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RESEARCH ARTICLE

HISTOPATHOLOGICAL SPECTRUM OF LAPAROSCOPICALY TREATED ENDOMETRIOTIC OVARIAN CYSTS

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ABSTRACT

Introduction: Endometriosis is defined as presence of endometrial glands and stroma outside the uterine cavity. This definition suggests that confirming the endometrial stroma and glands in ectopic location histopathologically should be necessary for diagnosis of endometriosis. But in some cases, one or both of these components may be absent or obscured by a superimposed hemorrhagic, inflammatory or fibrotic process and all that remains is a fibrotic area containing haemosiderin macrophages. In such cases only a presumptive diagnosis of endometriosis may be made with the possibility of other hemorrhagic ovarian cysts to be kept in mind.

Materials and Methods: We have studied histopathological reports of laparoscopically treated endometriotic ovarian cysts retrospectively from january 2014 to july 2016 in PSRI hospital and interpreted the results

Results: Out of total 52 endometriotic ovarian cystectomies done, only 27(51.92%) were reported as confirmed diagnosis of endometriotic ovarian cyst. Seven (13.46%) were reported as hemorrhagic corpus luteal cyst, 5 (9.61%) as hemorrhagic follicular cyst, 3(5.76%) were reported as theca lutien cyst, 5(9.61%) as benign hemorrhagic ovarian cyst most likely consistent with endometriotic etiology, 4 (7.69%) as benign hemorrhagic cysts of indeterminate nature and one (1.92%) as non mucinous cystadenoma of ovary. None was reported to be malignant or borderline.

Conclusion: Through this study we would like to emphasise the various possible histopathological outcomes of an apparant endometriotic cyst which would change the further plan of management of patient.

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INTRODUCTION

Endometriosis is classically defined as the presence of endometrial glands and stroma in outside the uterine cavity. Although implanted ectopically, this tissue presents histopathological and physiological responses that are similar to the responses of the endometrium. (Mahmood and Templeton, 1991) The most common sites affected are the ovaries, uterine ligaments, recto- and vesicovaginal septae, pelvic peritoneum, cervix, labia, and vagina. Malignant transformation of endometriosis may occur in up to 1% of women, with the most common site being the ovary. (Dogan *et al*., 2006) The main symptom of endometriosis is pelvic pain, which is often very intense. Dysmenorrhea and other complaints such as dyspareunia and infertility are also seen. (Moen and Schei, 1997; Eskenazi and Warner, 1997). It is important to remember that only 15-20% of women with endometriosis have ovarian endometriomas. Haemorrhagic ovarian cysts usually result from haemorrhage into a corpus luteum or other functional cyst. Secondary to a hormone response, the stromal cells surrounding a maturing graffian follicle become more vascular and after the oocyte has been expelled, the Graafian follicle develops into a corpus luteum with a highly vascular and fragile granulosa layer, which ruptures easily, forming a hemorrhagic ovarian cyst. As the definition suggests that confirming the ectopic endometrial stroma and glands in ectopic location histopathologically should be necessary for the diagnosis of endometriosis. Therefore, this situation leads to the need for surgery like laparoscopy for diagnosis. But in some cases, one or both of these components may be absent or obscured by a superimposed hemorrhagic, inflammatory or fibrotic process and all that remains is a fibrotic area containing hemosiderin macrophages. In such cases only a presumptive diagnosis of endometriosis may be made with the possibility of other hemorrhagic ovarian cysts to be kept in mind.

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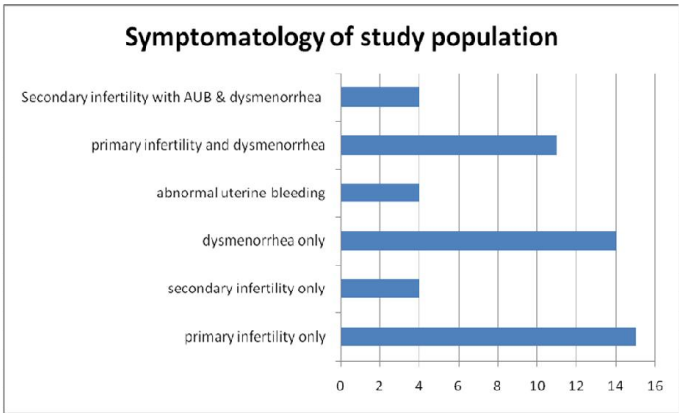
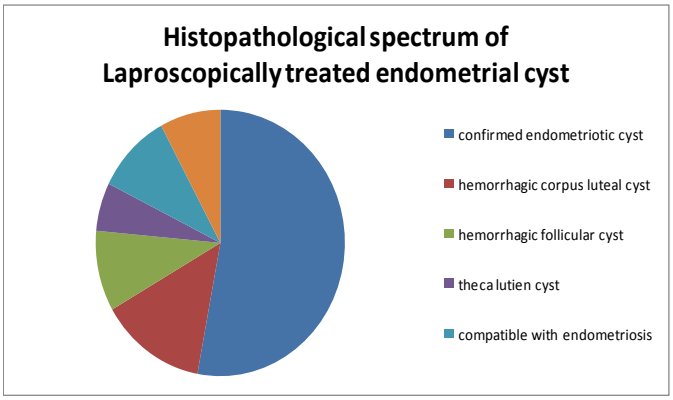
MATERIALS AND METHODS

This is a 31 months hospital based retrospective study of laparoscopically treated endometriotic ovarian cysts carried out at the department of gynaecology endoscopy, pushpawati singhania research institute (PSRI hospital), sheikh sarai, delhi. This study is conducted from January 2014 to July 2016. All the laparoscopic endometriotic cystectomies done in this period were included in this study and their respective histopathological reports were analysed. Demographic data such as age, marital status and parity were included in the study. Ovarian cystectomies other than obvious looking endometriomas were excluded from the study.

RESULTS

Out of total 96 laparoscopic ovarian cystectomies done, 52 were done for obvious looking endometriomas from January 2014 to July 2016. Patient's age ranged from 24 years to 44 years with mean and median age being 30.88 and 31. Maximum number of patients were from age group of 24 years to 34 years. Out of 52 patients, 6(11.53%) patients were unmarried and 46(88.46%) were married. Fifteen (28.84%) out of 52 patients came with complaints of primary infertility only, 4 (7.69%) patients had secondary infertility only, 14 (26.92%) patients had dysmenorrhea only, 4(7.96%) had abnormal uterine bleeding only. Eleven (21.15%) patients had both dysmenorrhea and primary infertility, 4 (7.96%) patients had secondary infertility with abnormal uterine bleeding and dysmenorrhea. Out of total 52 endometriotic ovarian cystectomies done, only 27(51.92%) were reported as confirmed diagnosis of endometriotic ovarian cyst (Figure 1).





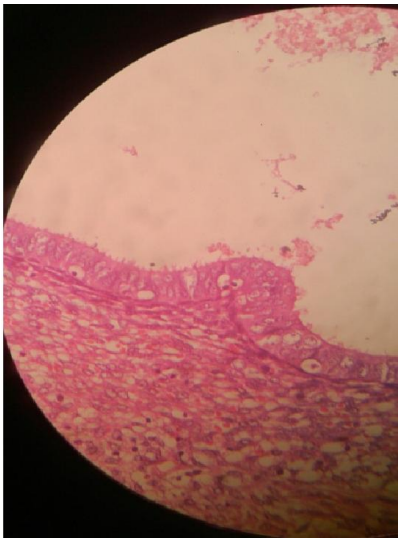


Figure 1. Endometriotic Cyst. Central hemorrhage with a lining of endometrial type epithelium overlying a cellular stroma

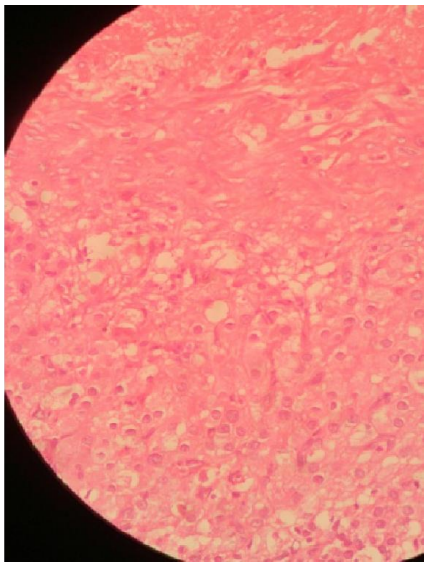


Figure 2. Corpus Leuteal Cyst. Picture showing central blood clott with lining of leutinised cell

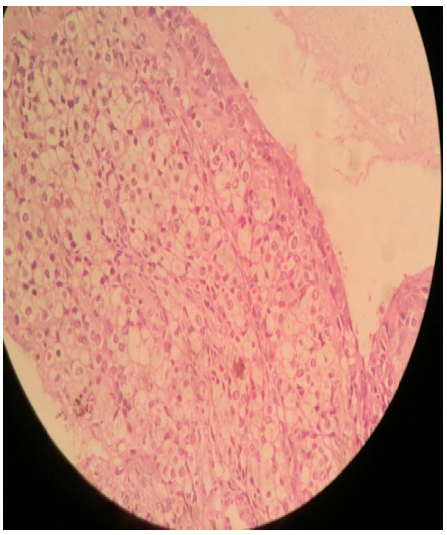


Figure 3. Follicular Cyst. Cyst lumen shows lining of granulose cells

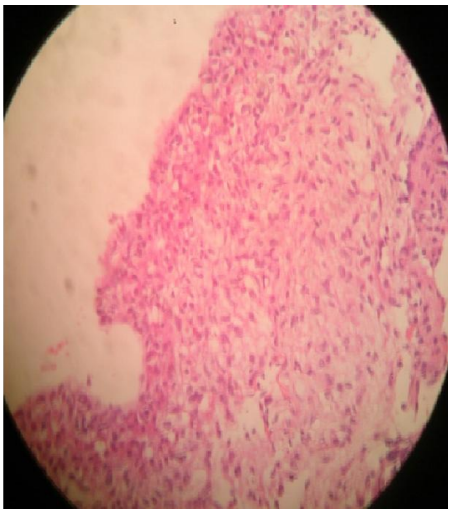


Figure 4. Theca Leuteal Cyst. Picture showing cyst lined by layer of granulose cell and leutinised theca cells

Seven (13.46%) were reported as hemorrhagic corpus luteal cyst (figure 2), 5 (9.61%) as hemorrhagic follicular cyst (Figure 3), 3(5.76%) were reported as theca lutien cyst (Figure 4), 5(9.61%) as benign hemorrhagic ovarian cyst most likely consistent with endometriotic etiology, 4 (7.69%) as benign hemorrhagic cysts of indeterminate nature and one (1.92%) as non mucinous cystadenoma of ovary. None was reported to be malignant or borderline.

DISCUSSION

An ovarian cyst is a common gynecological problem and is divided into 2 main categories; physiological and pathological. (Grimes *et al*., 2014) Physiological cysts are follicular cysts and luteal cysts. Pathological cysts are considered as ovarian tumors, which might be benign, malignant, and borderline. Benign tumors are more common in young females, but malignant are more frequent in elderly females. Follicular cysts form when a follicle fails to rupture at midcycle, leading to its continuous enlargement. Usually these cysts are asymptomatic and disappear without any intervention within one or two months. Similarly, a persistent corpus luteum may fail to disintegrate before menstruation, and enlarge in size. As well, it gives no symptoms in the majority of cases, though it may lead to some alteration in menstruation. However, both follicular and luteal cysts can become haemorrhagic, if bleeding occured within them, leading to rapid increase in size and severe pain. Different characteristics are used to differentiate benign from malignant cysts, but the final diagnosis should always be histological. It is important to take the sonographic picture within a clinical context to narrow the spectrum of the diagnostic options (Walsh *et al*., 1979). The clinical factors to be taken into consideration should include the patient's age, presenting sympotms, personal and family history of ovarian, breast or colon cancers. Simple cysts are commonly characterised by thin smooth wall, anechoic contents, no or only few septa, distal acoustic enhancement. Haemorrhagic ovarian cysts usually result from haemorrhage into a corpus luteum or other functional cyst. (Bass *et al*., 1984) The ensuing haemorrhagic cyst may show the different patterns on transvaginal scan examination. (Yoffe *et al*., 1991) A reticular pattern formed by fibrin deposits is the most common appearance of haemorrhagic cysts. It may simulate the presence of septa, but as they are made of fibrin they may show no vascular markings on colour Doppler mapping. This pattern could be mistaken for mucinous cyst-adenomas. The second most common appearance is a retracted triangular or curvilinear clot with the rest of the cyst being anechoic reflecting the sequestered serum. A bright or echogenic solid look of a fresh blood clot could be seen when scanning is done within a short time after bleeding. This pattern on the other hand could look like a solid ovarian mass. The most common haemorrhagic cyst is the corpus luteum. Because of the variety of its imaging appearances it could be mistaken for endometriomas, serous and mucinous cystadenomas and dermoid cysts. A corpus luteum usually changes texture and disappears within a short period of time while other pathological cysts maintain their shape and texture on repeated examinations. (Kn Okai *et al*., 1994)

A haemorrhagic cysts could be a chance finding during transvaginal scan examination but pelvic pain is the most common presentation (Moyle *et al*., 1983). This is usually midcycle lower abdominal pain after ovulation. It could be due to stretching of the ovarian capsule by the increase in cyst size by blood, leakage of blood into the pelvis causing peritoneal irritation or partial twisting and untwisting of the enlarged ovary. The cyst could attain a large size and free echogenic fluid could be seen in the pelvis during transvaginal scan examination. Endometriomas are cysts of endometriosis within the ovary. Vaginal scanning could show an endometriotic cyst in one or both ovaries as cystic mass with thick wall, homogeneous low level internal echoes and occasionally wall calcifications. (Walsh *et al*., 1979; Coleman *et al*., 1979) However this pattern is seen in other adnexal masses including dermoid and haemorrhagic cysts, tubo-ovarian abscess and ectopic pregnancies. Furthermore purely cystic or cysts with some internal debris or septae and solid-looking appearances have been described in histologically proven cases of endometriosis. This was thought to be due to the natural course of endometriomas which resembles the natural resolution course of any other haematoma. It is estimated that endometriosis afflicts about 4-13% of all women in reproductive age, 25-50% of women with infertility problems, 5-25%of those that are hospitalized because of pelvic pain,50% of young girls with severe dysmenorrhea and up to 7% of women hospitalized with the diagnosis of pelvic masses (Cramer and Missmer, 2002). There is a shift of the time of diagnosis from the late thirties and early forties to the twenties and the cause of this may be extensive use of laparoscopy and delayed childbearing. The use of hormones in menopausal women and obesity may be responsible for the occurrence of endometriosis in postmenopausal age. (Cramer and Missmer, 2002) The intensity of the pain is poorly correlated with the actual extend of the disease and the various local biochemical factors and the local action of activated mast cells may be responsible for this symptom (Vercellini *et al*., 1996). Gross appearance of endometriotic lesions is affected by their age and this is reflected by the various colors they present. Red color characterizes early lesions and yellow-red color reflect the breakdown of blood products. These lesions eventually progress into old or advanced lesions presenting black color.

Hemosiderin is indicated by a yellowish color and occasionally white lesions may be observed indicating the presence of fibrosis. It is possible that the same patient presents endometriotic foci in various stages of development. (Knapp, 1999) The size of the lesions varies as well. In early stages blister-like blebs are observed measuring 0.2-0.3cms in diameter, corresponding to the early red lesion observed mainly in adolescents .As the lesions age, they may enlarge up to 1 cm in diameter and are pigmented, bluish-red, black and eventually white and puckered because of fibrosis. Endometriotic foci are frequently associated with adhesions. The older the patient the more fibrotic the endometriotic lesion is and eventually it atrophies with obliteration of its components. Ovarian endometriotic cysts present a fibrous wall of various thickness and are filled by chocolate-like contend. The interior surface may be smooth or shaggy. Typically endometriosis in women of reproductive age presents histologically as one or more endometrioid glands surrounded by stromal cells, resembling the endometrial stromal cells of the proliferative phase. The glandular epithelium is one layer thick with cuboidal or tall cells and eosinophilic cytoplasm. Nuclei are ovoid with vertical orientation and very rare mitoses. (Signorile and Baldi, 2010) The whole picture is usually consistent with inactive or irregular proliferative endometrium, although typical proliferative or secretory changes may be observed. Cilia may be observed as well. Stromal cells are supported by a delicate reticulin network in which hyperemic small vessels may be observed. In the case of exogenous administration of progestins, cyclically functionic endometriosis or pregnancy, a stromal decidual reaction may be observed. A diffuse infiltration of histiocytes is usually observed Inflammatory cells may be present and a small component of smooth muscle cells especially in the wall of endometrioid cysts may be observed. (Anaf *et al*., 2000) Not all the above described elements are easily identified in endometriosis. Especially in the cases of ovarian endometrioid cysts the lesion appears to be composed of stroma, with fibrosis, lined by hemosiderin-laden macrophages. (Mounsey *et al*., 2006) Many histological sections may be necessary to identify the glandular component of endometriosis. One must keep in mind that macrophages may be connected with hemorrhagic follicles or corpora lutea and only the presence of glandular epithelium or luteinized cells is diagnostic. (Hachisuga and Kawarabayashi, 2002)

Mettler *et al* stated that only 48% of laparoscopically diagnosed endometriosis on ovarian surface were confirmed histopathologically. (Mettler *et al*., 2003) Similarly in our study also we found only 51.92% of laparoscopically diagnosed ovarian endometriosis as confirmed on histopathology. In the ovary, the presence of hemorrhagic follicle cysts or cystic corpora lutea may cause diagnostic problems, although the presence of granular layer cells or luteinized cells aid to the diagnosis. It must be noted that there are cases that the laparoscopic picture is diagnostic but the typical picture of endometriosis cannot be established and only stromal cells and other changes such as hemorrhage and macrophages are observed. In these cases the most appropriate diagnosis is that the lesion is "compatible with endometriosis" with the possibility of other hemorrhagic ovarian cyst to be kept in mind.

Conclusion

Through this study we would like to emphasise the various possible histopathological outcomes of an apparant endometriotic cyst which would change the further plan of management of patient. So better understanding of this varied histopathological spectrum will further help in making correct diagnosis and better management of patients.

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