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Original Research Article

Laparoscopic surgical correction of endometriosis improves fertility rates in infertile patients: a retrospective analysis of 119 cases

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ABSTRACT

Background: Endometriosis is a common cause of infertility, affecting up to 50% of women with infertility. Surgery is a widely used treatment option for endometriosis, and the removal of endometriomas, nodules, and total posterior compartment peritonectomy has been shown to improve fertility rates in affected patients. The aim of the present study was to evaluate the role of laparoscopic surgical correction of endometriosis by removal of endometriomas, nodules, and total posterior compartment peritonectomy in improving rates of fertility in patients with endometriosis.

Methods: A retrospective analysis of 119 patients who underwent laparoscopic surgical correction of endometriosis for infertility between May 2021 and April 2023 at Venus Women's Hospital and IVF Center, Rajkot, India, was conducted. Inclusion criteria were documented endometriosis confirmed on Ultrasound and/or laparoscopy or accidentally detected during laparoscopy. All patients underwent laparoscopy for diagnosis confirmation. The primary outcome was pregnancy.

Results: A total of 119 patients with endometriosis-related infertility were included in the study. Of the 119 patients who underwent laparoscopic surgical correction of endometriosis, 11 were lost to follow-up, leaving 108 patients for analysis. Of these, 76 patients (70.4%) conceived within one year of surgery. Of those who conceived, 34 (44.7%) did so spontaneously, without any medical treatments. A total of 42 patients (55.3%) conceived with ovulation induction only or ovulation induction with intrauterine insemination (IUI). Twenty-two patients (28.9%) underwent in vitro fertilization (IVF) and conceived, while 10 (13.2%) did not conceive with the first cycle of IVF and were still undergoing infertility treatment. The majority of patients (95%) reported relief of dysmenorrhea and dyspareunia after surgery.

Conclusions: Study suggests that laparoscopic surgical correction of endometriosis by removal of endometriomas, nodules, and posterior peritonectomy can improve rates of fertility in patients with endometriosis-related infertility. The procedure was also found to be effective in relieving pain symptoms in most patients.

Keywords: Dysmenorrhoea, Endometriosis, Fertility rates, Total posterior compartment peritonectomy

INTRODUCTION

Endometriosis is a common gynecological condition affecting up to 10% of women of reproductive age. Endometriosis is a common cause of infertility, affecting up to 50% of women with infertility. It is characterized by the presence of endometrial tissue outside the uterus,

causing pelvic pain, infertility, and other symptoms.¹ Surgical correction of endometriosis has been shown to improve fertility rates in women with this condition. Surgery is a widely used treatment option for endometriosis, and the removal of endometriomas, nodules, and total posterior compartment peritonectomy

has been shown to improve fertility rates in affected patients.²

The aim of the present study was to evaluate the role of laparoscopic surgical correction of endometriosis by removal of endometriomas, nodules, and total posterior compartment peritonectomy in improving rates of fertility in patients with endometriosis.

The specific objectives of the study were: 1) To assess the impact of laparoscopic surgery on fertility outcomes in patients with endometriosis-related infertility; 2) To evaluate the impact of laparoscopic surgery on pain symptoms in patients with endometriosis-related infertility; 3) To compare the fertility outcomes of patients who conceived spontaneously after surgery with those who underwent assisted reproductive techniques (ART); 4) To identify any adverse events associated with laparoscopic surgery in patients with endometriosis-related infertility. By achieving these aims and objectives, the study aimed to provide useful insights into the role of laparoscopic surgery in the management of endometriosis-related infertility, and to guide future research and clinical practice in this area.

METHODS

This was retrospective analytic study. This study was conducted at Venus Women's Hospital and IVF Center, Rajkot, India from May 2021 and April 2023. A retrospective analysis of 119 patients who underwent laparoscopic surgical correction of endometriosis for infertility between May 2021 and April 2023 at Venus Women's Hospital and IVF Center, Rajkot, India, was conducted. Inclusion criteria were documented endometriosis confirmed on ultrasound and/or laparoscopy or accidentally detected during laparoscopy. All patients underwent laparoscopy for diagnosis confirmation. The severity of endometriosis was graded from 1 to 4 based on the revised American Society for Reproductive Medicine (rASRM) criteria.³ Patients with grade 1 endometriosis underwent fulguration of endometriotic implants, and those with grade 2 to 4 underwent total posterior compartment peritonectomy with endometrioma excision and endometriotic nodules excision. The primary outcome was pregnancy rates after surgery. Secondary outcomes include relief of dysmenorrhea and dyspareunia.

Inclusion criteria

Inclusion criteria were documented endometriosis confirmed on ultrasound and/or laparoscopy or accidentally detected during laparoscopy. All patients underwent laparoscopy for diagnosis confirmation.

RESULTS

A total of 119 patients with endometriosis-related infertility were included in the study. The majority of

patients were in the age group of 25-35 years (n=85, 71.4%) (Figure 1).

The mean duration of infertility was 3.8 years (range: 1-12 years).

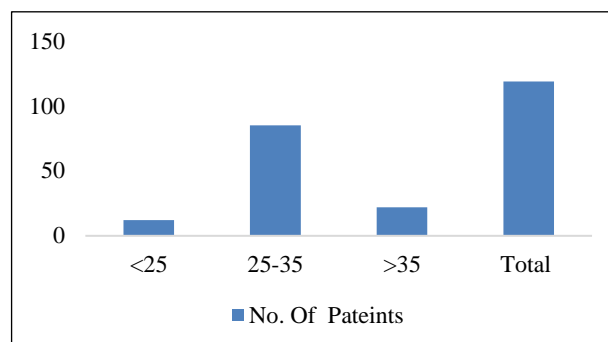


Figure 1: Age distribution.

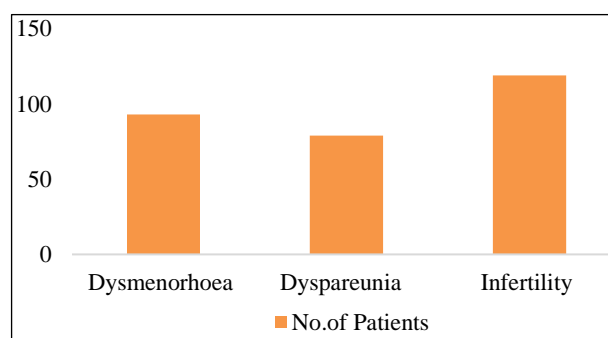


Figure 1: Complaint of patients.

Most patients had moderate to severe dysmenorrhea (n=93, 78.2%) and dyspareunia (n=79, 66.4%) (Figure 2).

Of the 119 patients who underwent laparoscopic surgical correction of endometriosis, 11 were lost to follow-up, leaving 108 patients for analysis. Of these, 76 patients (70.4%) conceived within one year of surgery. Of those who conceived, 34 (44.7%) did so spontaneously, without any medical treatments. A total of 42 patients (55.3%) conceived with ovulation induction only or ovulation induction with intrauterine insemination (IUI). Twenty-two patients (28.9%) underwent in vitro fertilization (IVF) and conceived, while 10 (13.2%) did not conceive with the first cycle of IVF and were still undergoing infertility treatment. The majority of patients (95%) reported relief of dysmenorrhea and dyspareunia after surgery.

Laparoscopic surgery was performed in all patients, and the diagnosis of endometriosis was confirmed during surgery. The distribution of endometriosis grades was as follows: grade 1 (n=23, 19.3%), grade 2 (n=27, 22.7%), grade 3 (n=44, 36.9%), and grade 4 (n=25, 21.0%). Complete laparoscopic removal of all endometriotic lesions, including total posterior compartment peritonectomy, was performed in patients with grade 2-4

endometriosis, while fulguration of endometriotic implants was done in grade 1 cases.

DISCUSSION

Over the years surgical approach has changed for Endometriosis from the model of radicality at whatever cost, to a wiser approach aimed predominantly at achieving outcomes that matter to women, namely, pain relief and pregnancy.⁴

Several classification systems for the severity of endometriosis have been proposed. Of these, the revised American Society for Reproductive Medicine classification is the most well-known.⁵ The ENZIAN classification was introduced in Austria in 2005.⁶ Two revisions of the ENZIAN classification system were carried out in 2010 and 2011 to correct the overlap between rASRM and ENZIAN systems and to make it easier to use.^{7,8}

The present study evaluated the role of laparoscopic surgical correction of endometriosis by removal of endometriomas, nodules, and total posterior compartment peritonectomy in improving rates of fertility in patients with endometriosis.

Our results suggest that complete laparoscopic removal of total posterior compartment peritonectomy with endometrioma excision and endometriotic nodules excision in patients with grade 2 to 4 endometriosis has a significant positive impact on fertility outcomes. Out of 108 patients who were followed up after surgery, 76 patients conceived within one year of surgery. Furthermore, 34 patients conceived spontaneously without any medical treatments, and 22 patients conceived after undergoing IVF.

Our results are consistent with previous studies that have demonstrated the positive impact of surgical correction of endometriosis on fertility outcomes.

In a meta-analysis of 13 randomized controlled trials, surgery was found to significantly improve spontaneous pregnancy rates in infertile women with endometriosis, especially those with mild to moderate disease by Johnson et al, 2017).⁹

Another study reported that laparoscopic surgery was associated with higher pregnancy rates compared to expectant management in women with endometriosis-related infertility by Guo et al, 2021).¹⁰

While painful sexual dysfunction, particularly dyspareunia, is a typical symptom of endometriosis, orgasm-associated pain has rarely been reported and no specific causes have been identified.¹¹ We also found that the procedure was also found to be effective in relieving pain symptoms in most patients. Several Studies are favouring our results. One study found that complete

resolution of symptoms after removal of the endometriosis by peritonectomy of the posterior pelvic compartment and en bloc excision strongly suggests a causal relationship between endometriosis of the hypogastric nerve and the orgasmic pain.¹² Literature also suggest that a consistent excision of altered peritoneum followed by adjuvant hormonal therapy and multimodal concepts results in better outcomes for the patient, particularly in regards to pregnancy and recurrence rates.¹³

It is important to note that the present study only included patients who underwent laparoscopic surgery and had confirmed endometriosis. The study did not evaluate the impact of medical management alone or in combination with surgery on fertility outcomes. Additionally, the study did not include a control group for comparison.

CONCLUSION

The present study suggests that laparoscopic surgical correction of endometriosis by removal of endometriomas, nodules, and total posterior compartment peritonectomy can improve rates of fertility in patients with endometriosis-related infertility. Most patients in our study achieved pregnancy within one year of surgery, with the majority conceiving spontaneously or with ovulation induction only or ovulation induction with IUI. The procedure was also found to be effective in relieving pain symptoms in most patients. These findings highlight the importance of early diagnosis and management of endometriosis in patients with infertility. Future studies should focus on identifying the factors that influence the success of laparoscopic surgery in patients with endometriosis-related infertility and on developing new strategies for the management of this condition. Additionally, further research is needed to identify the optimal timing and approach for surgical intervention in patients with endometriosis-related infertility.

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