

Epidemiology and risk factors associated with laparoscopically diagnosed typical and atypical endometriosis among Egyptian women

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ABSTRACT

Objectives: To estimate the prevalence of typical and atypical (subtle) pelvic endometriosis as diagnosed by laparoscopy, and to define risk factors for this disease among Egyptian women.

Design: A prospective cross-sectional observational study.

Setting: Gynecologic Endoscopy Units, Assiut and Al-Azhar University Hospitals, Egypt.

Materials and methods: A total of 2493 patients submitted to video-assisted laparoscopy due to any indication. Diagnostic laparoscopy for evidence of typical or subtle endometriotic ovarian, tubal or peritoneal lesions. Biopsy from the lesion was frequently taken for histopathological evaluation.

Main outcome measures: Laparoscopic and histopathologic diagnosis of pelvic endometriosis. Correlating the different patient characteristics and the risk of endometriosis.

Results: Laparoscopically, 469 patients (18.8%) were diagnosed to be endometriosis. Of those, typical and atypical endometriosis were diagnosed in 220 patients (8.8%) and 249 patients (9.98%) respectively. Laparoscopy was indicated as a part of infertility work-up in 2017 patients (80.9%), for chronic pelvic pain in 304 patients (12.2%), and other indications in 172 patients (6.9%). Endometriosis was diagnosed in 182 (38.8%), 219 (46.6%), and 68 (14.5%) patients in the 3 groups respectively. Biopsy was taken from 367 cases (78.2%) and significantly correlated with laparoscopy ($P=0.001$, $OR=0.8$, 95% CI (0.4 -1.5)). Concerning risk factors, only decreased patient's age (less than 30 years), low parity, and urban residence were significantly correlated with endometriosis. ORs were 0.8, 0.8, and 0.9 with 95% CI of 0.7-3.4, 0.4 -1.6, and 0.4 - 1.2 for the 3 risk factors respectively.

Conclusions: Pelvic endometriosis is a common frequently underestimated health problem in Egypt. It is correlated with patient's age less than 30 years, low parity and urban residence. It should be considered in infertile women and patients with pelvic pain specially those with prior pelvic surgery. Being more commonly diagnosed, subtle endometriosis deserves large sample-sized studies of its impact on women's health and fertility.

Keywords: endometriosis, laparoscopy, epidemiology, Egypt

Endometriosis is a relatively common disorder in reproductive-age women and is associated with significant pain and morbidity (1). At laparoscopy, it appears as puckered black or bluish lesions (2).

However, there are many other lesions that may be more common, more active and more difficult to diagnose than the typical lesions (3). Peritoneal staining may be helpful in localization of some of these subtle lesions (4).

Widely varying figures for the prevalence of endometriosis have been published. Roughly, 3-10% of women in the reproductive age group and 25-35% of infertile women have endometriosis (5).

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It is clear to all gynecologists that its incidence is increasing which may be due to increased clinical awareness, better education in gynecologic pathology, and the availability of better visualization using video-assisted laparoscopy. It is also probable, however, that the disease is actually increasing in frequency (6). Laparoscopic diagnosis of endometriosis increased when atypical lesions were included in the diagnostic criteria of the disease (2). It is a common disease among white women with high income living in civilized countries. However, it was reported in black and oriental women as well (7,8). Many Egyptian gynecologists underestimate the magnitude of this problem based on the general misbelief that endometriosis is a rare disease in Egypt. To date, using the Medline, there is no national figure of the frequency of endometriosis in Egypt. This prospective study aims to estimate the prevalence of typical and atypical pelvic endometriosis as diagnosed by laparoscopy, and to define risk factors for this disease among Egyptian women.

MATERIALS AND METHODS

This study was carried out in the Endoscopy Units at the departments of Obstetrics & Gynecology, Assiut and Al-Azhar Universities, Assiut and Cairo, Egypt, through the period from November 1998 to May 2005. It included 2493 patients in the reproductive age submitted to Video-assisted laparoscopy due to any indication. The study was approved by the medical ethics Committees of the Faculties of Medicine. All patients gave a written consent. For each woman, a detailed history and thorough examination were reported with comment on age, life style (job, education, and smoking), body mass index (BMI), menstrual and contraceptive histories, main complaint and its duration, occurrence of pelvic pain, nodules in pouch of Douglas, or marked tenderness on moving the cervix. Video-assisted laparoscopy was done for all cases using standard double-puncture technique. Systematic assessment of the pelvic organs was done to determine the presence or absence of endometriotic lesions. If endometriosis was diagnosed, it was specified anatomically (ovarian, tubal or peritoneal) and

according to the severity of the lesion. Lesions were either typical or atypical (subtle). Description followed ASRM classification (9). In this classification, peritoneal and ovarian implants are categorized into three subgroups: red (red, red-pink and clear lesions), white (white, yellow-brown, and peritoneal defects), and black (black and blue lesions). Patients were classified into two groups according to the laparoscopic diagnosis of endometriosis. In both endoscopic units, experienced endoscopic surgeons who accepted to kindly participate in this study and to meticulously fill-in the previously designed study sheets, were asked to take biopsy for histopathological examination whenever possible. A data entry file was created on EPI Info version 9. After complete data entry the file was converted to SPSS file. Analysis was undertaken using SPSS version 11 and expressed as mean \pm SD. Statistical methods were applied including descriptive statistics (frequency, percentage, mean and standard deviation) and tests of significance (two-tailed student t-test, analysis of variance (ANOVA) and chi-square). P value was considered as statistically significant when less than 0.05. Kappa statistics was used to detect agreement between laparoscopy and histopathology.

RESULTS

This study comprised 2493 patients submitted to video-assisted laparoscopy due to different indications. Laparoscopic diagnosis of pelvic endometriosis was seen in 469 patients (18.8%) mainly of young age (less than 30 years), with low parity, and urban residence as shown in table 1. Positive cases had a statistically significant range of menstrual disturbances (Table 2). Laparoscopically, typical and atypical endometriosis were diagnosed in 220 patients (8.8%) and 249 patients (9.98%) respectively. Laparoscopic diagnosis of endometriosis followed the revised ASRM Classification (1997) as shown in table 3. Laparoscopy was indicated as a part of infertility work-up in 2017 patients (80.9%), for chronic pelvic pain in 304 patients (12.2%), and other indications in 172 patients (6.9%). Endometriosis was diagnosed in 182 (38.8%), 219

Table 1. Patient Characteristics.

	Positive laparoscopy 469 patients (18.8%)	Negative laparoscopy 2024 patients (81.2%)	P Value	OR	95% CI
Age (y) (M±SD)	26.8±5.3	29±5.3	NS	0.8	0.7-3.4
Low parity (No, %)	715 (76.2%)	730(47%)	0.001	0.8	0.4-1.6
Urban residence (No, %)	667 (71.1%)	705 (45.3%)	0.001	0.9	0.4-1.2
Occupation (No, %)	309 (32.9%)	580 (37.3%)	NS	0.3	0.3-1.4
Education (y) (M±SD)	10.6±2.1	9.3±2.5	NS	0.4	0.2-2.9
BMI (M±SD)	21.6±2.8	20.2±3.6	NS	0.4	0.3-4.9
Prior pelvic surgery	90 (19.1%)	239 (11.8%)	0.0001	0.56	0.43-.74
Contraception	56 (5.9%)	124 (7.9%)	0.0001	0.48	0.36-0.67

Note: NS= not significant.

(46.6%), and 68(14.5%) patients in the 3 groups respectively. Primary infertility was diagnosed in 422(89.9%) and 1760(86.9%), while secondary infertility was diagnosed in 47(10%) and 263(12.9%) patients in the positive and negative cases respectively without significant difference. However, the duration of infertility was significantly longer ($p= 0.001$) in the positive group (9.3 ± 1.7 vs. 4.5 ± 1.2), OR= 0.8, CI=0.5-2.1. In all subgroups, biopsy was taken from 367 cases (78.2%) and agreed with laparoscopy (kappa coefficient = 0.78 (table 4).

DISCUSSION

Endometriosis seems to be a self-limited disease in many women as it has been reported that only 1-8% of cases of endometriosis are diagnosed while the majority of cases are undiagnosed (10,11). This concept is supported by observations that 64-67% of patients with infertility and endometriosis are asymptomatic (12, 13). Furthermore, it was found that 50% of patients

undergoing sterilization and 61% of patients having surgery for myoma had asymptomatic endometriosis (14). In the present study, laparoscopic diagnosis of endometriosis is reported in 469 patients (18.8%). Estimates of the incidence of endometriosis based on laparoscopic diagnosis appeared in the 1970s where 23% (15/66) of infertile women had endometriosis compared to only 1.3% (4/296) of the parous population undergoing sterilization (15). Likewise, it was reported in 21%(21/100) versus 2%(4/200) (16) and 48%(18/38) versus 5%(2/43) (17) in infertile vs. fertile women respectively.

The old AFS classification published in 1985 (18) lacks description of the morphology of the disease. In this study, we relied on the recent ASRM classification (9) which includes information on the morphologic appearance of the disease. We diagnosed subtle endometriosis in 249 (11.7%) patients. The clinical significance of such lesions is controversial. In a previous study of 86 patients, 40% of patients had minimal or mild endometriosis at laparoscopy despite being asymptomatic.

Table 2. Menstrual history

	Positive laparoscopy 469 patients (18.8%)	Negative laparoscopy 2024 patients (81.2%)	P Value	OR	95% CI
Age at menarche (y) (M±SD)	12.3±2.5	13.6±2.7	NS	0.7	0.3-2.0
Days of Menses (M±SD)	5.8±1.5	3.6±1.2	0.01	0.8	0.6-1.4
Cycle length (M±SD)	27.7±3.6	31.9±4.2	0.04	0.7	0.8-2.1
Dysmenorrhea (No, %)	297 (63.3%)	993 (49%)	0.0001	0.56	0.45-0.69
Cycle regularity	248 (52.8%)	1166 (57.6%)	NS	1.21	0.99-1.48

NS= not significant.

Table 3. Revised ASRM classification of 469 endometriosis patients.

Stage	No.	%
Stage I	164	34.9 %
Red lesions	100	
White lesions	21	
Black lesions	43	
Stage II	186	39.6 %
Red lesions	73	
White lesions	55	
Black lesions	58	
Stage III (black lesions)	48	10.3 %
Stage IV (black lesions)	71	15.2 %

The authors suggested that minimal endometriosis is partly a para-physiologic condition that is frequently self limited or resolve spontaneously (19). This opinion is supported by studies stated that endometriosis-associated dysmenorrhea was not related to typical or atypical peritoneal implants (20). More recently, invisible microscopic endometriosis is considered as an unproven entity which retards intellectual progress in the study of endometriosis (21). On the other hand, subtle lesions are supposed to be more active than typical lesions (22). Practically speaking, it seems to be difficult to treat all atypical peritoneal lesions diagnosed at laparoscopy which may damage a wide area of the peritoneum. We suggest biopsy-taking prior to any laparoscopic management. Whether to treat them surgically or by hormonal treatment remains to be studied.

In this study, biopsy was taken from 367 (78.2%) patients and confirmed the diagnosis of endometriosis in 300 (81.7%) cases. This high percentage of agreement could be explained by the late presentation of many patients when endometriosis is evident laparoscopically. Literally, histopathological confirmation of endometriosis is variable which is attributed to the different morphologic appearances of

endometriotic lesions diagnosed at laparoscopy. For instance, in pigmented lesions, it was confirmed in 73-76% (23, 24) and raised to 88.6% in the presence of complex or multiple pigmented lesions; while in non-pigmented lesions the incidence declines as low as 57% (24). On the other hand, histologic diagnosis was confirmed in 50% of cases diagnosed laparoscopically in a recent study (25). Therefore, meticulous histopathological confirmation should still be the first step in laparoscopic diagnosis and treatment of suspected endometriosis (26). Proximity of laparoscopic and histopathologic diagnosis could be achieved by proper recording of the endometriotic lesions and continuous cooperation and research with the histopathologists.

In this study, only decreased patient's age (less than 30 years), low parity, and urban residence were significantly correlated with endometriosis. Likewise, endometriosis was diagnosed more likely in nulliparous women (27-29). The prevalence of endometriosis decreases in the early forties (30). Being more common in the urban women may be explained by the more medical awareness and educational level. Urban residence is associated with increasing problems of pollution with a possible link between one of the most harmful components of pollution, dioxin, and endometriosis (31). In this study, prior pelvic surgery was significantly correlated with endometriosis which may be explained by endometriosis predilection of these scars. Moreover, these operations could be performed originally to treat some endometriotic lesions. Endometriosis was significantly diagnosed in patients with history of contraception. Intrauterine contraceptive device use may be associated with increased prevalence of endometriosis as it may cause menorrhagia with subsequent retrograde menstruation (32). The exact relationship of oral contraceptive pills to the risk of endometriosis is controversial (33).

Table 4. Laparoscopic versus histopathologic diagnosis (367)

Laparoscopic diagnosis	Histopathologic diagnosis			
	Endometriosis	Hemorrhagic cysts	Non-specific infection	Others
367	300 (81.7%)	30 (8.1%)	17 (4.6%)	20 (5.4%)

It is concluded that pelvic endometriosis is a common frequently underestimated health problem in Egypt. It is correlated with patient's age less than 30 years, low parity and urban residence. It should be considered in infertile women and patients with pelvic pain specially those with prior pelvic surgery. Subtle endometriosis is a commonly seen finding at laparoscopy. Its diagnosis would help prompt early treatment before the appearance of sequels of typical lesions. Increased doctor and patients' awareness, more research on the methods of diagnosis and optimal lines of treatment, and proper medical registration are required to perfectly deal with this enigmatic disease.

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