

Analysis of Hysterectomies and Clinicopathological Correlation: A Prospective Study

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Abstract

Background: Hysterectomy is one of the most commonly performed definitive treatment for various gynecological diseases worldwide. In this study we aim to analyze the hysterectomies done in our hospital with respect to age, indications, routes of hysterectomies, complications and histopathological correlation with clinical findings. **Material and Methods:** This prospective, observational study was conducted on total of 579 patients in the Department of Obstetrics & Gynecology, Pacific Medical College & Hospital, Rajasthan. Clinical diagnosis was established on the basis of history, clinical examination and investigations which included ultrasound, Pap's smear and endometrial biopsy if done. All hysterectomy specimens were subjected to histopathological examination. Sensitivity, specificity, positive predictive value, negative predictive value and p-value of clinical diagnosis with histopathological diagnosis was calculated. **Results:** The commonest indication of hysterectomies in our hospital was abnormal uterine bleeding (26.94%). Total abdominal hysterectomy with bilateral salpingoophorectomy was the most common procedure with an incidence 74.27%. The overall sensitivity was 90.36%, specificity was 98.6% and positive predictive value was 85.9% in our study. The

accuracy of the diagnosis ranged from 89.6% to 100% and p - value was significant at 0.001 for adenomyosis and proliferative endometrium. In all cases of malignancies and cervical dysplasia p value was insignificant because all malignancies can be diagnosed clinically and histopathology is for confirmation and further management. **Conclusion:** Every hysterectomy specimen should be subjected to histopathological examination to ensure diagnosis and further management in particular of malignant diseases. Histopathological analysis correlates well with the pre-operative clinical diagnosis for hysterectomy.

Keywords: Clinicopathological; Histopathological Diagnosis; Hysterectomy; Adenomyosis; Total Abdominal Hysterectomy.

Introduction

Hysterectomy is one of the most commonly performed definitive treatment for various gynecological diseases worldwide [1]. The incidence of hysterectomy varies between regions, between hospitals within same region and even between consultants within the same hospital [2,3]. In India the reported incidence of hysterectomy is 6-8%, whereas in developed countries it is 10-20% [4]. We do not have any national registry for reporting hysterectomies in our country and that may be the cause for under reporting and low rates of hysterectomies.

Hysterectomies are performed abdominally (64%) which may be total or subtotal, vaginally (22%) and by laparoscope through abdominal ports (14%) [5]. Total abdominal hysterectomy accounts for 60-80% of hysterectomies in USA and UK [6,7].

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Hysterectomies may or may not be accompanied by salpingoophorectomy unilateral or bilateral. Oophorectomy along with hysterectomy was recommended by 83% gynecologists in post menopausal women, by 50% in perimenopausal women and by < 5% in premenopausal women [8].

Controversies regarding indications of hysterectomy for benign gynecological diseases and increasing rates of hysterectomies in India prevailed in recent past. But hysterectomy certainly improves quality of life in women and gives good satisfaction rates.

Conservation of ovaries during hysterectomy is also a recent recommendation now. In this case importance must be given to women's preference. Recently there has been an increasing trend of minimally invasive and conservative management of uterine lesions all over the world. But in developing countries and particularly rural areas, hysterectomy still remains widely accepted and preferred modality of treatment for gynecological diseases. The obvious reasons could be non availability of latest treatment options in all hospitals due to their higher cost and lack of technical skills [9]. Women fail to approach the health care facilities due to financial constraints and sociocultural inhibitions and if at all they do, they opt for permanent cure for their diseases at minimal cost.

In this study we aim to analyze the hysterectomies done in our hospital with respect to age, indications, routes of hysterectomies, complications and histopathological correlation with clinical findings.

Material and Methods

This prospective, observational study was conducted in the Department of Obstetrics & Gynecology, Pacific Medical College & Hospital,

Udaipur, Rajasthan. It is a tertiary care teaching institute catering mainly to rural population. A total of 579 patients were included in the study during this period.

All hysterectomies done in this hospital during the period of January 2016 to September 2017 were included. Obstetric hysterectomies were excluded from the study. Abdominal hysterectomies included total hysterectomy (TAH) with unilateral (TAH + USO) or bilateral salpingoophorectomy (TAH + BSO) and supracervical hysterectomy. Vaginal hysterectomy included vaginal hysterectomy with pelvic floor repair (VH with PFR) and non descent vaginal hysterectomy (NDVH). Laparoscopic route included total laparoscopic hysterectomy (TLH).

Data regarding age, indications, routes of hysterectomy, intraoperative and postoperative complications, clinical and histopathological diagnosis of patients were recorded. Clinical diagnosis was established on the basis of history, clinical examination and investigations which included ultrasound, Pap's smear and endometrial biopsy if done. All hysterectomy specimens were subjected to histopathological examination. Statistical analysis was done using appropriate method (SPSS Version 16).

Results

A total of 579 women underwent hysterectomies for various indications during the study period in our hospital.

Figure 1 The maximum number of hysterectomies were done in the age group of 31- 40 years (43%) followed by 37.65% in age group 41- 50 years. Around 5.8% were beyond 60 years and 2% were less than 30 years. A 16 year old mentally retarded girl had hysterectomy.

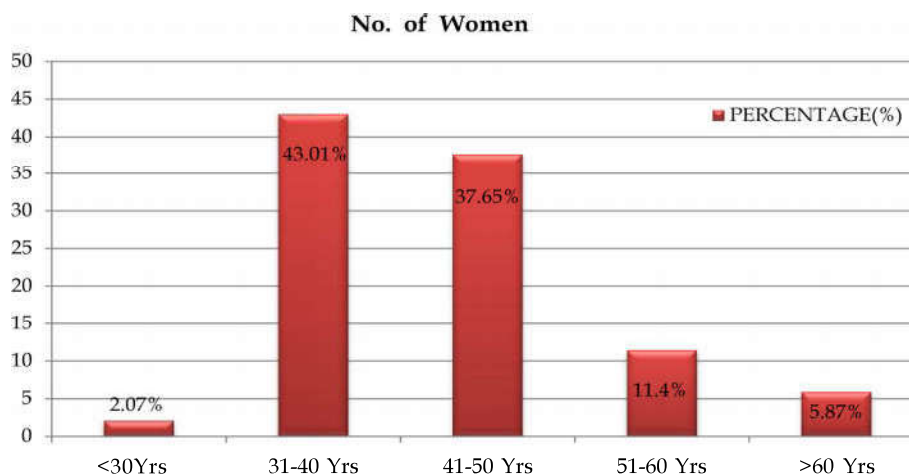


Fig. 1: Age Wise Distribution of Hysterectomies

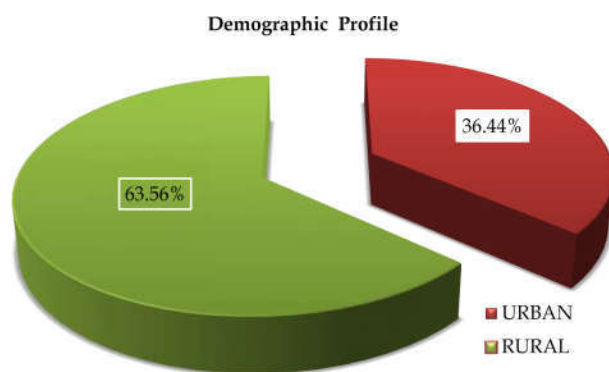


Fig. 2: Demographic Profile

Figure 2 Majority of women belonged to rural background (63.56%)

Figure 3 Majority of women (50.43%) presented with menstrual disorders which included menorrhagia, polymenorrhoea, dysmenorrhoea and metrorrhagia. About 22.8% complained of pain lower abdomen and 11.74% of white discharge per vaginum. Other less common complaints were mass coming out of vagina in 8.64%, post menopausal bleeding in 2.42% and swelling / mass felt per abdomen in 3.97%.

Table 1 The commonest indication of hysterectomies in our hospital was abnormal uterine bleeding (26.94%) followed by leiomyoma (24.7%) and

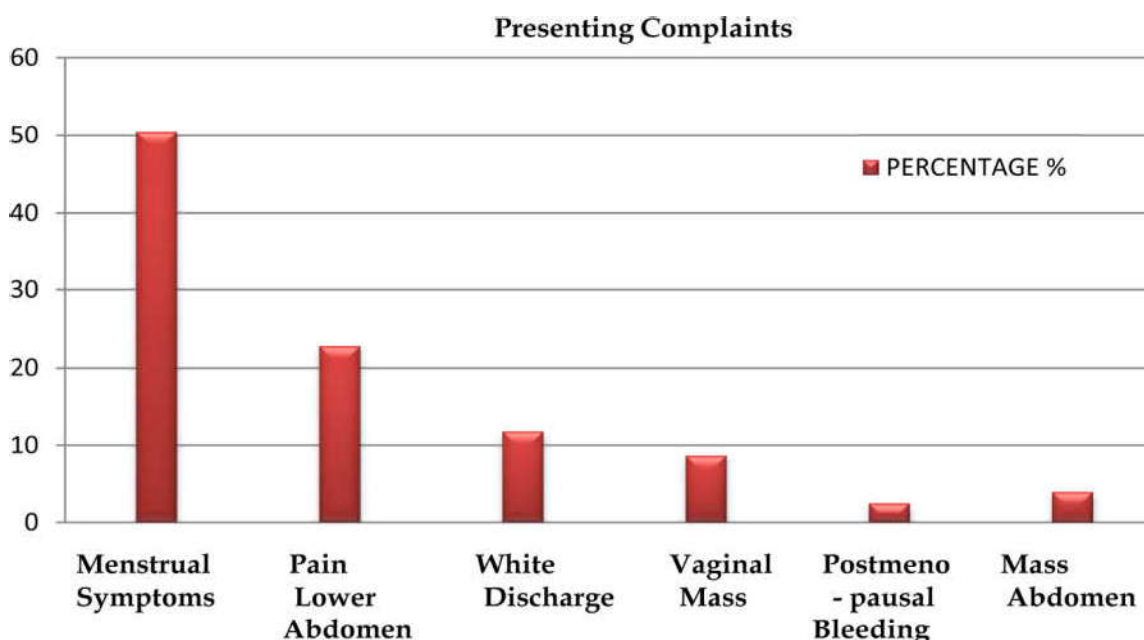


Fig. 3: Distribution of Cases According to Presenting Complaints

Table 1: Distribution of Cases According to Indications of Hysterectomy

Indications	No. of Women	Percentage %
Leiomyoma	143	24.70
Abnormal uterine bleeding	156	26.94
Pelvic Inflammatory Disease	126	21.76
Pelvic Organ Prolapse	44	7.60
Ovarian Cyst	23	3.97
Cervical Dysplasia	13	2.24
Adenomyosis	33	5.70
Endometriosis(Chocolate Cyst)	08	1.38
Carcinoma Cervix	06	1.04
Carcinoma Endometrium	03	0.52
Carcinoma Ovary	07	1.21
Polyp	06	1.04
Post Menopausal Bleeding	11	1.90
Total	579	100%

pelvic inflammatory disease (chronic cervicitis) (21.76%). Other indications were pelvic organ prolapse (7.60%), adenomyosis (5.70%), endometriosis (1.38%), ovarian cysts (3.97%), cervical dysplasia (2.24%), carcinoma cervix (1.04%), endometrial cancer (0.52%), malignant ovarian tumor (1.2%), polyp (cervical and endometrial)(1.04%) and post menopausal bleeding (1.90%).

Figure 4 shows that total abdominal hysterectomy with bilateral salpingoophorectomy (TAH + BSO) was the most common procedure with an incidence 74.27%. Others were total abdominal hysterectomy 11.4%, vaginal hysterectomy with pelvic floor repair

(VH with PFR) (6.22%), total abdominal hysterectomy with unilateral salpingoophorectomy (1.55%), supracervical hysterectomy(1.55%), non descent vaginal hysterectomy (NDVH) (1.03%). Total laparoscopic hysterectomy (TLH) were 2.59 % and extended / Wertheim’s hysterectomy for malignancy accounted for 1.38%.

Table 2 shows the distribution of cases according to clinical diagnosis made after the investigations. About 26.42% cases of adenomyosis, followed by leiomyoma 24.7%, chronic cervicitis 21.76%, proliferative endometrium 8.12% and 7.6 % cases of pelvic organ prolapse were diagnosed clinically.

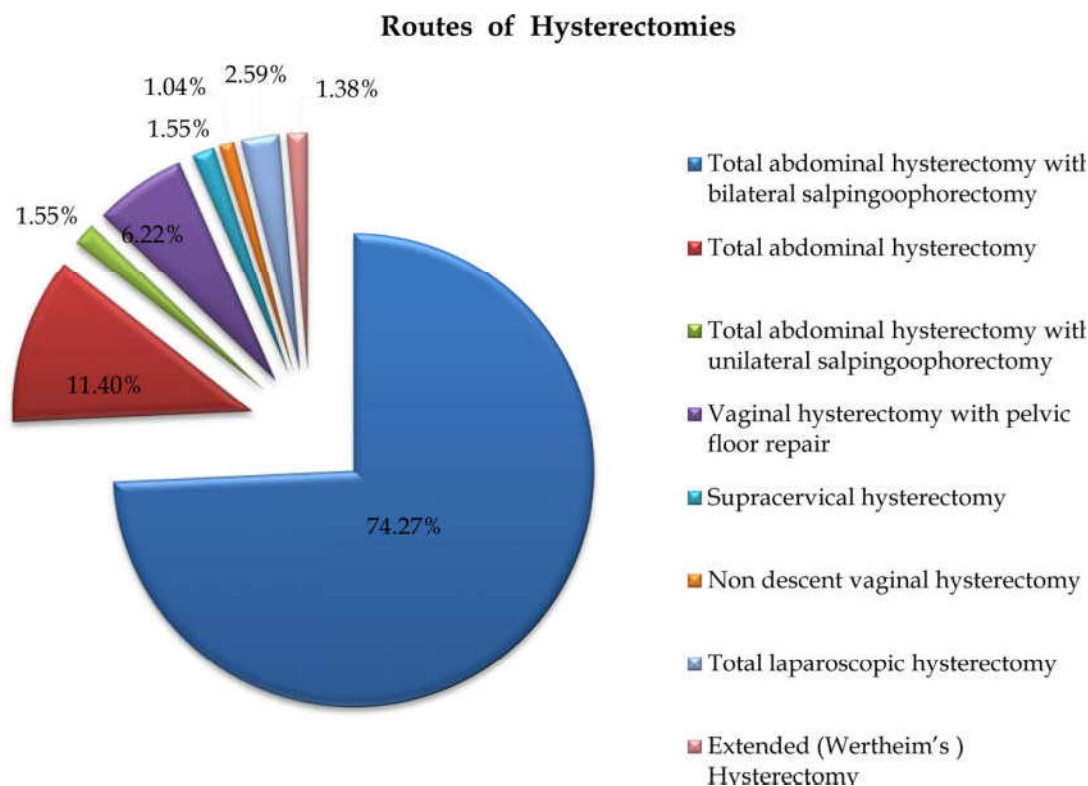


Fig. 4: Distribution of Cases According to Types of Hysterectomies

Table 2: Distribution of cases according to clinical diagnosis

S No.	Clinical Diagnosis	Number	Percentage %
1.	Leiomyoma	143	24.70 %
2.	Adenomyosis	153	26.42 %
3.	Proliferative Endometrium	047	08.12%
4.	Chronic cervicitis	126	21.76%
5.	Benign ovarian cysts	26	04.49%
6.	Endometriosis (chocolate cysts)	05	0.86%
7.	Malignant tumors ovary	07	1.21%
8.	Carcinoma cervix	06	1.04 %
9.	Carcinoma endometrium	03	0.52 %
10.	Polyp	06	1.04 %
11.	Cervical dysplasia	13	2.24 %
12.	Pelvic organ prolapse	44	7.60%
	Total	579	100%

Table 3: Distribution of cases according to histopathological diagnosis

S. No.	Histopathological Diagnosis	Number	Percentage %
1.	Leiomyoma	130	22.45%
2.	Adenomyosis	86	14.85%
3.	Adenomyosis + Leiomyoma	53	9.15%
4.	Endometrial : Proliferative	58	10.02%
	Atrophic	31	05.35%
5.	Chronic cervicitis	132	22.81%
6.	Benign ovarian cysts	23	03.97%
7.	Endometriosis (chocolate cysts)	08	1.38%
8.	Malignant tumors of ovary	07	1.21%
9.	Carcinoma cervix	06	1.04%
10.	Carcinoma endometrium	03	0.52%
11.	Polyp	09	1.55%
12.	Cervical dysplasia	13	2.25%
13.	Normal	20	3.45%
	Total	579	100

Table 4: Sensitivity, Specificity, Positive predictive value, Negative predictive value and p value of clinical diagnosis with histopathological diagnosis

Diagnosis	Leiomyoma	Adenomyosis	Chronic cervicitis	Endometrial Causes	Polyp	Cervical dysplasia	Cancer cervix	Endometrial cancer	Benign Ovarian Cysts	Endometriosis	Malignant Ovarian Tumor
Clinical	143	153	126	47	06	13	06	03	26	05	07
Histopath	130	86	132	89	09	13	06	03	23	08	07
Sensitivity	100%	100%	95.65%	67.94%	75%	100%	100%	100%	100%	77.73%	100%
Specificity	97.1%	88.03%	100%	100%	100%	100%	100%	100%	99.46%	100%	100%
PPV	90.9%	56.21%	100%	100%	100%	100%	100%	100%	88.46%	100%	100%
NPV	100%	100%	98.68%	92.10%	99.48%	100%	100%	100%	100%	99.48%	100%
Accuracy	97.75%	89.63%	98.97%	93.24%	99.48%	100%	100%	100%	99.48%	99.48%	100%
P value	0.368	< 0.001	0.672	<0.001	0.430	1.00	1.00	1.00	0.661	0.403	1.00

Table 3 shows the distribution of cases according to histopathological diagnosis. Histopathological diagnosis confirmed chronic cervicitis in 22.81%, leiomyoma in 22.45%, adenomyosis in 14.85%, adenomyosis and leiomyoma in 9.15%, and proliferative endometrium in 10.02% of cases. Out of 44 cases of pelvic organ prolapse 31 showed atrophic endometrium while 11 showed normal histology.

All the cases of cervical dysplasia, malignant tumours of ovary, carcinoma cervix and endometrial carcinoma diagnosed clinically were confirmed histopathologically. Benign ovarian cysts (4.49%), polyp (1.04%), and endometriosis (0.86%) were 3.97%, 1.55% and 1.38% respectively were confirmed after biopsy.

Table 4 Sensitivity, specificity, positive and negative predictive value for various indications of hysterectomy was calculated.

It was found that clinical diagnosis is 100% sensitive and correlates well with histopathological examination in cases of leiomyoma, adenomyosis, cervical dysplasia, cancer cervix, endometrial cancer,

benign and malignant ovarian tumors. It indicates that clinical diagnosis made by the clinicians accurately coincides with the histopathological reports in these cases.

Whereas, cases with chronic cervicitis, proliferative endometrium, polyp and endometriosis need further histopathological confirmation for reaching to a definitive diagnosis.

Our study also indicates that histopathological examination is 100% specific in diagnosing the cases of chronic cervicitis, endometrial growth pattern, polyp, cervical dysplasia, cervical and endometrial cancer, endometriosis and malignant ovarian tumor.

Table 5 Intraoperative hemorrhage (blood loss more than 500 ml) was encountered in 4 cases. Accidental injury to urinary bladder occurred in 3 cases and injury to bowel in 2 cases. Post operative wound sepsis was seen in 6 cases, urinary tract infection in 10 cases. Sub acute intestinal obstruction developed in 2 cases and they were managed conservatively. Fever was observed in 3.45% cases.

Table 5: Distribution of cases according to complications during surgery

Intra-operative	No. of Women	Percentage
Hemorrhage	04	0.69%
Urinary Tract Injury	02	0.34%
Bowel Injury	03	0.51%
Postoperative		
Fever	20	3.45%
Urinary tract infection	10	1.73%
Wound sepsis	06	1.04%
Subacute intestinal obstruction	02	0.34%
Total	47	8.11%

Discussion

In our study majority of women who had hysterectomy fell in the age group of 31-40 years (43%) followed by 37.65% in 41-50 years age group which is a younger age group as compared to majority of studies. The likely explanation could be that our institution caters mainly to rural tribal population where women opt for major surgery with early perimenopausal menstrual disturbances. According to Chryssikopoulos [10] et al 74.77% women undergoing abdominal hysterectomy were in age group 36-55 years while 70.60% patients undergoing vaginal hysterectomy were in age group 56-75 years. Shergill SK [11] et al in their study found that maximum number of women who had hysterectomy were in age group 31-50 years.

Menorrhagia was the chief complaint in our study 50.73% followed by pelvic pain 22.79% and white discharge per vaginum in 11.74%. According to the study by Lee N.C [12] the three main presenting complaints were menstrual bleeding, pelvic pain and pelvic relaxation. Menorrhagia was also reported as main presenting complaint in studies by Shergill S.K [11] (66%), Singh A [4] (74%) and Khaniki M [13] et al (62.2%). Pelvic pain and excessive white discharge are common in rural tribal population possibly because women are unable to maintain good general hygiene and hygiene during menses. The obvious reasons could be ignorance, illiteracy, poverty, poor sanitation and poor resources.

Abnormal uterine bleeding was the commonest indication for hysterectomy in our study 26.94%

followed by leiomyoma 24.69% and pelvic inflammatory disease with chronic cervicitis 21.76%. Shergill S.K [11] reported leiomyoma as the most common indication (34%) and then abnormal uterine bleeding (26%) and prolapse (24%). Khaniki M [13] also reported Leiomyoma as the most common indication (24.8%). In the study by Clarke A [14], dysfunctional uterine bleeding was more common indication (58%) then leiomyoma 23.2%. Similarly Saleh S.S [15] also found dysfunctional uterine bleeding as the commonest indication followed by fibroid. Sobande A A et al [7] in his study reported abnormal uterine bleeding in 38.8% cases followed by UV Prolapse in 28.7% and abdominopelvic mass 15.1%.

Abdominal route (90.13%) was more commonly employed than vaginal (7.24%) or laparoscopic (2.59%) in our institution. Saleh SS [15] reported 89% abdominal and 11% vaginal hysterectomies in his study. Total abdominal hysterectomy with bilateral salpingoophorectomy accounted for 74.26% of all cases in our study. In majority of the studies as shown in table below abdominal hysterectomy was the commonest type of surgery.

Removal of ovaries was the rule in all post menopausal women but in pre and peri menopausal women informed consent for bilateral oophorectomy was obtained. Conservation of ovaries is advocated in recent times and risks of surgical menopause were fully explained to all patients. Most of the women were unwilling to accept any adnexal lesion post hysterectomy and insisted on complete removal of uterus. Regular postoperative follow up is also not feasible in rural settings.

S. No	Research Studies	Abdominal Hyst.	Vaginal Hyst.	Laparoscopic Hyst.
1.	Lee NC	69%	31%	-
2.	Jacoby et al	64%	22%	14%
3.	Pandey D	74.7%	17.8%	6.6%
4.	Toma A [23]	80.1%	14%	5.9%
5.	Chryssikopoulos	85.33%	14.67%	-
6.	Saleh SS	89%	11%	-
7.	Our study	90.73%	7.24%	2.59%

Preference of the gynecologist for abdominal route and practice could be the reasons for higher rates of abdominal hysterectomies in our study. In our institution younger women with pelvic organ prolapse were treated with sling surgery and Fothergill's surgery while Lefort's surgery was done in elderly high risk women. This can be the cause of lesser hysterectomies by vaginal route.

Women with low income and no health insurance are less likely to undergo laparoscopic hysterectomy (Jacoby et al) [5]. Hence, total laparoscopic hysterectomy is 2.59% of all hysterectomies in our study.

The histopathological diagnosis in our study revealed chronic non specific cervicitis as the predominant lesion similar to Rather G.R [3] where chronic cervicitis was the commonest histopathological finding 84.52% and then leiomyoma 30.8%, adenomyosis 13.89%, adenomyosis plus leiomyoma in 8.02%. In majority of studies showing clinicopathological correlation of hysterectomy specimens leiomyoma was the most common. Sobande AA et al [7], Saleh SS et al [15] and Jha R et al [21] reported 25.8%, 36.5% and 24.9% leiomyomas in their studies respectively .

Ojeda VJ et al [22] found 14% adenomyosis in his study which was consistent with our result. In our study 100% sensitivity was seen for all diagnosis except chronic cervicitis, polyp, endometriosis and proliferative endometrium. The overall sensitivity was 90.36%, specificity was 98.6% and positive predictive value was 85.9% in our study. The accuracy of the diagnosis ranged from 89.6 % to 100% and p - value was significant at 0.001 for adenomyosis and proliferative endometrium. This was because adenomyosis can be missed in clinical diagnosis while proliferative and hyperplasic endometrium can only be diagnosed by histopathology. In all cases of malignancies and cervical dysplasia p value was insignificant because all malignancies can be diagnosed clinically and histopathology is for confirmation and further management.

Histopathological examination of hysterectomy specimens has diagnostic, therapeutic, ethical and legal importance [16]. Clinicopathological correlation of all hysterectomies will be useful in justifying the procedure since controversies regarding indications, justification, misuse and overuse of hysterectomies are often raised.

The overall complication rate in our study was 8.1% which is similar to the study by Pandey D et al [17] 8.5%. Chryssikopoulous et al [10] reported complication rate of 25.30% and Lee NC et al [12] 0.3-43%. The overall rate of visceral damage was 0.5% -

27%. (Gupta S et al [6], Manyonda I et al [1]) which was 0.85% in our study. Al Sunaidi [18] in his study found that total abdominal hysterectomy is the most common cause of bowel obstruction 13.6/1000 total abdominal hysterectomy. Spillsbury K et al [20] reported urinary tract infection 1.6%, haemorrhage 2.4%, genitourinary injury 1.9% and infection other than urinary tract 1.6%. The urinary tract infection rate was similar to our study (1.73%).

Incidence of surgical site infection after hysterectomy was 2 - 21% in the study by Olsen MA et al [19] and risk increased with increased BMI and blood transfusion.

Conclusion

Hysterectomy still remains the widely used modality of treatment in developing as well as developed countries. Majority of the hysterectomy procedures are performed via an abdominal approach. The maximum incidence of hysterectomy is in the age group of 31 to 40. Abnormal uterine bleeding was the main indication for hysterectomy. Every hysterectomy specimen should be subjected to histopathological examination to ensure diagnosis and thus management in particular of malignant diseases. Histopathological analysis correlates well with the pre-operative clinical diagnosis for hysterectomy.

References

1. Manyonda I. Hysterectomy for benign gynaecological disease. *Curr Obstet Gynaecol* 2003;13:159-165.
2. Mukhopadhyaya N, Manyonda IT. The hysterectomy story in the United Kingdom . *J Midlife Health* 2013; 4:40-1.
3. Rather GR, Gupta Y, Bharadwaj S. Patterns of lesions in hysterectomy specimens; a prospective study. *J K Science*. 2013;15(2)63-8.
4. Singh A, Arora AK. Why hysterectomy rates are lower in India. *Indian J Community Med*. 2008;33(3):196-7.
5. Jacoby VL1, Autry A, Jacobson G, Domush R, Nakagawa S, Jacoby A. Nationwide use of laparoscopic hysterectomy compared with abdominal and vaginal approaches. *Obstet Gynecol*. 2009;114:1041-8.
6. Gupta S, Manyonda I. Hysterectomy for benign gynaecological diseases. *Current Obstet Gynaecol* 2006;16:147-53.
7. Sobande AA, Eskander M, Archibong EI, Damole IO. Elective hysterectomy: A clinicopathological review from Abha catchment area of Saudi Arabia. *West Afr J Med* 2005;24:31-5.

8. Gimbel H, Ottesen B, Tabor A. Danish gynecologists opinion about hysterectomy on benign indication : results of a survey. *Acta Obstet Gynecol Scand* 2002;81:1123-31.
9. Sharma C, Sharma M, Raina R et al. Gynecological diseases in rural India: A critical appraisal of indications and route of surgery along with histopathology correlation of 922 women undergoing major gynecological surgery. *J Midlife Health* 2014;2:55-61.
10. Chryssikopolous A, Loghi SC. Indications and results of total hysterectomy. *Int Surg* 1986;71(3):188-94.
11. Shergill SK, Shergill HK, Gupta M, Kaur S. A clinic pathological study on hysterectomies. *J Indian Med Assoc.* 2002;100(4):238-9.
12. Lee NC, Dicker RC, Rubin G, Oray HW. Confirmation of the preoperative diagnosis for hysterectomy. *Am J Obstet Gynecol.* 1984;150(3):283-7.
13. Khaniki M, Shojaie M, Tarafdari AM. Histopathological study of hysterectomy operations in a University clinic in Tehran from 2005 to 2009. *J Fam Reprod Health.* 2011;5(2):51-5.
14. Clarke A, Black N, Rowe P, Mott S, Howle K. Indications for and outcome of total abdominal hysterectomy for benign disease: a prospective cohort study. *Br J Obstet Gynaecol.* 1995;102:611-20. <http://dx.doi.org/10.1111/j.1471-0528.1995.tb11398x> PMID :7654638.
15. Saleh. S.S. Fram K. Histopathology diagnosis in women who underwent a hysterectomy for a benign condition. *Arch Gynaecol Obstet* 2012;285:133943. <http://dx.doi.org/10.1007/s00404-011-2152-y> PMID:22124533.
16. Gupta G, Kotasthane DS, Kotasthane VD. Hysterectomy: a clinicopathological correlation of 500 cases. *The Internet Journal of Gynaecology and Obstetrics.* 2010;14(1):1-5.
17. Pandey D , Sehgal K, Saxena A et al. An audit of indications , complications and justification of hysterectomies at a teaching hospital in India . *International Journal of Reproductive Medicine.* 2014;3:1-5.
18. Al Sunaidi M , Tulandi T . Adhesion related bowel obstruction after hysterectomy for benign conditions . *Obstet Gynecol* 2006;108:1162-1166.
19. Olsen MA, Higham-Kessler J, Yokoe DS et al. Developing a risk stratification model for surgical site infection after abdominal hysterectomy . *Infect Control Hosp Epidemiol* 2009;30:1077-1083.
20. Spilsbury K, Hammond I, Bulsara M Semmens JB. Morbidity outcomes of 78,577 hysterectomies for benign reasons over 23 years *BJOG* 2008;115: 1473-83.
21. Jha R, Pant AD. The histopathological analysis of hysterectomy specimens. *J Nepal Med Assoc.* 2006;45(163):283- 90.
22. Ojeda VJ. The pathology of hysterectomy specimens. *New Z Med J.* 1979;89:169-71.
23. Toma A , Hopman WM , Gorwill RH . Hysterectomy at a Canadian tertiary care facility: results of a one year retrospective review. *BMC Women's health* 2004; 4:10.