ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCES
SCHOOL OF MEDICINE
DEPARTMENT OF OBSTETRICS AND GYNECOLOGY

Review of Histologic Results of Vaginal Hysterectomy Specimens Done for Pelvic Organ Prolapse: 4 year retrospective cross sectional study

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February, 2014
Addis Ababa, Ethiopia
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A THESIS SUBMITTED TO THE SCHOOL OF MEDICINE, COLLEGE OF HEALTH SCIENCES, ADDIS ABABA UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR SPECIALTY CERTIFICATE IN OBSTETRICS AND GYNECOLOGY.

February, 2014
Addis Ababa, Ethiopia
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# Table of contents

Acknowledgment ..............................................................................................................................i  
Table of contents ............................................................................................................................ii  
List of tables .....................................................................................................................................iv  
List of annexes ...............................................................................................................................iv  
List of abbreviations .....................................................................................................................v  
Abstract ..........................................................................................................................................vi  
1. Introduction .................................................................................................................................1  
   1.1 Statement of the problem .................................................................................................1  
   1.2 Literature review ...........................................................................................................3  
   1.3 Justification of the study ..............................................................................................10  
2. Objectives ...................................................................................................................................11  
   2.1 General objectives .........................................................................................................11  
   2.2 Specific objectives ...........................................................................................................11  
3. Methods and material ..............................................................................................................12  
   3.1 Study design ....................................................................................................................12  
   3.2 Study area and period ...................................................................................................12  
   3.3 Source population .........................................................................................................12  
   3.4 Study population ............................................................................................................12  
   3.5 Sample size and sampling procedure .......................................................................12  
   3.6 Operational definitions .................................................................................................13  
   3.7 Data collection tools and procedures ...................................................................13  
   3.8 Data processing and analysis .....................................................................................13  
   3.9 Ethical considerations ....................................................................................................14  
4. Results ........................................................................................................................................15  
   4.1 Demographic characteristics of the study population ...........................................15  
   4.2 Preoperative evaluation status of the study population .........................................16
4.3. Histologic results of the biopsy specimens

5. Discussion

6. Conclusion

7. Recommendation

8. Limitations of the study

9. References

10. Annexes
List of tables

Table 1. Summary of pathologic findings in different researches done on histologic analysis of vaginal hysterectomy specimens done for prolapse symptoms .................................................................................................................. 8

Table 2. Summary of specific pathologic findings by the above researches done on histologic analysis of vaginal hysterectomy specimens done for prolapse symptoms in percent ................................................................. 9

Table 3. Frequency distribution of demographic characters of study population .................................................. 15

Table 4. Frequency distribution of preoperative status of the study population .............................................. 16

Table 5. Summary of incidence magnitude and pattern of Pathologic findings on histologic examination ........................................................................................................... 17

Table 6. Comparison of pathologic findings in this study to different researches done on histologic analysis of vaginal hysterectomy specimens done for prolapse symptoms ......................................................................... 18

Table 7. Comparison of specific pathologic findings in this study to the above researchers done on histologic analysis of vaginal hysterectomy specimens done for prolapse symptoms in percent ................................................................. 19

List of Annexes

Annex 1. Questionnaire
# List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>POP</td>
<td>Pelvic Organ Prolapse</td>
</tr>
<tr>
<td>UP</td>
<td>Uterine Prolapse</td>
</tr>
<tr>
<td>BSO</td>
<td>Bilateral salpingo-oophorectomy</td>
</tr>
<tr>
<td>AUB</td>
<td>Abnormal uterine bleeding</td>
</tr>
<tr>
<td>CIN</td>
<td>Cervical Intraepithelial Neoplasia</td>
</tr>
<tr>
<td>GMH</td>
<td>Gandhi Memorial Hospital</td>
</tr>
<tr>
<td>SPH</td>
<td>Saint Paulo's Hospital</td>
</tr>
<tr>
<td>TASH</td>
<td>Tikur Anbesa Specialized Hospital</td>
</tr>
<tr>
<td>JUH</td>
<td>Jimma University Hospital</td>
</tr>
<tr>
<td>U.S.A.</td>
<td>United States of America</td>
</tr>
<tr>
<td>EB</td>
<td>Endometrial Biopsy</td>
</tr>
<tr>
<td>US</td>
<td>Ultrasound</td>
</tr>
<tr>
<td>UI</td>
<td>Urinary Incontinence</td>
</tr>
<tr>
<td>IRB</td>
<td>Institutional Review Board</td>
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</table>
Abstract

Background: Pelvic organ prolapse is a health concern affecting millions of women worldwide. It can severely affect a woman’s quality of life by limiting physical, social, psychological and sexual function. Significant numbers of women in Ethiopia are also suffering from such problem, even at the young age. Vaginal hysterectomy with pelvic floor repair is one of the frequently performed surgeries in treating women who have completed their family and are not particular about preserving menstrual function. It is a routine practice to send all these hysterectomy specimens for further histopathologic analysis, to look for the presence of incidental pathologic findings. But routine pathologic examination is inappropriately time consuming, costly, and contributes little if anything to the further management of the patient. This study aims to review the histologic results of vaginal hysterectomy specimens done for POP.

Objectives: The aim of this study was to review the histologic results of vaginal hysterectomy specimens done for pelvic organ prolapse.

Methods: A facility based cross sectional study was done to review the histologic results of vaginal hysterectomy specimens that are done only for uterovaginal prolapse. The study was conducted in Tikur Anbesa Specialized Hospital, Department of Pathology. Four years (Sept 2009 - Sept 2013) computer saved data and patients medical records were used to analyze the result. The data was entered, cleaned, and analyzed using SPSS 17.0 statistical software.

Results: Out of the 306 vaginal hysterectomy specimens, histologic analysis was done to all of the cervical tissues (100%). But histological analysis done only to 4 (1.3%) and 7 (1.9%) of the myometrial and the endometrial tissues respectively, because, according to the protocol of the Department of Pathology, tissues other than the cervix will undergo histologic analysis only if they are found to be abnormal on gross examination. Out of the 306 specimens, only 10 (3.2%) show abnormalities on gross examination. On histologic examination, including the cervix, 40 (13.1%) of the specimens had pathologic findings of which only 4 (1.3%) were clinically significant, all of which were precancerous cervical lesions, the rest were benign lesions.

Conclusion and recommendation: The proportion of histologically analyzed parts of the specimen subjected is very low which probably resulted in the reduction in the incidence of overall incidental pathologic abnormalities in this study. Appropriate and complete histologic evaluation of each part of the specimens should be undertaken to get a base line data and help make decisions in the future whether subjecting specimen for routine histopathological analysis after vaginal hysterectomy should be practiced or not.
Introduction

Pelvic organ prolapse (POP) is a bulge or protrusion of pelvic organs and their associated vaginal segments into or through the vagina (1). It is a common and costly affliction of older women (2). It has been estimated that over the next 30 years, the demand for treatment of POP will increase by 45%, commensurate with an increase in the population of women older than 50 years of age (3, 4). Pelvic organ prolapse is a health concern affecting millions of women worldwide. A woman has an estimated lifetime risk of 11 percent to undergo surgery for prolapse or incontinence. Eleven to 19 percent of women will undergo surgery for prolapse or incontinence by age 80 to 85 years, and 30 percent of these women will require an additional prolapse repair procedure (5).

Data from the Women's Health Initiative revealed anterior pelvic organ prolapse in 34.3%, posterior wall prolapse in 18.6%, and uterine prolapse in 14.3% of women in a study. In the study, a significant risk factor associated with prolapse was vaginal delivery. Women with at least one vaginal delivery were twice as likely as nulliparous women to have pelvic organ prolapse (6).

Pelvic organ prolapse results from attenuation of the supportive structures, whether by actual tears or “breaks” or by neuromuscular dysfunction or both. Support of the vaginal canal is provided by the enveloping endopelvic connective tissue and its condensations at the vaginal apex, which form the cardinal uterosacral ligament complex. The endopelvic connective tissue is the first line of support buttressed intimately with the pelvic diaphragm, composed of the levator ani and coccygeus muscles. These muscles provide a supportive diaphragm through which the urethra, vagina, and rectum egress. Uterine prolapse is generally the result of poor cardinal or uterosacral ligament apical support, which allows downward protrusion of the cervix and uterus toward the introitus (7). Researchers agree that POP originates from multiple causes and develops gradually over a span of years. Some of the risk factors are pregnancy, vaginal childbirth, Multiparity, menopause, aging, hypoestrogenism, chronically increased intra-abdominal pressure, chronic obstructive pulmonary disease (COPD), constipation, obesity, pelvic floor trauma, genetic factors(Connective Tissue Disease), race, connective tissue disorders, hysterectomy, spina bifida (8).

POP can severely affect a woman’s quality of life by limiting physical, social, psychological and sexual function. It is estimated that 50% of parous women lose pelvic floor support and subsequently develop a prolapse. However, only 20% of these women are symptomatic (9). Stress urinary incontinence, micturition difficulties, and problems with defecation are all associated with prolapse (10). Although as many as 50% of women older than age 50 have some degree of pelvic organ prolapse(11), fewer than 20% seek treatment (12). This may be due to a
number of reasons, including lack of symptoms, embarrassment, or misperceptions about available treatment options.

Although pelvic organ prolapse is not life threatening, it can impose a significant burden of social and physical restrictions of activities, impact on psychological well-being and overall quality of life. In areas of high parity and little or no access to health care, countless women suffer from problems associated with pelvic organ prolapse with no real possibility of resolution. Mortality from this condition is negligible, significant morbidity or deterioration of lifestyle may be associated with prolapse (13). Despite the apparent prevalence of pelvic support problems, there are few studies of high epidemiologic quality to accurately estimate disease prevalence (14).

Options of treatment could be non surgical (like life style modification, estrogen replacement, pelvic floor exercise and use of pessaries) or surgical that can be either reconstructive[definitive(vaginal hysterectomy) or conservative(suspension)] or obliterative (colpocleiasis) (15). Treatment choice depends on the type and severity of symptoms, age and medical co-morbidities, desire for future sexual function and/or fertility, and risk factors for recurrence (16).

The primary management strategy for severe UVP is surgical (17). Surgical treatment is aimed to relieve symptoms, which may be caused by prolapse, and, in most cases, to restore vaginal anatomy so that sexual function may be maintained or improved without significant adverse effects or complications. Approaches to surgery include vaginal, abdominal, and laparoscopic routes, or a combination of approaches (18). Most commonly, vaginal surgery is preferred because the patient usually has a shorter recovery time with this approach. In addition, it is selected if a vaginal approach is planned for the correction of incontinence (e.g. for placement of a suburethral sling) or when concomitant vaginal reconstruction is indicated (17). In the United States, a vaginal approach is preferred by most for prolapse repair (3).

Vaginal hysterectomy is a patient-evaluated efficient treatment for uterovaginal prolapse with swift recovery and a low rate of complication. Sexual activity and symptoms of urinary urgency were improved (19).

All of the hysterectomy specimens are submitted for histopathological examination to confirm the diagnosis by doing immunohistochemistry for collagen abnormalities and look for other incidental pathologic findings. Sections from all parts of the specimen i.e. myometrium, endometrium and cervix are done, analyzed and reported for findings by pathologists. The Royal Collage of pathologists has decided to have selective examination of biopsy specimens and with regard to vaginal hysterectomies for POP, first the specimen has to be grossly evaluated and those having abnormality on gross examination will be subjected for histopathology. If no gross abnormality is seen, only the cervix should be analyzed, this is because, routine pathologic examination is inappropriately time consuming, costly, and contributes little if anything to the further management of the patient (20, 21).
The Department of Pathology, College of Health Sciences, AAU, follows the above recommendation by the Royal College of Pathologists, the selective histologic examination of the grossly abnormal myometrium or endometrium, though there are no local studies to support such practice.

Review of Literature

1. Pelvic Organ Prolapse

Pelvic organ prolapse is a health concern affecting millions of women worldwide. Despite the apparent prevalence of pelvic support problems, there are few studies of high epidemiologic quality to accurately estimate disease prevalence. This stems in part from a lack of consistent and valid clinical definitions (22). In the United States, POP is responsible for more than 200,000 surgeries per year. And it is the third most common cited indication for hysterectomy (23). Pelvic organ prolapse and urinary and fecal incontinence are significant problems in developing countries with the mean prevalence of 19.7% in a research done in 16 low income countries. Access to health care to manage these conditions is often limited, and women usually have to live with the consequences for the rest of their lives (24).

Pelvic organ Prolapse has accounted for 28% of major gynecological problems in older women of Indian people in a study done to assess the spectrum of gynecologic problems in these people in a hospital setting (25). The annual incidence for hospital admission with a diagnosis of uterine prolapse in Nigerian women was 2.1%. (26). In a community based reproductive health survey in rural Gambia, pelvic organ prolapse was seen in 48% of the study population with 14% of them having severe degree of prolapse that requires surgical intervention (27). A pilot study done in Dabat district, northwest Ethiopia to assess the prevalence and risk factors for Pelvic floor disorders. Of the 395 women were participated in the study recruited by a systematic random sampling technique. Pelvic examination was performed in 294 (74.2 %) participants to assess anatomical prolapse using the simplified Pelvic Organ Prolapse Quantification staging system. The median age of the participants was found to be 35.0 years. Thirty-one women reported urinary incontinence (7.8 %), 25 (6.3 %) symptomatic pelvic organ prolapses and 2 (0.5 %) fecal incontinence. Anatomical pelvic organ prolapse stage II-IV was detected in 162 (55.1 %) of women who underwent pelvic examination. The prevalence of symptomatic prolapse was low despite a high prevalence of prolapse signs. Heavy carrying and prolonged labor increased the risk of anatomical prolapse stage II-IV (28).

2. Vaginal Hysterectomy

A Cochrane review found that the vaginal route, compared with all other routes for hysterectomy, yields better outcomes and fewer complications (29). In the U.S., it is the third most common cited indication for hysterectomy.(5)

In Nigeria, hysterectomy has accounted for 16.4% of gynecological surgeries and Vaginal hysterectomy was responsible for 21.0% of the hysterectomies and accounted for 3.7% of all gynaecological surgeries. Utero-vaginal prolapse was the only indication for the vaginal hysterectomy (30).

In Ethiopia, in a study done in Jimma University Specialized Hospital, POP accounted for 40.7% of major gynecologic operations. Mean age of patients was 42.43 ± 10.4 years and there was a significant association between prolapse and age of patients (p <0.05). Majority of them (80.6%) lived in rural area and there was a significant association between prolapse and residence area.
Prolapse is common among rural, farmer, parous and older women where most of them delivered at home with prolonged labor (31). In Gondar College and Gandhi Memorial hospitals, vaginal hysterectomy for uterovaginal prolapses has accounted for 19.9% and 17.2% of all major gynaecological operations respectively. The mean ages for Gondar and Gandhi subjects were 38.09 +/- 11.52 and 42.17 +/- 13.16 years, respectively. Based on the two hospital records with similar results illustrates that it is mainly a rural problem (32). At TASH vaginal hysterectomy is the second most common indication for hysterectomy accounting for 22.7% and done exclusively for uterine prolapse (33).

According to the results of the studies done in Ethiopia, vaginal hysterectomy for uterovaginal prolapse is the second most common gynecologic operations and all were done for prolapse symptoms (31, 32, and 33).

3. Histopathology

3.1. Hysterectomy specimens:-

In a clinicopathogical review of Elective hysterectomy from Abha catchment area of Saudi Arabia, histopathology of hysterectomy specimens and appendages were reported as abnormal in 179 (56.4%), with uterine fibroids the most common pathology in 82 specimens (25.8%) followed by adenomyosis in 72 specimens(22.7%). Vaginal hysterectomy was performed exclusively for utero-vaginal prolapse (34). Leiomyoma was the commonest finding in hysterectomy specimens in Nigeria (35).

Analysis of the 179 hysterectomy specimens received in the Department of Pathology, King A. Aziz Medical City, Jeddah, the most common pathology identified was leiomyoma 62 (34%), followed by adenomyosis in 33 (18.4%) and endometrial polyp in 24 (13.4%). Changes consistent with uterovaginal prolapse accounted for 15 (8.3%). Other less frequent pathologies identified included disordered proliferative endometrium, endometritis and simple hyperplasia, which were present in 12 (6.75) (36).

In Nepal, Uterine prolapse was commonest indication of hysterectomy (37.1%) and accounted for 98.8% of vaginal hysterectomies, Leiomyoma was the most common pathology found in uterine corpus (27.1%). Chronic cervicitis in cervix, functional cysts in ovaries and paratubal cysts in fallopian tubes were most common histological findings. Hysterectomy specimens may be unremarkable histopathologically, most of which are vaginal hysterectomies done for uterine prolapse (37).

Microscopic assessment of macroscopically normal hysterectomy specimens does not contribute to patient management and is unnecessary in an era of manpower shortage and cost containment (38).

In a retrospective analysis of hysterectomies in Pakistan for presenting complaints, surgical indication, histologic findings, and postoperative complications, histologic findings reconfirmed the clinical diagnoses and the most common indication for hysterectomy was fibroid related menorrhagia n=40(32.5%), followed by third degree uterovaginal prolapse n=30(24.4%), and dysfunctional uterine bleeding 29(23.6%) patients. Clinical diagnoses were related to presenting complaints (p=0.000) and were confirmed by histopathologic findings (p=0.000) (39). In retrospective study done to see the correlation between the preoperative clinical diagnosis and
the final histopathology of hysterectomy specimens, all cases who underwent a hysterectomy over a 2-year period (2008–2009) were analyzed in Jordan University Hospital, Amman, Jordan. The histopathology of the endometrium prior to hysterectomy was reported in 68% of the cases and the most common finding was an endometrium with signs of hormonal imbalance. In the final histopathology reports of the hysterectomy specimens, fibroid was the most common finding reported in 36.5% of the cases. Adenomyosis was reported in 28%, endometrial hyperplasia in 12% and malignancy in 5% of the cases. No specific pathology was reported in 10% of the cases. The clinical and the pathological correlation are poor, when abdominal pain or dysfunctional uterine bleeding (DUB) was the preoperative clinical diagnosis. However, there was a very high correlation when the clinical diagnosis was a fibroid. All hysterectomy specimens should be sent for histopathology regardless of the preoperative histopathology of the endometrium (40).

3.2. Vaginal Hysterectomy Specimens:–
All patients treated by hysterectomy for the diagnosis of uterine prolapse were selected consecutively from the histopathology files of New York University Medical Center from 1993 to 2002, a total of 372 patients. 84% of the patients were 55 years of age. As routine, all specimens were grossly examined. If no gross abnormality was seen, four sections were taken from each specimen: anterior and posterior cervix and anterior and posterior endomyometrium. All gross lesions were sampled. All pathologic significant findings were recorded. Incidental findings were present in 245 of 372 (66%) patients, most of which were leiomyomata or endometrial polyps. Cases with only significant microscopic findings included 14 cases of simple hyperplasia without atypia, 1 case of simple and complex endometrial hyperplasia with atypia, and 1 case of endometrial adenocarcinoma confined to the endometrium. A case of International Federation of Gynecology and Obstetrics grade 2 endometrial adenocarcinoma, invasive to a depth of 35% of myometrium, was grossly identified. Review of slides showed that all significant findings (endometrial hyperplasias and carcinomas) were either present in each of the two sections from anterior and posterior endomyometrium or identified on gross examination. Although one may be tempted to abandon the microscopic examination of uteri from patients with prolapse with negative Pap smears, no other clinical history, and no gross findings, the occasional presence of endometrial carcinoma in such cases argues against such an approach (41).

In a retrospective study of 221 women who underwent vaginal hysterectomy because of prolapse of the uterus at the Medical Centre Alkmaar, the Netherlands, no malignancy or carcinoma in situ of cervix or endometrium was found in the 221 women; 7 times a cervical intraepithelial neoplasia (CIN) 1 with free hysterectomy resection margins was seen. The unexpected finding of a cervical or uterine malignancy at histological examination is extremely rare, A prospective study should ascertain under what circumstances microscopic examination can safely be omitted (42).

In a retrospective analysis of pathology findings at hysterectomy with reconstructive pelvic surgery over a 3.5-year period, Seventeen of 644 patients had unanticipated premalignant or malignant uterine pathology (2.6%; 95% confidence interval, 1.7–4.2). Two (0.3%; 95% confidence interval, 0.09–1.1) had endometrial carcinoma. All cases of unanticipated disease were identified in postmenopausal women (43). A retrospective observational study on 640 patients who underwent hysterectomy for uterine prolapse was performed in a university hospital, Chinese University of Hong Kong. Two cases (0.47%) of endometrial malignancy
were found. One of them presented with post-menopausal bleeding besides the symptoms of urogenital prolapse. The other patient was totally asymptomatic. The pathology of vaginal hysterectomy showed stage IA endometrial carcinoma. Among all the 301 asymptomatic patients, the risk of incidental malignancy was 0.33% (n=1/301). Within the post-menopausal group of asymptomatic patients, the risk of incidental malignancy was 0.40% (n=1/249). The overall risk of malignancy in patients with uterine prolapse was 0.47%. The risk of incidental malignancy in both pre- and post-menopausal patients was 0.33% while that in post-menopausal patients was 0.40%, which also fall into the range of incidence rate of sporadic endometrial carcinoma quoted in other studies, ranging from 0% to 2.6%. Risk of missing uterine malignancy in patients of uterine prolapse is low. Uterine preservation in uterine prolapse surgery is a safe option (44).

In a study which was conducted in Delhi, India with the aim to evaluate the frequency of incidental histopathological findings in uteri removed for prolapse and assessing their clinical relevance, a total 253 cases of hysterectomy with or without salpingoophorectomy were reviewed, incidental findings were found in 77 cases (30.4%). Clinically significant incidental findings including tubercular endometritis (one case) and cervical intra-epithelial neoplasia (two cases) were found and concluded that microscopic examination, although an integral part of pathological examination, as some of these women may require subsequent treatment, reveals significant pathology in very few cases (45). All patients treated with hysterectomy—with or without salpingo-oophorectomy—between 1997 and 2004 for the diagnosis of uterine prolapse were retrieved from the histopathology files of Kocaeli University Faculty of Medicine Department of Pathology (Kocaeli, Turkey). All the hysterectomies performed in the hospital are pathologically evaluated, both grossly and microscopically. There were 68 cases available. The mean age of the patients was 59.5 years (range, 38–77 years), and 69.1% were over 50 years of age. Sixty-two (92%) cases were postmenopausal. All patients had preoperative symptoms regarding the prolapse. There was no history of abnormal uterine bleeding in any of the cases. All the cases had a preoperative, conventional Pap smear. Incidental findings were identified in 36 of 68 cases (52.94%). Microscopic abnormalities of no clinical relevance in the uterus included leiomyoma (20 cases), adenomyosis (14 cases), endometrial polyp (three cases), and one case of endometritis. Cervical hyperkeratinosis was detected in several cases, with the most prominent in older patients with a long duration of symptoms. Cases with significant microscopic findings were identified as five cases of endometrial hyperplasia with no atypia, and one case of endometrial endometrioid adenocarcinoma grade 1 invading more than half of the myometrium. The tumor was located in fundus. It was infiltrating the myometrium but lacked any cervical extension and vascular invasion (pT1b). The patient was 62 years old. She had her last menstruation 14 years ago and did not have hormonal replacement therapy. There was no history of abnormal uterine bleeding, and she had prolapse symptoms for the last 3 years. Additionally, a case with a focal CIN 2 was identified in the cervix, and strongly encourages a microscopic evaluation of all the normal-looking hysterectomy specimens, as the occasional presence of malignant tumors—either in the endometrium or the cervix—can only be accurately diagnosed by microscopic examination (46). There is a case report of an incidental small malignant mixed mesodermal tumor found at vaginal hysterectomy in a 68-year-old woman (47). Of all the patients over the age 40 years, who underwent the vaginal hysterectomy for uterovaginal prolapse at Nishtar Hospital Multan, Gynecology Unit-III, a total of 98 vaginal hysterectomies for uterovaginal prolapse were enrolled during the study period of one year (July 1998 to July 1999.. Cervical cytology of 63 (64.3%) revealed normal results while inflammatory condition was seen in 35 (35.7%) smears.
Every vaginal hysterectomy specimen was subjected for detailed histopathological examination. Histological findings in the endometrium were, proliferative phase found in 19 (19.38%) patients, and 21 (21.42%) patients had secretory phase. Atrophic endometrium was detected in 26 (26.53%), cystic hyperplasia was present in 17 (17.34%) patients and in 15 (15.33%) patients had endometrial polyp. Regarding the histological findings in cervix, 25 (25.53%) cervices revealed normal histology. Chronic cervicitis was detected in 38 (38.77%) of the patients, squamous hyperplasia was present in 10 (10.2%) patients, microglandular hyperplasia was present in 6 (6.12%) patients, squamous metaplasia was present in 18 (18.38%) of the patients. Out of the 98 hysterectomy specimen, occult squamous cell carcinoma was detected in one (1.02%) patient. Majority of the cases had normal histological findings for the myometrium while about quarter of cases had single or multiple leiomyomas of variable sizes and adenomyosis was found in 8.17% of cases. The identification of these abnormal histological findings illustrates the importance of examining all the excised surgical specimens for histopathology whatever is the indication for operation. Results from this study of hysterectomy specimen removed for uterovaginal prolapse strongly supports the practice of submitting the entire excised specimen for histopathology (48). Records of patients in Maywood, USA, undergoing hysterectomy for pelvic organ prolapse (POP) and/or urinary incontinence (UI) from January 2004 to December 2009 were reviewed and abstracted preoperative screening trends and final pathologic diagnoses. Of the 708 women in the study, 125 (18%) had preoperative endometrial biopsy (EB), 43 (6%) had pelvic ultrasound (US), and 21 (3%) had EB and US. Surgical route included vaginal (58%), abdominal (23%), and laparoscopic (18%). Most (97.1%) final pathologic diagnoses were benign. Five cancers (0.6%) were detected; four of these women had normal preoperative screening, including EB, US, or both tests. Screening with EB + US was found to be ineffective in our cohort of patients due to the low prevalence of undetected uterine cancer in asymptomatic women planning POP/UI surgery (49). In a review of pathohistological changes of uterus of 591 women over forty years that have been operated in the 1966-1974 period using the Mayo-Ward technique, pathological changes were found in one third of the cases either on the endometrium (9.2%) or uterine myoma (21.8%). Only once it was a case of cancer in situ and another time micro invasive cervical cancer. The authors have come to the conclusion that vaginal hysterectomy with plastic correction of the pelvic floor is the method of choice (50). One patient had developed a bifocal adenosarcoma, in the endometrium and vagina, after she has undergone remodeling surgery for genitalic prolapse (51).
** Clinically significant findings in percent out of the total specimens.

Table 1. Summary of pathologic findings in different researches done on histologic analysis of vaginal hysterectomy specimens done for prolapse symptoms

<table>
<thead>
<tr>
<th>Investigator</th>
<th>Year</th>
<th>Place</th>
<th>Method</th>
<th>Sample</th>
<th>Finding</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mahajan</td>
<td>2011</td>
<td>Delhi, India</td>
<td>Facility based</td>
<td>253</td>
<td>30.4% (1.1%)**</td>
<td>Aus &amp; New Zealand J. of Ob &amp; Gyn</td>
</tr>
<tr>
<td>Razia Mehboob</td>
<td>2002</td>
<td>Multan, Pakistan</td>
<td>Facility based</td>
<td>98</td>
<td>22% (1.02%)**</td>
<td>Pakistan J. Med. Res</td>
</tr>
<tr>
<td>Frick AC</td>
<td>2010</td>
<td>Cleveland, OH, U.S.A</td>
<td>Retrospective descriptive</td>
<td>644</td>
<td>(2.6%)**</td>
<td>Am J Obstet Gynecol</td>
</tr>
<tr>
<td>Wan OY</td>
<td>2013</td>
<td>Hong Kong, China</td>
<td>Retrospective descriptive</td>
<td>640</td>
<td>(1.7%)**</td>
<td>Aust N Z J Obstet Gynaecol</td>
</tr>
<tr>
<td>Yin H</td>
<td>2004</td>
<td>New York</td>
<td>Retrospective descriptive</td>
<td>372</td>
<td>66% (4.3%)**</td>
<td>Int J Gynecol Pathol</td>
</tr>
<tr>
<td>Schouwink</td>
<td>1997</td>
<td>Alkmaar, Netherlands</td>
<td>Facility based</td>
<td>221</td>
<td>(3.1%)**</td>
<td>Ned Tijdschr Geneeskd.</td>
</tr>
<tr>
<td>Müezzinoglu</td>
<td>2005</td>
<td>Kokkali, Turkey</td>
<td>Facility based</td>
<td>68</td>
<td>52.94% (8.8%)**</td>
<td>J Gynecol Surg</td>
</tr>
<tr>
<td>Yang X</td>
<td>2001</td>
<td>U.S.A.</td>
<td>Case report</td>
<td></td>
<td></td>
<td>J Reprod Med</td>
</tr>
</tbody>
</table>
Table 2. Summary of specific pathologic findings by the above researches done on histologic analysis of vaginal hysterectomy specimens done for prolapse symptoms in percent.

<table>
<thead>
<tr>
<th>Name of Researchers</th>
<th>Yin H</th>
<th>Mahajan</th>
<th>Razia Mehboob</th>
<th>Frick AC</th>
<th>Wan OY</th>
<th>Müezzinoglu</th>
<th>Schouwink</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Myometrium</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leiomyoma</td>
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<td>47.7</td>
<td>29.41</td>
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</tr>
<tr>
<td>Adenomyosis</td>
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<tr>
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<td><strong>Endometrium</strong></td>
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<td></td>
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<td></td>
</tr>
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<td>Endometrial polyp</td>
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<td>19.4</td>
<td>5.2</td>
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<tr>
<td>Endometrial Atrophy</td>
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<td></td>
<td>0.47</td>
<td>1.47</td>
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<td>Tubercular endometritis</td>
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<td></td>
</tr>
<tr>
<td>Hyperplasia</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Without atypia</td>
<td>3.5</td>
<td>15.2</td>
<td>17.34</td>
<td>1.3</td>
<td>0.12</td>
<td>7.35</td>
<td></td>
</tr>
<tr>
<td>Atypical</td>
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<td></td>
<td></td>
<td></td>
<td>1.1</td>
<td>0.12</td>
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<tr>
<td>Endometrial Ca</td>
<td>0.54</td>
<td></td>
<td></td>
<td></td>
<td>0.3</td>
<td>0.30</td>
<td>1.47</td>
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<tr>
<td><strong>Cervix</strong></td>
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<td></td>
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<tr>
<td>Acute cervicitis</td>
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<td></td>
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<td></td>
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<tr>
<td>Chronic cervicitis</td>
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<td>HSV changes</td>
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<td>Endocervical polyp</td>
<td>4.3</td>
<td>1.3</td>
<td></td>
<td></td>
<td>0.78</td>
<td></td>
<td></td>
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<tr>
<td>Bartholin cyst</td>
<td>1.3</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>CIN</td>
<td>2.6</td>
<td>0.3</td>
<td>0.78</td>
<td></td>
<td>1.44</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>Cervical Ca</td>
<td></td>
<td></td>
<td>1.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

According to the above researches, the most common pathologic findings are benign of which uterine myoma is the leading. Pathologic findings which are significant affecting subsequent management of the patients are very rare.
Justification of the study

Ethiopia is one of the World's poorest countries. Out of a population of around 80 million people, 35 million people are living in abject poverty. Most of them live in rural areas with agriculture as their main occupation. Transportation facilities are poorly developed (52). Significant number of women are suffering from uterovaginal prolapse, even at young age (28, 31, 32). Vaginal hysterectomy has been and is being done in many district and tertiary hospitals of the country for uterovaginal prolapse and is the second most common gynecologic surgery (31, 32, 33).

Not all vaginal hysterectomy specimens are sent for histologic analysis, may be due to lack of pathologists and financial problem of the patients. The specimens will be sectioned, analyzed and reported for findings by pathologists. This creates a great burden and work load to the pathologists in the face of short man power, costs a lot to the institution, and is also costly to the patients. In addition routine pathologic examination contributes little if anything to the further management of the patient. Suggestions to reduce the histopathology workload in the UK were selective examination of frequently submitted specimens (20, 21).

Most of the researches done on this issue show insignificant findings in routine examination of vaginal hysterectomy specimens done for prolapse symptoms with recommendation to have a larger study to decide whether or not to omit routine histopathologic analysis of vaginal hysterectomy specimens for prolapse symptoms. This research is done to partially or fully answer this on our context and put a base line data concerning the issue under study for future research undertakings in the country.
Objectives

General objective:-

The main objective of the study was to review the histologic results of routinely sent vaginal hysterectomy specimen done for pelvic organ prolapse.

Specific Objectives:-

1. To determine the magnitude and patterns of incidental pathologic findings on histologic examination of vaginal hysterectomy specimens.
2. To determine the quality of preoperative evaluation done for women undergoing surgery for POP.
3. To evaluate the relevance of routine subjection of vaginal hysterectomy specimens for histopathologic analysis.
Methods and Materials

Study Setting:
The study was conducted in the Department of Pathology, School of Medicine, Addis Ababa University, Tikur Anbessa Specialized Hospital (TASH), Addis Ababa, Ethiopia. TASH is one of the largest governmental teaching hospitals in the country situated at its capital. Many biopsy specimens including hysterectomy specimens, different hospitals of the city are subjected for histopathology. The department has a computer saved copy of all the histologic results that can be retrieved easily.

Study design:
A facility based retrospective cross sectional study to review the histologic results.

Source population
All women who had vaginal hysterectomy for pelvic organ prolapse and specimen submitted to TASH, Pathology Department for histopathologic analysis.

Study population
All women who had vaginal hysterectomy for pelvic organ prolapse and specimen submitted to TASH, Pathology Department for histopathologic analysis during the study period. The histologic results and their medical records from the respective hospitals were retrieved for those who fulfill the inclusion criteria.

Study period:
Sept 11, 2009- August 31, 2013

Inclusion/Exclusion criteria:

- **Inclusion criteria**
  - Histologic results of vaginal hysterectomy specimens done only for prolapse symptoms done during the study period

- **Exclusion criteria**
  - Histologic results of vaginal hysterectomy specimens done for other indications
  - Lost or incompletely analyzed results

Sample size and sampling Procedure:
All histologic results of vaginal hysterectomy specimens done for prolapse symptoms that fulfill the inclusion and exclusion criteria in the study period were included in the study.
Data collection procedures:
Semi structured Questionnaire written in English were used to collect the data. The issues that were included are socio demography, reproductive performance ( parity), the name of the hospital the request is sent from, preoperative evaluation results and noted pathology on physical examination or preoperative investigation, biopsy no and malignant and benign conditions of the specimen detected by histopathology.
All the pathology request papers during the study period were collected from the pool of the department by looking at the clinical diagnosis written as UVP and the name of the procedure done as vaginal hysterectomy.
Patients medical records were collected from the respective hospitals traced using the name of the hospital subjecting the specimen and the patient's medical record number obtained from the request paper.
Histologic results of analyzed vaginal hysterectomy specimens done for prolapse symptoms during the study period were collected from the department electronic record tracing the biopsy no written on the request paper.
The total number of biopsies subjected for analysis and the fraction of hysterectomy specimens with or without BSO (Bilateral salpingo-oophorectomy) during the study period were found from the Department’s registry book.
The principal investigator collected the data using patients’ charts and Pathology Department electronic records of histologic analysis. Data was cleaned, entered and analyzed using SPSS version 17.

Data processing and analysis:
Data were coded, entered and cleaned using SPSS version 17 statistical software. The data was summarized in tables form, and appropriate descriptive statistics was used. Further statistical analysis was not done because of few cases with abnormal findings.

Operational Definitions:
**Pelvic organ prolapse** - a bulge or protrusion of pelvic organs and their associated vaginal segments into or through the vagina.

**Uterovaginal prolapse** - a bulge or protrusion of the uterus with the cervix into or through the vagina.

**Vaginal hysterectomy** - a surgical procedure to remove the uterus with the cervix through the vagina.

**Clinically significant lesions** - Premalignant and malignant lesions of the specimen (endometrial hyperplasia (simple or complex; with or without atypia), cervical intra-epithelial neoplasia (CIN) and carcinoma.

**Clinically insignificant** - Others (leiomyoma, adenomyosis, endocervical polyp, endometrial polyp and acute and chronic cervicitis...)

**Gross Appearance of specimen** - Appearance when seen with naked eye with sectioning through the specimen (Abnormal if- leiomyomas, endometrial irregularity, endometriosis are noted or suspected).
Preoperative pathology- any abnormal finding suspected or detected preoperatively during physical examination of the patient or investigations (Pap smear, EB, or sonography).

Ethical consideration:
Ethical clearance was obtained from Addis Ababa University Department of Obstetrics and Gynecology Research and Publication Committee and the faculty IRB. Permission was obtained from the hospital medical director of BLH. The study information was submitted to Head of the department of Pathology, Addis Ababa University, where it was discussed and allowed to proceed. Permission was also obtained from the medical directors of each hospital to use the patient's medical records.

Study variables

**Independent variables**
- Age
- Parity
- Menstrual status
- Magnitude of prolapse of the pelvic organ
- Occupation
- Address
- Name of hospital submitting the biopsy
- The number and pattern of pathology found preoperatively

**Dependent variable**-
- The presence, and magnitude of pathologic findings in histologic results of vaginal hysterectomy specimens
Results

A total of 20,864 biopsy specimens were subjected for analysis during the study period out of which 1144(5.3%) were hysterectomy specimens with or without BSO. 306 vaginal hysterectomy specimens that fulfill the inclusion criteria were included in the study which accounts for 26.7% of all hysterectomy specimens and 1.4% of all the biopsy specimens in the study area.

The age distribution of the study participants has ranged from 26-90 years with mean age of 49.88±10.86 years, 159 (52%) of them were from rural areas of the country. More than half coming from Addis Ababa and its surroundings 190(62.1%) followed by SNNPR74 (24.2%). The parity of the study participants ranged from 0-12 births with mean parity of 5.86±2.23. Most of the hysterectomy specimens were sent from Gandhi memorial hospital 171(55.9%) followed by TASH 78 (25.5%).

Table 3. Socio-demographic characters of study population

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age groups</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-30</td>
<td>14</td>
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</tr>
<tr>
<td>31-40</td>
<td>57</td>
<td>18.6</td>
</tr>
<tr>
<td>41-50</td>
<td>117</td>
<td>38.2</td>
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<tr>
<td>51-60</td>
<td>75</td>
<td>24.5</td>
</tr>
<tr>
<td>&gt;60</td>
<td>43</td>
<td>14.1</td>
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<tr>
<td><strong>Parity groups</strong></td>
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<td>0</td>
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<td>1-5</td>
<td>124</td>
<td>40.5</td>
</tr>
<tr>
<td>5-10</td>
<td>178</td>
<td>58.2</td>
</tr>
<tr>
<td>&gt;10</td>
<td>2</td>
<td>.7</td>
</tr>
<tr>
<td><strong>Address- Region</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Addis Ababa</td>
<td>190</td>
<td>62.1</td>
</tr>
<tr>
<td>SNNPR</td>
<td>74</td>
<td>24.2</td>
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<tr>
<td>Oromo</td>
<td>30</td>
<td>9.8</td>
</tr>
<tr>
<td>Amhara</td>
<td>4</td>
<td>1.3</td>
</tr>
<tr>
<td>Tigray</td>
<td>8</td>
<td>2.6</td>
</tr>
<tr>
<td><strong>Address- Area</strong></td>
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<td></td>
</tr>
<tr>
<td>Urban</td>
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<td>48</td>
</tr>
<tr>
<td>Rural</td>
<td>159</td>
<td>52</td>
</tr>
<tr>
<td><strong>Institution submitting biopsy</strong></td>
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<td></td>
</tr>
<tr>
<td>GMH</td>
<td>171</td>
<td>55.9</td>
</tr>
<tr>
<td>BLH</td>
<td>78</td>
<td>25.5</td>
</tr>
<tr>
<td>SPH</td>
<td>55</td>
<td>18.0</td>
</tr>
<tr>
<td>OTHERS</td>
<td>2</td>
<td>.7</td>
</tr>
</tbody>
</table>
**Preoperative Status of the study population**

According to the preoperative evaluation done with history, physical examination and investigations, the majority, 236 (77.1%) were postmenopausal. Of the premenopausal patients, 18 (25.7%) were having irregular menstrual cycle and endometrial biopsy was done only to 2 (11.1%) of them, one of which showed proliferative phase and the other a simple endometrial hyperplasia. Of the 236 post menopausal patients only 1 had postmenopausal bleeding for which endometrial biopsy was taken and showed atrophic endometritis.

Most 266 (86.9%) of the patients had a third degree POP at the time of surgery. 20 (6.5%) patients had ulcerated POPs and punch biopsy was taken for 5 of them for not healing with medical and supportive management and the results were; 1 normal, 3 chronic non specific inflammation and the last showed only keratotic change.

Pap smear was done to 180 (58.8%) of patients and there were only 4 CIN I cases. Transabdominal pelvic ultrasound was done to 279 (91.2%) of the patients and only 2 patients had thickened endometrium while the others were reported to be normal. The total number of preoperatively noted pathologies in this study were only 8 (2.6%) of the samples.

**Table 4.** Frequency distribution of preoperative status of the study population

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number(306)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Menstrual status</strong></td>
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<td></td>
</tr>
<tr>
<td>Premenopausal</td>
<td>70</td>
<td>22.9</td>
</tr>
<tr>
<td>Postmenopause</td>
<td>236</td>
<td>77.1</td>
</tr>
<tr>
<td><strong>Ulcer</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ulcerated</td>
<td>20</td>
<td>6.5</td>
</tr>
<tr>
<td>Not ulcerated</td>
<td>286</td>
<td>93.5</td>
</tr>
<tr>
<td><strong>Degree of prolapsed</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st degree</td>
<td>3</td>
<td>1.0</td>
</tr>
<tr>
<td>2nd degree</td>
<td>37</td>
<td>12</td>
</tr>
<tr>
<td>3rd degree</td>
<td>266</td>
<td>87</td>
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<tr>
<td><strong>Pap smear</strong></td>
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<tr>
<td>Done</td>
<td>180</td>
<td>58.8</td>
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<tr>
<td>Not done</td>
<td>126</td>
<td>41.2</td>
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<tr>
<td><strong>Ultrasound</strong></td>
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<td></td>
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<tr>
<td>Done</td>
<td>279</td>
<td>91.2</td>
</tr>
<tr>
<td>Not done</td>
<td>27</td>
<td>8.8</td>
</tr>
</tbody>
</table>
**Pathologic Examination**

All parts of the biopsy specimens (myometrium, endometrium, and cervix) are examined first grossly and the findings thought to be abnormal are described, then any tissue suspected to have gross pathology in the endometrium and myometrium, and all cervical specimen will undergo histologic examination, as stated by the Royal College of Pathologists, regarding histologic evaluation of vaginal hysterectomy specimens for POP (51).

**Gross Examination**

On gross examination of the specimens, cornification was seen on 237 (74.5%) of the cervixes in addition to 2 ulcers and 1 multiple papillary projections. There were also 2 nodular masses on the myometrium, 3 samples with dilated endometrial cavities, and 2 other samples with polypoid endometrial masses. Totally there were 10 abnormalities on gross examination of the specimen, other than cornifications of the cervix, making incidence of gross abnormalities to be 3.3% of the total samples.

**Histologic Examination**

All of the cervixes (100%), 4(1.3%) myometrial tissues and 7(2.3%) endometrial tissues were histologically analyzed. Some of those specimens having endometrial pathology on gross evaluation had histologic examination of both the endometrium and myometrium and vice versa making the number of histologically analyzed endometrial and myometrial tissues out number their gross abnormalities.

The results of histologic analysis of these specimens is described in table 5.

On histologic examination of the cervix, 257 (84%) had epidermal hyperplasia with thick keratin cover and additionally, there were 7(2.3%) Nabothian cysts, 18(5.9%) chronic cervicitis, 1(0.3%) polyp and 4(1.3%) CIN (of which 2 were CIN I, 1 CIN II, and 1 CIN III).

Out of the 306 specimens analyzed only 40 patients had abnormalities on histologic evaluation of either parts of the specimen, other than keratinization, making the incidence pathologic abnormalities in this study to be 13.1%, of which the clinically significant findings were only4(1.3%) of the sample.

Table 5. Summary of Pathologic findings on histologic examination

<table>
<thead>
<tr>
<th>Findings</th>
<th>Number</th>
<th>Percent (%)</th>
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</thead>
<tbody>
<tr>
<td><strong>Uterine Pathology</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Myoma</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td><strong>Endometrial Pathology</strong></td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>Atrophy</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Endometritis</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Polyp</td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td><strong>Cervical Pathology</strong></td>
<td>30</td>
<td>75</td>
</tr>
<tr>
<td>Nabothian Cysts</td>
<td>7</td>
<td>17.5</td>
</tr>
<tr>
<td>Cervicitis</td>
<td>18</td>
<td>45</td>
</tr>
<tr>
<td>Polyp</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>CIN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>II</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>III</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>40</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 6. Comparison of pathologic findings in this study to different researches done on histologic analysis of vaginal hysterectomy specimens done for prolapse symptoms

<table>
<thead>
<tr>
<th>Investigator</th>
<th>Year</th>
<th>Place</th>
<th>Method</th>
<th>Sample</th>
<th>Finding</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mahajan</td>
<td>2011</td>
<td>Delhi, India</td>
<td>Facility based</td>
<td>253</td>
<td>30.4% (1.1%)</td>
<td>Aus&amp;New Zealand J. of Ob&amp;Gyn</td>
</tr>
<tr>
<td>Razia Mehboob</td>
<td>2002</td>
<td>Multan, Pakistan</td>
<td>Retrospective descriptive</td>
<td>98</td>
<td>22% (1.02%)</td>
<td>Pakistan J. Med. Res</td>
</tr>
<tr>
<td>Frick AC</td>
<td>2010</td>
<td>Cleveland, OH, U.S.A</td>
<td>Facility based</td>
<td>644</td>
<td>(2.6%)</td>
<td>Am J Obstet Gynecol</td>
</tr>
<tr>
<td>Wan OY</td>
<td>2013</td>
<td>Hong Kong, China</td>
<td>Facility based</td>
<td>640</td>
<td>(1.7%)</td>
<td>Aust N Z J Obstet Gynaecol</td>
</tr>
<tr>
<td>Yin H</td>
<td>2004</td>
<td>New York</td>
<td>Retrospective descriptive</td>
<td>372</td>
<td>66% (3.7%)</td>
<td>Int J Gynecol Pathol</td>
</tr>
<tr>
<td>Schouwink</td>
<td>1997</td>
<td>Alkmaar, Netherlands</td>
<td>Facility based</td>
<td>221</td>
<td>(3%)</td>
<td>Ned Tijdschr Geneeskde.</td>
</tr>
<tr>
<td>Muezzinoglu</td>
<td>2005</td>
<td>Kokkali, Turkey</td>
<td>Retrospective descriptive</td>
<td>68</td>
<td>52.94% (8.8%)</td>
<td>J Gynecol Surg</td>
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<tr>
<td>Yang X</td>
<td>2001</td>
<td>U.S.A.</td>
<td>Facility based</td>
<td>306</td>
<td>13.1% (1.3**)</td>
<td>J Reprod Med</td>
</tr>
<tr>
<td><strong>This study</strong></td>
<td>2014</td>
<td>A.A. Ethiopia</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

** The magnitude of the clinically significant findings in this study is comparable to those done in India, China and Pakistan.
**Table 7.** Comparison of specific pathologic findings in this study to the above researchers done on histologic analysis of vaginal hysterectomy specimens done for prolapse symptoms in percent.

<table>
<thead>
<tr>
<th>Name of Researchers</th>
<th>Yin H</th>
<th>Mahajan</th>
<th>Razia Mehboob</th>
<th>Frick AC</th>
<th>Wan OY</th>
<th>Müezzinoglu</th>
<th>Schouwink</th>
<th>This study</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Myometrium</strong></td>
<td></td>
<td></td>
<td></td>
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<td>6.5</td>
<td>15.33</td>
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<td>5.2</td>
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<tr>
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Discussion

The mean age of the patients in this study is 49.88±10.86 years, which, is comparable to that done in India (43), but younger by almost 10 years from those done in China, USA and Turkey (41, 42, 44), and older by about 10 years compared to the study done in Ethiopia (31). POP has occurred in Ethiopia and India at a relatively younger age compared to the others that could probably be secondary to the low socioeconomic status in this countries and lower vaginal birth rate in China (42). The mean parity was 5.86±2.23 children which is comparable with the study done in Ethiopia (31) but much higher than those in china which was 3±1.8 (42) and this could be the reason for them to develop POP at younger age. POP has occurred in two of the nulliparous ladies showing that other risk factors are also involved in its development and that both of the patients were engaged in energy demanding activities and the age of one patient was 65 years but the other lady was 38 years old.

The number of pathologic findings identified up on preoperative evaluation were only 8 (2.6%) which so small that association of these findings with the histologic results couldn't be made to see their clinicopathologic correlation. This low incidence could be because of incomplete preoperative evaluation of the patients with transvaginal ultrasound rather than abdominal and endometrial biopsy when appropriate. Because preoperative transvaginal ultrasound is a worthy investigation to see associated gynecological pathology prior to vaginal hysterectomy and can also lead to a change in planned management (53). In this study though trans abdominal ultrasound was done to 91.2% of patients, it didn't detect significant pathologies due to its low sensitivity. Endometrial biopsy was also done only to 11.1% of premenopausal ladies with irregular endometrial cycles and many pathologies might have been missed due to this.

Pap smear was done only to 180 (58.8%) of patients which is very much low, because all patients should undergo screening before planning vaginal hysterectomy as it is the recommended practice (46). Out of the 180 Pap smear done only 4 (2.2%) patients had CIN I and the rest were reported as negative for dysplasia. All the 4 CIN cases detected with Pap smear had normal histology of the cervix on histologic examination. This may be explained by the delay between Pap smear and hysterectomy which may have resulted in spontaneous resolution, or because of over diagnosis with Pap smear, or skill of the Cytopathologists.

Vaginal hysterectomy specimens are sent for histopathology to confirm the diagnosis by looking for collagen abnormalities and to look for the presence of other incidental pathologies. In this setup it is only to see the presence or absence of other associated pathologies that these specimens are subjected.

In this study all parts of the biopsy specimens (myometrium, endometrium, cervix) were examined first grossly and described for findings and then any tissue suspected to have gross pathology has undergone histologic examination. For those with no gross pathology, only the cervix will undergo histologic examination as recommended by the Royal College of Pathologists (50).

Only 2 (0.7%) abnormalities were seen on gross examination of the myometrium and only 5 (1.6%) abnormalities on examination of the endometrium. This low findings could be because the specimens are not well evaluated which in turn decreases the number of myometrial and
endometrial tissues undergoing histologic analysis that are again going to give low incidence of pathologic findings on histologic results of these tissue parts.

In this study only 40 (13.1%) of the 306 specimens were found to have pathologies on histologic examination. This incidence is low when compared to other studies that ranges from 22-66% (39, 41, 42, 43, 44). This low incidence could be because not all parts of the specimen were histologically analyzed, as mentioned above, increasing the chance of missing pathologies.

Myoma was found in only 4 (10%) of the pathologic findings in this study which was actually the commonest finding in other studies with its incidence ranging from 24.9-47.7% (39, 41, 42, 43, 44). This is because small number of myometrial tissue was histologically analyzed and very small and microscopic myomas might have been missed during gross examination.

The clinically significant findings identified after full histologic evaluation of the cervix were only 4 all of which were precancerous lesions accounting for 10% of the total pathologic findings in this study. This is relatively higher when compared to other results which ranges from 0.3-2.6% (39, 41, 42, 43, 44). This is because of the low incidence of endometrial and myometrial pathologies in this study. These findings include; a case of high SIL, a case of CIN I, and two cases of CIN II.

The pathology identified as CIN III or high SIL, the patient didn't have Pap smear done preoperatively, for the patient with CIN II, the Pap smear was negative and for two of the CIN I on histology Pap smear was not done.

The patient found to have endometrial hyperplasia with endometrial biopsy, the hysterectomy specimen was not histologically analyzed for the tissue was said to appear normal on gross evaluation.

The overall incidence of clinically significant pathologic findings in this study out of the total specimens is 1.3% all of which are preinvasive lesions of the cervix and there were no malignant conditions of the myometrium, endometrium or cervix identified.

Due to the low incidence of the pathologic findings in this study for the aforementioned reasons further statistical analysis couldn't be made to see the associations and predictors of the pathologic findings among the independent variables.
Conclusions

1. Preoperative evaluation of patients undergoing surgery for POP was inadequate.

2. The reason for histologic analysis of vaginal hysterectomy specimens in this setup was only to look for the presence of incidental pathologic findings and not to look for the exact pathology causing prolapse.

3. The proportion of parts of the specimens for which histologic analysis was done was so low, that it is not possible to rely on the results.

4. Specimens with additional pathology identified preoperatively were not given specific attention and analyzed.

5. The magnitude of pathologic findings which are clinically significant in this particular review was low (1.3%) and could be due to the reason mentioned above.

6. It was difficult to study associations between the clinically significant pathologic findings with the specific age groups, menstrual status, parity or preoperatively noted pathologies due to the very low incidence of the pathologic findings.
Recommendations

1. Pap smear has to be done to all patients undergoing surgery for POP.

2. For better identification of preoperative pathologies transvaginal ultrasound rather than transabdominal shall be done.

3. Endometrial biopsy should be done to all patients suspected to have endometrial pathology demonstrated by irregular vaginal bleeding, before undergoing vaginal hysterectomy.

4. Microscopic examination of macroscopically normal hysterectomy specimens is unnecessary only if the specimen is grossly evaluated carefully. So careful and thorough evaluation of the specimens is crucial.

5. Though appear grossly normal, those specimens with preoperatively identified pathology should have appropriate histologic evaluation not to miss the findings.

6. Identifying the pathology of pelvic organ prolapse with immunohistochemistry should be also be practiced in the setup.

7. Further prospective study should be done on specimens from different setups of the country after full preoperative work up of the patients and histologic analysis of all parts of the specimen for a more reliable result to the know exact incidence of pathologic findings and make conclusions either to omit or continue routine histologic analysis of such specimens.
Limitations of the study

1. As it is a retrospective study, the study has suffered the biases inherent to such study designs.

2. Because not all specimens are sent to this department, it may be difficult to conclude the exact incidence of the results.

3. It was not possible to analyze the exact pathology causing POP because the department is not doing immunohistochemistry for collagen abnormality.

4. Because not all patients are preoperatively worked up so it is difficult to know the exact magnitude of the preoperative abnormalities and draw their clinicopathologic correlation.

5. Because only specimens with gross abnormality are histologically analyzed, it is difficult to know the exact incidence and magnitude of the abnormalities from these studies and find association with the independent variables.
References

15. Denehy TR, Choe JY, Gregori CA, Breen JL. Modified Le Fort partial colpocleisis with Kelly urethral plication and posterior colpoperineoplasty in the medically compromised


17. George Lazarou, MD, FACS, FACOG. Uterine Prolapse Treatment & Management, Medscape reference Updated: Sep 22, 2011.


Annexes

Questionnaire on demography, reproductive performance and pathologic findings in histologic results of vaginal hysterectomy specimens done for pelvic organ prolapse (English).

Questionnaire

This questionnaire is prepared to collect data for the research intended to review histopathologic results of vaginal hysterectomy specimens done for uterovaginal prolapse analyzed in the department of pathology, Addis Ababa University, BLH.

Questions from 1 to 5 are to be filled from the pathology request paper and patients medical record while questions under number 6 to 7 are to be filled from the histology result papers. (Please encircle the respective letters when detected and write the results legibly when appropriate).

1. Demography
   1.1. Age (yrs)..............................
   1.2. Address
      1.2.1. Region..........................
      1.2.2. Area
         a) Urban
         b) Rural
   1.3. Occupation (Activity engaged)
      a) Household
      b) Heavy duty

2. Parity (in Number)..............

3. Mensus
   3.1. Premenstrual
      a) Regular
      b) Irregular if so Endometrial biopsy (done............................../not done)
   3.2. Postmenopause
      a) Bleeding if so Endometrial biopsy (done............................../not done)
      b) No bleeding

4. Preoperative evaluation
   4.1. Degree of prolapse
      a) 1st
      b) 2nd
      c) 3rd
   4.2. Ulcer
      a) Yes if so biopsy (done................................................./not done)
      b) No
   4.3. Pap smear
      a) Done (result..................)
      b) Not done
   4.4. Pelvic ultrasound
      a) Done and finding
         i) Normal
         ii) Uterine mass
         iii) Endometrial thickening
         iv) Endometrial fluid collection
      b) Not done

5. Name of the institution submitting the biopsy.................. Date received.............

6. Biopsy No. ......................... Date reported.......................... Report interval.........................

7. Pathology
   7.1. Gross Appearance of tissue
      7.1.1. Myometrium
             A) Normal
             B) Abnormal (Result...........................)
      7.1.2. Endometrium
             A) Normal
             B) Abnormal (Result...........................)
      7.1.3. Cervix
             A) Normal
             B) Abnormal (Result...........................)
7.2. Histology

7.2.1. Myometrium
A) Normal
B) Myoma
C) Adenomyosis
D) Sarcoma (describe)

7.2.2. Endometrium
A) Normal (secretory, proliferative)
B) Atrophy
C) Endometritis i) Tuberculosis ii) Other (describe)
D) Polyp
E) Hyperplasia A) Yes (describe) B) No.
F) Cancer A) Yes (Describe) B) No.

7.2.3. Cervix
A) Normal
B) Keratotic changes
C) Nabothian cysts
D) Cervicitis (describe)
E) Polyp
F) Features of HPV changes
G) CIN A) Yes (describe type) B) No.
H) Cancer A) Yes (describe type and stage) B) No.