Evaluation of Endometriosis in Infertility: Incidence, Clinical Features, and Laparoscopic Findings

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Abstract

Background and objective: Endometriosis is defined as the presence of endometrial glands and stroma-like lesions outside of the uterus. To study the incidence, clinical features, and their association with laparoscopic findings in patients with endometriosis who underwent evaluation for infertility.

Materials and methods: It is a hospital-based prospective study conducted at the Department of Obstetrics and Gynaecology, Mahatma Gandhi Medical College and Hospital, Jaipur, from January 2019 to June 2020 among women with complaints of infertility who underwent diagnostic hysterolaparoscopy.

Results: In our study, out of 104 infertile patients who underwent diagnostic laparoscopy for evaluation of infertility, 32 patients (30.8%) had endometriosis, 21 patients had involvement of pouch of Douglas (POD) followed by the uterus and the ovaries. Most of the patients belonged to stage III (37.5%) followed by stage I and stage II. 22.1% of patients with endometriosis had dysmenorrhea followed by chronic pelvic pain and dyspareunia in 18.3 and 14.4%, respectively. In our study, 68.8% of patients with endometriosis had primary infertility and 31.2% had secondary infertility. Symptoms, such as, chronic pelvic pain, dysmenorrhea, and dyspareunia, in endometriosis patients were statistically significant. 65.7% of patients with endometriosis had adhesion.

Conclusion: Endometriosis in infertile females is very common and it is increasingly being detected by diagnostic modalities like laparoscopy in the evaluation of infertility. Though most females are asymptomatic or have symptoms like dysmenorrhea, chronic pelvic pain, and dyspareunia which raise the suspicion of endometriosis.

Keywords: Adhesions, Dyspareunia, Endometriosis, Hysterolaparoscopy, Infertility.

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Introduction

Endometriosis is a medical enigma in the females of the reproductive age group. It is characterized by the presence of endometrial tissue outside the uterine cavity. It mostly involves the ovaries, pelvic peritoneum, cul de sac, broad ligament, and uterosacral ligaments.[1] It is also found on other uncommon remote sites, such as, lungs, brain, lymph node, nerves, previous surgical scars, and umbilicus.[2,3]

Endometriosis has a very diverse range of presentations that include pelvic pain, dysmenorrhea, dyspareunia, or subfertility.[4]

The prevalence of endometriosis in reproductive women is around 10–20% and endometriosis is the cause of infertility in 30–70% of the patient coming for infertility investigation.[5,6] Thirty to fifty percent of women with endometriosis are infertile, while 25–50% of infertile women have endometriosis.[7] It occurs in 6–22% of women undergoing tubal ligation. Fifteen to eighteen percent of women with chronic pelvic pain and 21 to –65% of women evaluated for infertility.[8]

Symptoms generally do not correlate well with stages of endometriosis, and the meantime of surgical diagnosis from onset of symptoms in the United States is about 12 years.[9] A definitive diagnosis of endometriosis can only be made via laparoscopy and is considered as the gold standard.[10]

Whether histology should be obtained when peritoneal disease alone is present is controversial. Visual inspection is usually adequate but histological confirmation of at least one lesion is ideal. In case of ovarian endometrioma (>4 cm in diameter) and deeply infiltrating disease, histology is recommended to exclude rare cases of malignancies.[10]

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Considering the current burden of endometriosis, the diagnostic challenges faced by gynecologists, and the paucity of local data, the study aims to calculate the frequency of endometriosis in women who underwent diagnostic laparoscopy for the evaluation of primary or secondary infertility along with which staging of endometriosis and its association with clinical signs and symptoms was also done. Staging of endometriosis was done according to the American Society for Reproductive Medicine Revised Classification of Endometriosis.[11]

Whereas, the affiliation between endometriosis and infertility remains unclear. There is strong evidence that infertility can cause considerable emotional and financial burdens for women. According to various researches on women's experiences of infertility, women benefit from supportive care and timely

treatment. These circumstances make us medical professionals realize that it may be difficult to provide care, i.e., evidence-based, sensitive, and appropriate for each woman.

MATERIALS AND METHODS

It was a hospital-based prospective study conducted in the Department of Obstetrics and Gynaecology, Mahatma Gandhi Medical College and Hospital, Jaipur from January 2019 to June 2020. The study aimed to determine the incidence and staging of endometriosis based on laparoscopic findings and its association with clinical symptoms in women with infertility.

Inclusion Criteria

Women presenting with infertility, posted for hysterolaparoscopy, and willing to participate in the study.

Exclusion Criteria

Patients with medical conditions that are contradictory for the laparoscopic procedure are excluded (e.g., heart diseases-NYHA grade III and grade IV, blood coagulation disorders, uncontrolled hypertension, and uncontrolled diabetes).

All collected data were entered into SPSS version 20. Categorical data are expressed in percentages, means, and standard deviation. The unpaired t-test was used for quantitative data and the Chi-square test was used for qualitative data. The level of significance was set at $p < 0.05$.

OBSERVATIONS AND RESULTS

Incidence of endometriosis in our study was 30.8% (Fig. 1). Endometriosis was seen maximum in a pouch of Douglas (POD) (20.2%) followed by ovaries (14.4%), uterus (12.5%), and uterosacral ligament (4.8%) (Figs 2 and 3).

Table 1 shows the distribution of study participants according to stage and type of infertility. 68.8% of patients with endometriosis had primary infertility, whereas 31.2% of patients had secondary infertility. Participants with primary infertility belonged to stage III (34.3%) followed by stage I (21.8%), stage II (9.3%), and stage IV (3.1%), respectively.

Participants with secondary infertility belonged to stage I (12.5%) followed by stage IV (9.3%), stage II (6.25%), and stage III (3.1%), respectively.

In comparison, stage and type of infertility showed statistically non-significant results.

Table 2 shows the distribution of study participants according to the site of endometriosis and symptoms. It is evident from the table that a maximum number of patients with endometriosis and complaints of chronic pelvic pain were likely to have diseases in ovaries (40%), the POD (33.3) followed by uterus (15.4%).

A maximum number of patients with dysmenorrhea were likely to have diseases in the POD (47.6%) followed by ovaries (46.7%) followed by uterus (30.8%).

A maximum number of patients with dyspareunia were likely to have in uterosacral (80%) followed by ovaries (40%) followed by the POD (33.3%) followed by uterus (13.2%) and only one case of endometriosis in a tube was detected which had dyspareunia as a symptom.

Endometriosis has a higher complaint of dysmenorrhea, chronic pelvic pain, and dyspareunia. It is evident from the table that in endometriosis patients, dyspareunia was present in 73.3% of cases, dysmenorrhea in 65.2% of cases, and chronic pelvic pain in 63.2% of cases. Comparison of each of symptoms and endometriosis showed bilaterally positive chrompertubation test (CPT) while 9% were positive only in one tube and 13% showed no spill in both the tubes (Fig. 4 and Table 3).

In endometriosis patients, 65.7% of patients had adhesions and 34.3% of patients did not have adhesions. In non-endometriosis patients, 5.6% of patients had adhesions, whereas 94.4% of patients did not have adhesions. The comparison showed statistically significant results (Table 4).

DISCUSSION

The incidence of endometriosis in our study was 30.8% (32/104). 44.1% of prevalence were recorded by Tomar et al. at Indore, M.P. and Valson et al. was showed 25% at Wayanad district of Kerala.[12,13] Calhaz-Jorge et al. reported its prevalence at 45% in Portuguese infertile women.[14]

Endometriosis was seen maximum in the POD (20.2%) followed by ovaries (14.4%), uterus (12.5%), and uterosacral ligament (4.8%).
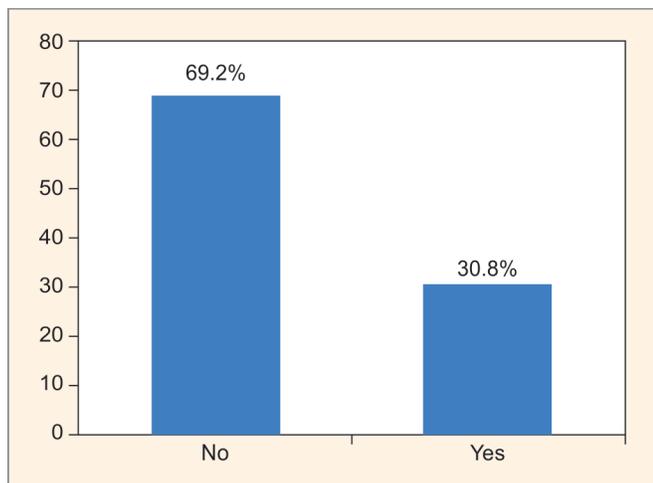

Fig. 1: Distribution of study participants according to the incidence of endometriosis
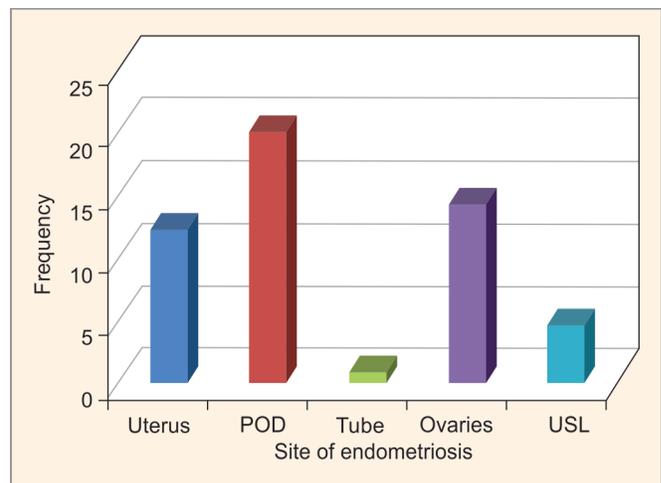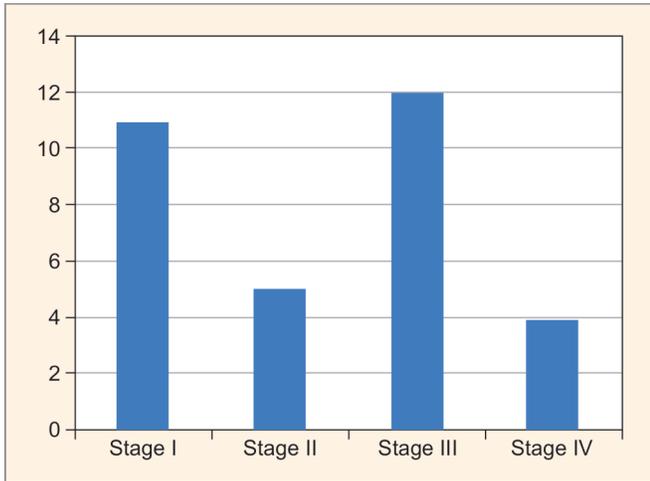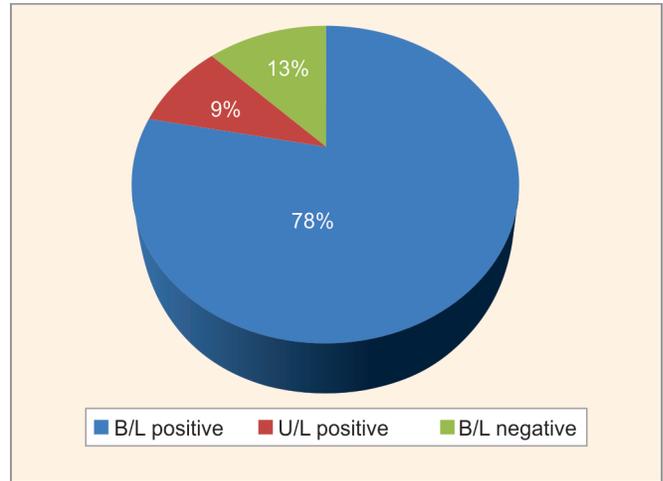

Fig. 2: Distribution of study participants according to the site of endometriosis

Fig. 3: Distribution of study participants according to stage of endometriosis

Fig. 4: Distribution of patients according to chromopertubation (CPT) in endometriosis patients

Table 1: Distribution of study participants according to stage and type of infertility in patients with endometriosis

		Type of infertility		
		Primary	Secondary	Total
I	N	7	4	11
	%	21.8	12.5	
II	N	3	2	5
	%	9.3	6.25	
III	N	11	1	12
	%	34.3	3.1	
IV	N	1	3	4
	%	3.1	9.3	
Total	N	22	10	32
	%	68.8	31.2	

p value = 0.07 (non-significant)

Table 2: Distribution of study participants according to the site of endometriosis and symptoms

		Chronic pelvic pain	Dysmenorrhea	Dyspareunia
Uterus	N	2	4	3
	%	15.4	30.8	13.2
POD	N	7	10	7
	%	33.3	47.6	33.3
Tubes	N	0	0	1
	%	0	0	100
Ovaries	N	6	7	6
	%	40	46.7	40
USL	N	0	1	4
	%	0	20	80

Table 3: Distribution of study participants according to the presence of endometriosis and symptoms

		Endometriosis			
		Non-endometriosis	Endometriosis	Total	p value
Chronic pelvic pain	N	7	12	19	0.001 (S)
	%	36.8	63.2		
Dysmenorrhea	N	8	15	23	0.001 (S)
	%	34.8	65.2		
Dyspareunia	N	4	11	15	0.001 (S)
	%	26.7	73.3		

p value = 0.001 (S)

Table 4: Distribution of study participants according to adhesion and endometriosis

			Endometriosis		
			Non-endometriosis	Endometriosis	Total
Adhesions	No	N	68	11	79
		%	94.4	34.3	75.9
	Yes	N	4	21	25
		%	5.6	65.7	24.1
Total		N	72	32	104

Tomar et al. were found that the uterosacral ligament (28 cases), pelvic wall (24 cases), POD (16 cases), ovarian fossa (13 cases), and endometrioma (9 cases).

In our study, stage distribution was as 34.38, 15.6, 37.5, and 12.5% these findings approximately correlate with studies done by Matorras et al. who found stage distribution to be as stage I, II, III, and IV as 50.6, 22.6, 14.3, and 12.06%, respectively. Parazzini et al. reported stage distribution as 11.3% stage I, 12.2% stage II, 51% stage III, and 21.7% stage IV.

In our study, 68.8% of patients with endometriosis had primary infertility, whereas 31.2% of patients had secondary infertility. Participants with primary infertility belonged to stage III (34.3%) followed by stage I (21.8%), stage II (9.3%), and stage IV (3.1%), respectively.

Participants with secondary infertility belonged to stage I (12.5%) followed by stage IV (9.3%), stage II (6.25%), and stage III (3.1%), respectively.

In our study, dyspareunia was present in 73.3% of cases, dysmenorrhea in 65.2% of cases, and chronic pelvic pain in 63.2% of cases in endometriosis patients. Comparison of each of symptoms and endometriosis showed statistically significant results. Tomar et al. recorded that 45.55% of dysmenorrhea (45.55%), 8.8% of dyspareunia, and 5.5% of chronic pelvic pain.[15] Previous studies have also revealed the association between endometriosis and different pain symptoms, such as, dysmenorrhea, dyspareunia, and chronic pelvic pain.

In endometriosis patients, bilateral chromopertubation (CPT) was positive in 78.1% of patients and bilateral CPT was negative in 12.5% of patients, whereas unilateral CPT was positive in 9.4% of patients. Sahu and Tempe recorded B/L tube patent in 61.6%, B/L tubal block in 51.4%, and U/L tube patent in 51.4% of patients with endometriosis.[16]

In endometriosis patients, 65.7% of patients had adhesions and 34.3% of patients did not have adhesions. Sahu and Tempe reported adhesion in 84.6% of cases of endometriosis with infertility.[17]

Conclusion

Endometriosis is a complex disorder from both the clinicians' and patient's point of view in terms of symptoms and diagnosis. The incidence of endometriosis among infertile patients was found to be 30.8% which was in accordance with other studies that were conducted. Although the incidence of endometriosis in infertility patients depends on patient profile and diagnostic tools used to detect it.

Endometriosis in infertile females is very common and it is increasingly being detected by diagnostic modalities like laparoscopy in the evaluation of infertility. Though most females are asymptomatic or have symptoms like dysmenorrhea, chronic pelvic pain, and dyspareunia which raise the suspicion of endometriosis. Clinical symptoms and most clinical signs also do not correlate well with the laparoscopic stage of the disease. Therefore, it is very difficult to predict the stage of the disease based on clinical findings alone.

Ultrasound evidence of endometrioma has a strong correlation to the severity of the disease. But it is of limited value for diagnosing and determining the extent of endometriosis. Laparoscopy remains the gold standard for diagnosing and staging endometriosis.

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