensive tissue dissection and cord dissection.

In our study in a span of follow up period of 6 months the recurrence seen was 0% but in Mayer et. al. study it was seen in 1.1% of patients without mesh fixation and 0.9% of patients with mesh fixation. So our study proves that recurrence rate does not depend upon the fixation of the mesh.

Keywords: Inguinal hernia; Laparoscopic hernia repair; TAPP; Mesh fixation.

Introduction

“No disease of human body, belonging to the province of the surgeon, requires in its treatment a better combination of accurate, anatomical knowledge with surgical skill than HERNIA in all its varieties”.¹

Sir Astley Paston Cooper’s statement in 1804 still reverberates in the minds of surgeons.

Groin hernias are the most common conditions referred to surgeons all over the world and over five lakh hernia repairs are performed annually.² The lifetime risk for men is 27% and for women is 3%.³

The rapid changes that have been witnessed in open approach surgeries, prosthetic materials and laparoscopic surgeries have made hernia surgery, a most interesting field of endeavor that demands renewed discipline and dedication.⁴ Though a

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variety of procedure are performed none can be termed as an ideal procedure as each one is accompanied by varied early late complications, the most significant being recurrence. In 1981, William Bull, one of the most prominent Surgeons, wrote of hernia repairs, "It is wise to estimate the value of given procedures by the relative proportions of relapses".⁵ There has been a revolution in surgical procedures for groin hernia repairs after the introduction of prosthetic material by Usher⁶ in 1958. Open Pre-peritoneal mesh repair by Stoppa⁷ was found to significantly reduce recurrence rate for multi-recurrent groin hernias. However, it was associated with significant postoperative pain and morbidity. The concept of Tension Free Open Mesh Repair was first described by Lichtenstein in 1989.⁸

Ger reported the first laparoscopic hernia repair in 1982 by approximating the internal ring with stainless steel clips.⁹ The laparoscopic Trans Abdominal Pre-Peritoneal (TAPP) repair was a revolutionary concept in the hernia surgery and was introduced by Arregui and Dion¹⁰ in the early 1990s. Laparoscopic groin hernia repair can be done by TAPP approach and also by Total Extra Peritoneal (TEP) approach.¹¹

In our Institution, inguinal hernia repair is one of the common surgeries performed daily. This study aims at studying the efficiency, advantages, disadvantages, limitations, post operative pain, duration of hospital stay and recurrence after transabdominal preperitoneal (TAPP) hernia repair without mesh fixation.

Aim

To analyze complications after laparoscopic inguinal hernia repair (TAPP) without mesh fixation in patients with hernia.

Objective

To look for the complications after laparoscopic hernia repair (TAPP) without mesh fixation on follow up of the patient with respect to following:

- 1) Post-operative pain
- 2) Bleeding
- 3) Port site infections
- 4) Urinary retention
- 5) Testicular swelling and pain
- 6) Recurrence

Material and Methods

Source of data:

All eligible cases undergoing laparoscopic inguinal hernia repair in the Department of surgery, Dhiraj General Hospital, Pipariya, Vadodara during the study period of From the date of approval of study - August 2019

Study design: Observational cohort study

Study site: Department of General Surgery, Dhiraj General Hospital, Pipariya, Vadodara

Sample size: Sample size of 31 (All the patients coming with inguinal hernia will be enrolled.)

Study period: From the date of approval of study to 2 years

Sampling method: Purposive sampling

Selection Criteria: uncomplicated inguinal hernia patients will be included in our study for laparoscopic hernia repair.

Inclusion criteria:

- Age more than 18 years
- Symptomatic inguinal hernia
- Defect of any size

Exclusion criteria:

- Asymptomatic inguinal hernia
- Irreducible inguinal hernia
- Inguinal hernia extending to scrotum
- Obstructed and strangulated inguinal hernia
- BMI > 30
- Female patients

Methodology

This is a prospective observational cohort study conducted at Dhiraj general Hospital on patients presenting with uncomplicated inguinal hernia. After obtaining consent patient were enrolled in our study.

At admission, detailed history will be taken and all patients will be subjected to thorough clinical examination including per abdominal examination including genital area and all the hernia sites and

per rectal examination. Routine lab investigations like blood and screening of chest will be done. Those patients having irreducible/obstruction/strangulation will be excluded from this study.

After taking consent for the procedure, the patient is investigated thoroughly. Once the patient is deemed fit for surgery, consent is taken for the same.

A dose of prophylactic antibiotic was given 30 minutes before surgery. A nasogastric tube and Foley's catheter were inserted (if required).

In the procedure after putting all the ports, peritoneum was incised and tissue dissection was done. Cord was also dissected to create enough space to put 15*12 cm mesh. Mesh was put in the space and spread properly to cover whole the space. The peritoneum was closed with vicryl 2,0 round body in a continuous manner.

Post operatively the patients were kept nil by mouth and advised complete bed rest till the effect of anaesthesia is completely worn out, till then they are given supportive maintenance intravenous fluids. Foley's catheter is removed once the patient becomes ambulatory, usually on the first postoperative day. Patients were advised and encouraged to ambulate and start their activities of daily life as early as possible.

Patients were observed for any complications in the immediate post-operative period. Patients were discharged once free of complications and once they resumed their activities of daily normal life.

All patients will be assessed during the first post-operative day, day of discharge, and at follow up visits at 1st week, 1 month, 3 months and 6 months post operatively.

Statistical Analysis

Data were statistically described in terms of, frequencies (number of cases) and percentages when appropriate. All statistical calculations were done using computer programs Microsoft Excel 2007 (Microsoft Corporation, NY, USA) and SPSS (Statistical Package for the Social Science; SPSS Inc., Chicago, IL, USA) version 21

Results and Discussion

During the last several decades numerous innovative and creative techniques have been introduced in an effort to manage patients with

inguinal hernia. Despite the development of many newer technologies including that of optics, the treatment of inguinal hernia by laparoscopic method has still eluded many of our patients.

The long learning curve of laparoscopic repair of inguinal hernia coupled with lack of proper documentation has and is delaying the proficient application of this procedure to the masses though several large published series have reported their experience with laparoscopic mesh repair of inguinal hernia.

Table 1: Comparison of Median age of Patients.

Age	Present Study	Wang et. al., ⁽¹²⁾
Median Age	48	47

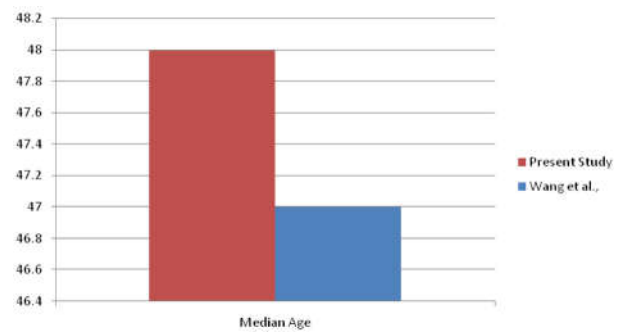


Table 2: Comparison of diagnosis based on location.

Diagnosis	Recent study	Rutkow et. al., ⁽¹³⁾
Right sided hernia	35.48	51
Left sided hernia	19.35	41
Bilateral hernia	45.16	2

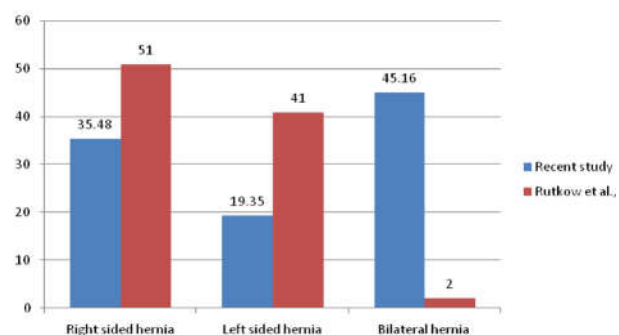


Table 3: comparison based on location of defect of patients studied.

Diagnosis	Present study	Ahmed et. al., ⁽¹⁴⁾
Direct Inguinal Hernia	61.29	23.3
Indirect Inguinal Hernia	38.70	76.7

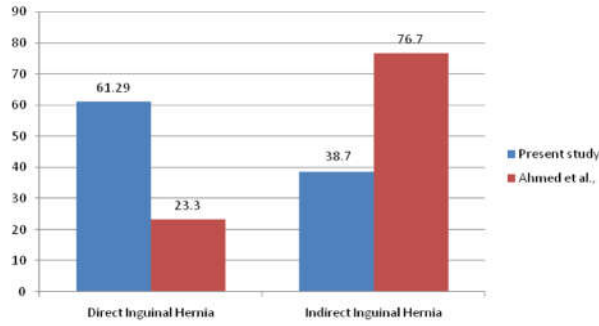


Table 4: Comparison based on postoperative pain.

Complications	Present study	Wang et. al., ⁽¹²⁾ (without fixation)	Wang et. al., ⁽¹²⁾ (with fixation)
Postoperative groin pain & testicular pain	22.57	2.6	23.68

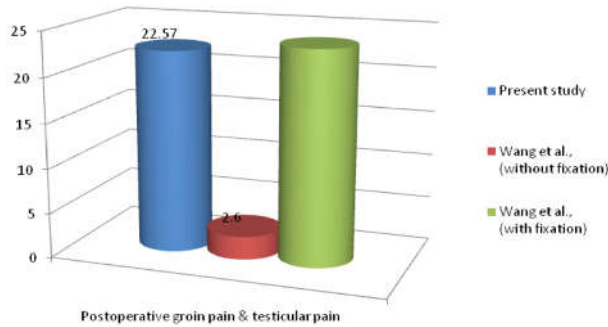


Table 5: comparison based on urinary retention and port site infection.

Complications	Present study	Smith et. al., ⁽¹⁵⁾ (Without fixation)	Smith et. al., ⁽¹⁵⁾ (With fixation)
Urinary retention	0.00	0.76	1.09
Port site infection	0.00	1.52	1.46

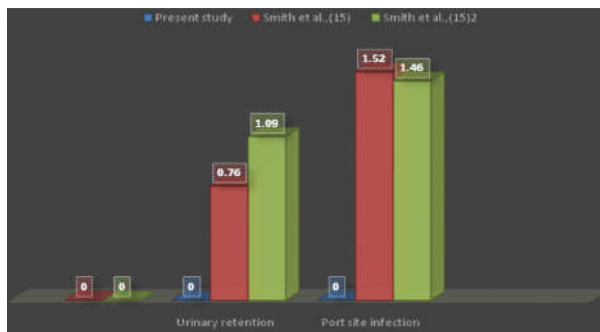


Table 6: Comparison based on recurrence.

Complication	Present study	Mayer et. al. (without fixation) ⁽¹⁶⁾	Mayer et. al. ⁽¹⁶⁾ (with fixation)
Recurrence	0.0	1.1	0.9

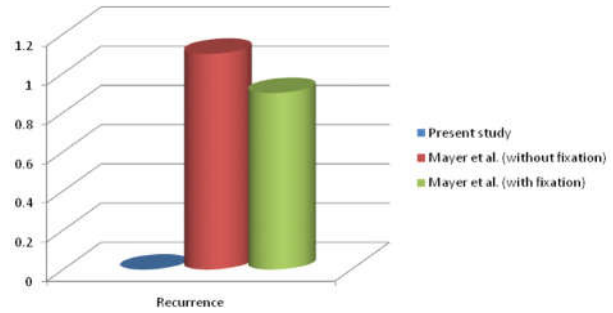


Table 7: Comparison based on hospital stay.

Study	Hospital stay
Present study	8.41
Wang et. al. ⁽¹²⁾ (without fixation)	6.7
Wang et. al. ⁽¹²⁾ (with fixation)	8.3

Table 8: Comparison based on operative time.

Study	Operative time
Present study	91 minutes
Wang et. al. ⁽¹²⁾ (without fixation)	90.2 minutes
Wang et al. ⁽¹²⁾ (with fixation)	78.9 minutes

There are two types of laparoscopic repair of inguinal hernia namely laparoscopic TEP repair and laparoscopic TAPP repair, both of which have evolved over a period of just two decades. There is a distinct conflict between mesh fixation and nonfixation. Lack of documentation and minimum published literature comparing the two and hence inability to arrive at standardizing the treatment protocol.

The following study was undertaken in an effort to identify the outcomes of the nonfixation of the mesh in laparoscopic TAPP hernia repair.

This was an observational study on 31 patients of laparoscopic TAPP hernia repair without mesh fixation conducted in Dhiraj Hospital, Vadodara which included a 6 months of follow up.

In our study the median age of the patients were 48 years, whereas in Wang et. al.⁽¹²⁾ study it was 47 years. This shows that our study is consistent with Wang et. al.⁽¹²⁾ study in respect to age of the patients. In our country most of the population comes from middle class and are farmers by occupation. In their lifetime due to strenuous work they develop weakening of the muscle wall and because of this they develop hernia at later age in life around 50 years.

In our study bilateral hernia (45.16%) were greater than either of the both right sided hernia (35.48%) and left sided hernia (19.35%), whereas in Rutkow et. al.⁽¹³⁾ study Right sided hernia (51%) were noted more than both of other combined left

sided (41%) and bilateral (2%). So the results in our study are not consistent with the Rutkow et. al.¹³ study. At birth right side of testes descends latter than the left side. During this it carries a fold of peritoneum with it. That's why right side of hernia is more common than the left side.

In our study out of 31 patients 61.29% hernia were noted as direct inguinal hernia whereas 38.70% hernia were noted as indirect inguinal hernia. But in Ahmed et. al.¹⁴. study only 23.3% patients were having direct inguinal hernia whereas 76.6% were having indirect hernia. This shows that our result is not similar with the result in the other study. In our study most of the patients are from around 50 years of age and farmer by occupation. So in these patients due to strenuous exercise, weakening of the abdominal wall muscle can occur and because of this direct hernia is common.

Complications:

Post operative groin and testicular pain

In our study the most common complication seen was postoperative groin pain and testicular pain. It was seen in total 7 patients (22.57%) whereas in Wang et. al.¹². it was seen in 2.6% of patients without mesh fixation and 23.68% of patients with mesh fixation. Pain can be caused by fibrosis of mesh, entrapment of nerve in mesh, dissection of tissue and cord dissection. In our study the pain was seen for short duration only and was managed with proper analgesics. It proves that in our study postoperative pain was high than other studies having patients without mesh fixation but it was similar to patients of that study with mesh fixation.

Urinary retention

In our study none of the patient had complication of urinary retention whereas in smith et. al.¹⁵ study it was seen in around 0.76% of cases without mesh fixation and 1.09% of cases with mesh fixation. It is one of the most common complications of general anesthesia used for laparoscopic hernia repair.

Port site infection

In our study none of the patients had complication of port site infection. But in smith et. al.¹⁵ study it was seen in 1.52% of the patients without mesh fixation and 1.46% with mesh fixation. These complications can be seen due to improper sterilization of the instrument or improper preparation of the patient. These complications should be managed by antibiotics and proper preparation of patients and sterilization of instruments.

Recurrence rate

In our study in a span of follow up period of 6 months the recurrence seen was 0% but in Mayer et. al.¹⁶ study it was seen in 1.1% of patients without mesh fixation and 0.9% of patients with mesh fixation. Recurrence rates are seen usually after 5 years. So proper long term follow up of recurrence rate should be carried out. Recurrence can be seen in this procedure due to small size of mesh, mesh migration or very large defect. So our study proves that recurrence rate does not depend upon the fixation of the mesh.

In our study the mean hospital stay of the patient was 8.41 days whereas in Wang et. al.¹². study it is 6.7 days in patients without mesh fixation and 8.3 days in patients with mesh fixation which suggests that the patients have to stay more in our hospital. The result is not similar to that seen in the other study.

In our study the operative time for the unilateral hernia was 91 minutes whereas in Wang et. al.¹². study the operative time was 90.2 minutes. It shows that our study is consistent with wang et. al.¹² study in means of operative time in surgery without mesh fixation but it increases time than mesh fixation.

References

1. NYHUS: The anatomy of inguinal region and its relation to groin hernia,- Hernia 4th edn,pg16
2. Lee L Swanstorm: Laparoscopic herniorrhaphy, - Surg clin. N. Am. 1996; 76(3), 483
3. Primatesta P, Goldacre MJ. Inguinal hernia repair; incidence of elective and emergency surgery, readmission and mortality. Int J Epidemiol 1996;25:835-9.
4. Bendavid R. Complications of Groin hernia surgery. Surg clin North Am. 1998; 78: 1089-1103.
5. Bull WT. Notes on cases of hernia which have relapsed after various operations for radical curve. NY Med J.1891; 53: 615-617.
6. Usher F, Cogan J, Lowry T. A new technique for the repair of inguinal and incisional hernias. Arch Surg 1960; 81:187-194.
7. Stoppa R E, Rives J L, Warlaumont CR et. al. The use of Dacron in the repair of hernias of the groin. Surg Clin North Am 1984;64:269-85.
8. Lichtenstein IL, Shulman AC, Amid PK, et. al. The tension free hernioplasty. Am J Surg 1989;157:188-93.
9. Ger R. The management of certain abdominal hernia by intra abdominal closer of the neck of

- sac. Preliminary communication. *Ann R Coll Surg* 1982; 64:342-4.
10. Dion Y M, Morin J. Laparoscopic inguinal herniorrhaphy. *Can J Surg* 1992; 35: 209-12.
 11. McKernan B. Laparoscopic pre-peritoneal prosthetic repair of inguinal hernias. *Surgical Rounds* 1992; 7:579-610.
 12. Wang L, Jin X, Wang H, Zhou X. Laparoscopic transabdominal preperitoneal procedure with and without mesh-fixation for inguinal hernia repairs. *Int J Clin Exp Med*. 2018 Jan 1;11(8):8651-5.
 13. Rutkow IM. Epidemiologic, economic, and sociologic aspects of hernia surgery in the United States in the 1990s. *Surgical clinics of north America*. 1998 Dec 1;78(6):941-51.
 14. Darwish AA, Hegab AA. Tack fixation versus nonfixation of mesh in laparoscopic transabdominal preperitoneal hernia repair. *The Egyptian Journal of Surgery*. 2016 Oct 1;35(4):327.
 15. Smith AI, Royston CM, Sedman PC. Stapled and nonstapled laparoscopic transabdominal preperitoneal (TAPP) inguinal hernia repair. *Surgical endoscopy*. 1999 Aug 1;13(8):804-6.
 16. Mayer F, Niebuhr H, Lechner M, Dinnewitzer A, Köhler G, Hukauf M, Fortelny RH, Bittner R, Köckerling F. When is mesh fixation in TAPP-repair of primary inguinal hernia repair necessary? The register-based analysis of 11,230 cases. *Surgical endoscopy*. 2016 Oct 1;30(10):4363-71.
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