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Original Research Article

A study of prevalence, severity, stages, conception rate and associated problems in patients with endometriosis

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ABSTRACT

Background: Endometriosis should be suspected in women with sub-infertility, dysmenorrhea, dyspareunia or chronic pelvic pain. However, these symptoms can also be associated with other diseases. Endometriosis may be asymptomatic even in some women with more advanced disease. The objective of this study was to prevalence, severity, stages, conception rate and associated problems in patients with endometriosis

Methods: Present study was retrospective and prospective study from January 2007 to September 2012 which included 200 infertile patients who underwent laparoscopy and were diagnosed with endometriosis in the Department of Obstetrics and Gynecology at Owaisi Hospital and Research Centre, Hyderabad, Telangana, India.

Results: Majority of the patients belonged to the age group of 18-25 years i.e. 45.5%. The most common symptom with which the women presented to the hospital was abnormal uterine bleeding seen in 26% of the cases. Out of total cases, 64% had primary infertility and remaining i.e. 36% had secondary infertility. Ovarian endometrioma was seen in 22% of the cases. Majority of the patients had dysmenorrhea in 62% of the cases. Majority were found out to be present in the stage one or minimal endometriosis i.e. they constituted 78 women which amounted at 39% of the total cases. As the severity of the endometriosis increased, the symptomatic relief rate after laparoscopy decreased. As the severity of the endometriosis increased, the conception rate following laparoscopic laser fulguration decreased. As the severity of the endometriosis increased, the requirement for ART increased.

Conclusions: Laparoscopy is considered to be better than laparotomy since there is less morbidity and less adhesions and tissue trauma.

Keywords: Bleeding, Endometriosis, Infertility, Prevalence, Problems, Stages

INTRODUCTION

Endometriosis is a benign disease defined by the presence of endometrial glands and stroma outside the uterus and is associated with both pelvic pain and infertility. The ectopic endometrial tissue usually is located in the pelvis but can appear anywhere in the body.

The disease exhibits a broad spectrum of clinical signs and symptoms are prone to progression and recurrence. The true overall prevalence of endometriosis is unknown,

primarily because surgery is the only reliable method for the diagnosis and generally is not performed on women without symptoms or physical findings that strongly suggest the disease. The prevalence of endometriosis is 1-7% in women seeking elective sterilization, 12-32% among women of reproductive age with pelvic pain, 9-15% in infertile women and approximately 50% among teens with chronic pelvic pain and dysmenorrhea.¹

Endometriosis is predominantly found in women of reproductive age but has been reported in adolescents and

in postmenopausal women receiving hormonal replacement.²

It is found in women of all ethnic and social groups. In women with pelvic pain or infertility, a high prevalence of endometriosis (from a low of 20% to a high of 90%) has been reported.^{3,4}

In asymptomatic women; undergoing tubal ligation, (women of proven fertility), the prevalence of endometriosis ranged from 3% to 43%.^{3,5,6}

Endometriosis is an estrogen dependent inflammatory disease that is characterized by endometrium like tissue outside the uterus. Affected women experience severe pelvic pain and reduced fertility and are at increased risk of developing ovarian and non-Hodgkin's lymphoma. Although the definitive cause of endometriosis remains unknown, several theories with supporting evidence have been described.⁷

Endometriosis should be suspected in women with sub-fertility, dysmenorrhea, dyspareunia or chronic pelvic pain. However, these symptoms can also be associated with other diseases. Endometriosis may be asymptomatic even in some women with more advanced disease. Risk factors for endometriosis include short cycle length, heavier menstruation and longer flow duration probably related to a higher incidence of retrograde menstruation. Patient height and weight are positively and negatively respectively associated with the risk of endometriosis.⁸

Present study was carried out to study prevalence, severity, stages, conception rate and associated problems in patients with endometriosis.

METHODS

Present study was retrospective and prospective study from January 2007 to September 2012 which included 200 infertile patients who underwent laparoscopy and were diagnosed with endometriosis in the Department of Obstetrics and Gynecology at Owaisi Hospital and Research Centre, Hyderabad, Telangana, India.

Inclusion criteria

- Reproductive age group of 20-40 years,
- Patients with primary infertility,
- Patients with secondary infertility.

Exclusion criteria

- Premature ovarian failure,
- Chronic genital Koch's.

Name, age, a thorough evaluation of fertility status, marital status, menstrual history, personal case history, details pertaining to family history was recorded.

General examination included height, weight and body mass index. Endometriosis is a disease confined to the pelvis. There are often no abnormalities on visual inspection. Some exceptions include endometriosis within an episiotomy scar, surgical scar and most often within Pfannenstiel incision. Examination of the vagina and cervix by speculum examination often reveals no signs of endometriosis. Occasionally bluish or red powder burn lesions may be seen on the cervix or the posterior fornix of the vagina. These lesions are tender or bleed with contact. Pelvic organ palpation often reveals anatomic abnormalities suggestive of endometriosis. Uterosacral ligament nodularity and tenderness may reflect active disease or scarring along the ligament. In addition, an enlarged cystic adnexal mass may represent an ovarian endometrioma, which may be mobile or adherent to other pelvic structures. Bimanual examination may reveal an extroverted, fixed, tender uterus or a firm, fixed posterior cul-de-sac.

All routine screening investigations were performed complete blood picture, complete urine examination, urine culture and sensitivity, blood grouping and Rh typing, random blood sugar, blood urea, HIV and HBsAg status, chest X ray, hormonal assays of follicular stimulating hormone, luteinizing hormone, serum Prolactin levels, T3, T4, TSH and anti-mullerian hormone are all checked and ruled out.

A transvaginal ultrasonography was performed to all patients to diagnose endometriosis using curvilinear transducer with frequency 6.5 megahertz. Sonographic criteria for endometriosis were used. Endometrioma often present as cystic structures with low level internal echoes and occasional thick septations, thickened walls and echogenic wall foci.

Laparoscopy provides access to peritoneal cavity for diagnosis and performance of many surgical interventions previously possible only by laparotomy. Laparoscopy is specifically indicated in infertility workup for better visualization of the endometriosis and verifying tubal pathology, patency and assessment of pelvic adhesions, detection of congenital anomalies of the uterus and ovaries.

Statistical analysis

The data was entered in the master chart and analyzed using proportions. Appropriate statistical tests were used.

RESULTS

Table 1 shows distribution of study subjects as per age and symptoms and type of infertility. Majority of the patients belonged to the age group of 18-25 years i.e. 45.5%. This was followed by the age group of 26-33 years where there were 37.5% of the patients present. Age group of 34-41 years represented the least number of patients which constituted to be 16% only. The most

common symptom with which the women presented to the hospital was abnormal uterine bleeding seen in 26% of the cases. This was followed by white discharge in 22% of the cases. This was followed by infertility in 17.5% of the cases. Post-menopausal bleeding was seen in 5% of the cases. Mass per vaginum was seen in 2% of the cases. Chronic pelvic pain was seen in 24% of the cases and 3.5% of the cases presented with else other symptoms. Out of total cases, 64% had primary infertility and remaining i.e. 36% had secondary infertility. Ovarian endometrioma was seen in 22% of the cases.

Table 1: Distribution of study subjects as per age and symptoms and type of infertility.

| Factors | Number | % | |
|----------------------|---------------------------|-----|------|
| Age (years) | 18-25 | 91 | 45.5 |
| | 26-33 | 75 | 37.5 |
| | 34-41 | 32 | 16 |
| Symptoms | Abnormal uterine bleeding | 52 | 26 |
| | White discharge | 44 | 22 |
| | Infertility | 35 | 17.5 |
| | Post-menopausal bleeding | 10 | 5 |
| | Mass per vaginum | 4 | 2 |
| | Chronic pelvic pain | 48 | 24 |
| | Other | 7 | 3.5 |
| Infertility | Primary | 128 | 64 |
| | Secondary | 72 | 36 |
| Ovarian endometrioma | Yes | 44 | 22 |
| | No | 156 | 78 |

Table 2 shows distribution of study subjects as per stages and complaints related to endometriosis. Majority of the patients had dysmenorrheal in 62% of the cases. 13% were asymptomatic. Dyspareunia was seen in 10% of the cases. Pelvic pain was seen in 15% of the cases. Out of 200 women studied in the present study, their staging of endometriosis was done. Out of them, majority were found out to be present in the stage one or minimal endometriosis i.e. they constituted 78 women which amounted at 39% of the total cases. 58 women i.e. 29% were found out to be present in the stage two or mild endometriosis. 44 women i.e. 22% were found out to be present in the stage three or moderate endometriosis. 20 women i.e. 10% were found out to be present in the stage 4 or severe endometriosis.

Table 3 shows distribution of study subjects as per relief status after laparoscopy as per stage. The symptomatic relief rate was 70% in 78 women who were found to be present in the stage one of the endometriosis after laparoscopy. The symptomatic relief rate was 68.5% in 58 women who were found to be present in the stage 2 of the endometriosis after laparoscopy. The symptomatic relief rate was 65% in 44 women who were found to be present in the stage 3 of the endometriosis after laparoscopy. The symptomatic relief rate was 41% in 20

women who were found to be present in the stage 4 of the endometriosis after laparoscopy. Thus, as the severity of the endometriosis increased, the symptomatic relief rate after laparoscopy decreased.

Table 2: Distribution of study subjects as per stages and complaints related to endometriosis.

| Factors | Number | % | |
|------------|--------------|-----|----|
| Complaints | Asymptomatic | 26 | 13 |
| | Dysmenorrhea | 124 | 62 |
| | Dyspareunia | 20 | 10 |
| | Pelvic pain | 30 | 15 |
| Stages | Minimal | 78 | 39 |
| | Mild | 58 | 29 |
| | Moderate | 44 | 22 |
| | Severe | 20 | 10 |

Table 3: Distribution of study subjects as per relief status after laparoscopy as per stage.

| Stages | Number of patients | Relieved | % |
|----------|--------------------|----------|------|
| Minimal | 78 | 54 | 70 |
| Mild | 58 | 40 | 68.5 |
| Moderate | 44 | 28 | 65 |
| Severe | 20 | 4 | 41 |

Table 4 shows spontaneous conception rate following laparoscopic laser fulguration after a six month follow up. The conception rate was 80% in 78 women who were found to be present in the stage one of the endometriosis following laparoscopic laser fulguration. The conception rate was 75% in 58 women who were found to be present in the stage 2 of the endometriosis following laparoscopic laser fulguration. The conception rate was 64% in 44 women who were found to be present in the stage 3 of the endometriosis following laparoscopic laser fulguration. The conception rate was 42% in 20 women who were found to be present in the stage 4 of the endometriosis following laparoscopic laser fulguration. Thus, as the severity of the endometriosis increased, the conception rate following laparoscopic laser fulguration decreased.

Table 4: Spontaneous conception rate following laparoscopic laser fulguration after a six month follow up.

| Stages | Number of patients | Conceived | % |
|----------|--------------------|-----------|----|
| Minimal | 78 | 62 | 80 |
| Mild | 58 | 43 | 75 |
| Moderate | 44 | 28 | 64 |
| Severe | 20 | 9 | 42 |

Table 5 shows methods of treatment used post laparoscopy laser fulguration in patients with endometriosis. For patients with minimal and mild controlled ovarian stimulation with clomiphene citrate 50 mg OD from day 2 to day 7 of cycle was given and

followed by regular follicular study from day 11. GnRH analogues were also given, and pregnancy rates were noted.

In moderate and severe patient's GnRH analogues for 3 cycles i.e. Leupride Depot 3.75 mg intramuscularly monthly for three months and then followed up for pregnancy rates if did not conceive then went for ART. Patients were followed up for conception.

Table 5: Methods of treatment used post laparoscopy laser fulguration in patients with endometriosis.

| Method | Stages | | | |
|---------------------------------------|---------|------|----------|--------|
| | Minimal | Mild | Moderate | Severe |
| Ovulation induction | 78 | 58 | 0 | 0 |
| GnRH analogues given post operatively | 78 | 58 | 44 | 20 |

Table 6 shows conception rate following laparoscopic laser fulguration plus ovulation induction plus GnRH analogue treatment after six months follow up. In minimal stage patients, out of 78 cases, 69 conceived i.e. 89%. In moderate stage patients, out of 58 cases, 46 conceived i.e. 80%. In moderate stage patients, out of 44 cases, 31 conceived i.e. 72%. In severe stage patients, out of 20 cases, 11 conceived i.e. 54%.

Table 6: Conception rate following laparoscopic laser fulguration plus ovulation induction plus GnRH analogue treatment after six months follow up.

| Stages | Number of patients | Conceived | % |
|----------|--------------------|-----------|----|
| Minimal | 78 | 69 | 89 |
| Mild | 58 | 46 | 80 |
| Moderate | 44 | 31 | 72 |
| Severe | 20 | 11 | 54 |

Table 7 shows number of patients that required ART as a treatment option following laparoscopy in patients with endometriosis. The proportion of women who required ART was 11% in 78 women who were found to be present in the stage one of the endometriosis following laparoscopy.

The proportion of women who required ART was 20% in 58 women who were found to be present in the stage 2 of the endometriosis following laparoscopy. The proportion of women who required ART was 29% in 44 women who were found to be present in the stage 3 of the endometriosis following laparoscopy.

The proportion of women who required ART was 45% in 20 women who were found to be present in the stage 4 of the endometriosis following laparoscopy. Thus, as the severity of the endometriosis increased, the requirement for ART increased.

Table 7: Number of patients that required ART as a treatment option following laparoscopy in patients with endometriosis.

| Stages | Number of patients | Required ART | % |
|----------|--------------------|--------------|----|
| Minimal | 78 | 9 | 11 |
| Mild | 58 | 12 | 20 |
| Moderate | 44 | 13 | 29 |
| Severe | 20 | 9 | 45 |

DISCUSSION

The incidence of infertility in the present study was 17.5%. Out of 13,339 infertile patients, 5895 were diagnosed with endometriosis. Therefore, the prevalence of endometriosis in the present study was 44.2%. In a study by New York academy of sciences on endometriosis and infertility the prevalence of endometriosis in infertility was about 25-40%.⁸

Wheeler JM reported a prevalence of 10%.⁹

The cases of endometriosis were diagnosed by laparoscopy as laparoscopy is the gold standard method of diagnosis. Out of total endometriosis, 200 patients diagnosed as endometriosis after laparoscopy were chosen for the present study.

The study included 200 patients with endometriosis out of which 128 had primary infertility and 72 had secondary infertility. It was found that majority of primary infertility with endometriosis were from the age group of 18-25 years and the secondary infertility belonged to the age group of 26-33 years. The general prevalence of endometriosis in reproductive age group women varies from 5-15% globally.¹⁰

Similarly, Haider G et al, who has quoted the age groups as 18-25 years out of which 55% were primary infertility and 30% were secondary infertility.¹¹

Out of 200 patients, 124 presented with dysmenorrhea, 30 with pelvic pain, 20 with dyspareunia and 26 were asymptomatic. The percentage of dysmenorrhea was 62%, pelvic pain was 15%, dyspareunia was 10% and asymptomatic were 13%. Dysmenorrhea, dyspareunia and infertility have been described as the classical triad of the disease. Similarly, in a study it was noted that 62.2% of patients reported with dysmenorrhea, followed by chronic pelvic pain and then dyspareunia.¹⁰

Staging of the disease was done based on the revised American Fertility Society criteria.¹²

In the present study, 39% had minimal/stage 1, 29% had mild/stage 2, 22% had moderate/stage 3 and 10% had severe or stage 4. Similarly, Koninckx PR et al, has stated

that minimal stage includes 20-40%, mild 30-40% and moderate and severe as 10-20%.¹³

Ovarian endometrioma was present in 44 patients i.e. 22%. Similarly, Buscaccia M et al, have demonstrated that 17-44% of patients with endometriosis present with ovarian endometriotic cysts.¹⁴

The coincidental problems seen with endometriosis during laparoscopy included PCOD, genital Koch's and fibroids. The prevalence was plotted on a graph. The prevalence of genital Koch's was noted to be 24%, PCOD was 5.6% and fibroid was 2%. Authors noticed an association of different stages of endometriosis with early phase of genital Koch's. Similarly, in a study by Das P et al, the overall incidence of genital Koch's was noted to be 14-41% in India out of which he stated that most commonly it is associated with endometriosis.¹⁵

In one study, it states that during menstruation, endometrial expression of TNF alpha, interleukin 8, INF gamma and matrix metalloproteinase 3 messenger mRNA levels are also significantly higher. These pro-inflammatory mediators bathing the genital organs could have led to exaggerated tissue responses leading to genital tuberculosis; therefore, proving the association of endometriosis with genital tuberculosis.¹⁶

All patients who had endometriosis on laparoscopy were treated surgically at the same time with laparoscopy. Minimal to mild were treated with laser fulguration and ovarian endometrioma with cystectomy. Laparoscopic cystectomy appears to be the best therapeutic choice if compared with drainage and coagulation. Adhesions were released with adhesiolysis. Deep endometriosis lesions were treated with electrosurgical excision.

Operative laparoscopy still remains the gold standard for endometriosis since it can restore pelvic anatomy and produce regression of disease as it has less morbidity and less post-operative adhesions. This has been reflected in number of cases with symptomatic relief and pregnancy rates after laparoscopy.⁸

Patients were followed up after six months and symptomatic relief was noted. In patients with minimal 70% had relief, 68.5% in mild, 65% in moderate, and 41% in severe cases. Similarly, Jefout MA et al, in a follow up study reported that 90% of responders had a pain relief for one year post laparoscopy.¹⁷

Patients were followed up after six months of laparoscopic laser fulguration the patients who had spontaneous conception rates were taken. In minimal 80% conceived, in mild 75%, in moderate 64% and in severe 42% conceived. As compared to an article published which stated that the rate of conception for minimal was 75%, 62% for mild, 42.1% for moderate and 40-50% for severe stage.¹⁸

Patients were given ovulation induction with clomiphene citrate and GnRH analogues post laparoscopic fulguration and then the conception were noted. Medical and surgical treatment for endometriosis has different effects on a woman's chances of conception, either spontaneously or via assisted reproductive technologies (ART). Medical treatments for endometriosis are contraceptive. Data, mostly uncontrolled, indicate that surgery at any stage of endometriosis enhances the chances of natural conception.¹⁹

Patients were followed up after six months and conception rates were noted again after ovulation induction with clomiphene citrate and GnRH analogues post laparoscopic fulguration. It was found that the rate was 89% in minimal, 80% in mild, 72% in severe and 54% in severe stages. As compared to a study by John D Paulson which stated the conception rates as 85% in minimal, 82% in mild, 76% in moderate and 70% in severe stage.¹⁸ M Buscaccia et al, reported that use of post-operative GnRH analogues can improve the pregnancy rate in advanced stages of endometriosis. Most of the conceptions in minimal and mild occurred with 1-6 cycles of clomiphene citrate. As the severity of the disease increased the conception rate decreased.¹⁴

The patients who did not conceive were then considered for assisted reproductive techniques where stage one showed 11%, stage two showed 20%, stage three showed 29% and stage four showed 45%.

CONCLUSION

Laparoscopy is considered to be better than laparotomy since there is less morbidity and less adhesions and tissue trauma. Symptomatic relief is more in earlier stages of endometriosis when compared to severe stages. Fertility rates are more in earlier stages when compared to severe stages of endometriosis. Diagnosis and management of endometriosis has to be planned at the first laparoscopy as to give maximum benefit to the patient. Adequate surgical treatment with laparoscopic improves the conception rates. ART can be reserved for clomiphene citrate failure cases. Management of infertility in endometriosis must be individualized and not as per fixed protocols.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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