

PREGNANCY OUTCOME OF LAPAROSCOPIC TREATED PATIENTS WITH ENDOMETRIOSIS

Dr. Archana Sahu¹, Dr. Pooja Deodhar², Dr. Tanu Yadav³, Dr. Padmini Baghel⁴

¹Third Year PG Resident, Department of Obstetrics and Gynaecology, Index Medical College Hospital and Research Centre, Indore, Madhya Pradesh, India

²Professor and Head, Department of Obstetrics and Gynaecology, Index Medical College Hospital and Research Centre, Indore, Madhya Pradesh, India

³Second Year PG Resident, Department of Obstetrics and Gynaecology, Index Medical College Hospital and Research Centre, Indore, Madhya Pradesh, India

⁴Third Year PG Resident, Department of Obstetrics and Gynaecology, Index Medical College Hospital and Research Centre, Indore, Madhya Pradesh, India

Corresponding Author: Dr. Padmini Baghel

Email: padminibaghel@gmail.com

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ABSTRACT

Background: A diagnosis of endometriosis is associated with increased risks of adverse pregnancy outcomes and infertility. The successful laparoscopic surgery can improved the conception rate and pregnancies outcomes

Objectives: To evaluate pregnancy rates and outcomes in patients with endometriosis after laparoscopic surgical management in our tertiary care hospital

Methods: This cross sectional observational study was done in patients diagnosed with endometriosis and who were managed by laparoscopic surgery at our hospital. Various stages of the endometriosis were identified by direct visualization. Laparoscopic Surgery and follow-up were performed in a standardized protocol. We evaluated pregnancy rates and outcomes in patients with endometriosis after laparoscopic surgical management.

Results: Out of total 120 eligible cases, 73 (60.8%) patients conceived and 47 (39.2%) did not conceive. Endometriosis was found to be in the minimal, mild, moderate, and severe stage in 10%, 33.3%, 45% and 11.7% respectively. Out of total conceived patients, 50.7% conceived naturally, 27.4% conceived after controlled ovarian hyper stimulation intrauterine insemination ((COH-IUI), and 21.9% conceived after in vitro fertilization (IVF). There were 68.5% term pregnancies, 20.6% preterm pregnancies, and 10.9% were spontaneous miscarriages.

Conclusion: The pregnancy rates and live birth outcomes seem to be significantly improved after laparoscopic surgical management of moderate to severe endometriosis.

Keywords: Endometriosis, Laparoscopy, Pregnancy outcome

INTRODUCTION

Endometriosis (EM) is a common gynecologic condition characterized by the presence of endometrial tissue on the mucosa outside the uterine cavity. EM generally includes three distinct forms: superficial endometriosis, ovarian endometriomas, and deep infiltrating endometriosis. EM may be located on the surface of the pelvic peritoneum, ovaries, ovarian cysts, or between the rectum and vagina [1]. EM can lead to inflammatory reactions, resulting in clinical manifestations, such as lower abdominal pain, irregular menstruation, painful sexual intercourse, and dysmenorrhea [2]. In addition, EM is the main cause leading to infertility in women [3]. EM is responsible for 25%–30% of all cases of infertility in women [4, 5]. It affects 6 to 10% of reproductive-aged women. All these clinical manifestations impact the quality of life in EM patients, which creates a great physical and psychological burden. Infertility is correlated with disease severity. Woman with severe endometriosis have lower estrogen level, fewer oocyte, lower pregnancy and implantation rate than woman with mild endometriosis. Abnormal oocyte quality and embryogenesis have a more role in decreasing pregnancy and implantation rate than decreased endometrial receptivity in woman with endometriosis [6, 7]. Laparoscopy is an important procedure to manage infertility that can be used to diagnostic or therapy. Laparoscopic adhesiolysis, resection, or ablation of endometrial lesion, and cystectomy usually performed in endometriosis cases. Those procedures can increase fecundability in infertility woman [8]. In recent years, there has been an increasing focus on the association between endometriosis and pregnancy outcomes [9, 10]. Endometriosis may be associated with poor pregnancy outcomes [11] including placenta praevia, preterm birth (PTB), premature prelabour rupture of membranes (PPROM), obstetric hemorrhage, gestational hypertensive disorders, foetal growth restriction (IUGR) and perinatal death. These associations are biologically plausible due to several factors: the inflammatory milieu and immune modifications established by endometriosis [12], the molecular, anatomical, and epigenetic abnormalities of eutopic endometrium noted in women with endometriosis [13], and the decidualisation of endometriosis lesions due to the hormonal changes of pregnancy [14].

Aims & objectives: The aim of this study was to evaluate the pregnancy rates and outcomes in the patients with endometriosis after laparoscopic surgical management.

MATERIALS AND METHODS

This was a cross sectional observational study, conducted in the Department of obstetrics and gynecology, index medical college and research center, M P. Patients diagnosed with endometriosis who were managed by laparoscopic surgery during the study period included in this study.

Inclusion criteria

- Women ≥ 18 and < 45 years of age
- Women who not conceived after one year of unprotected intercourse
- Symptoms and clinical signs suggestive of endometriosis
- Transvaginal ultrasound findings confirmed ovarian endometriosis/adenomyosis
- Women who provide written informed consent for the study

Exclusion criteria

- Women <18 or >45 years of age
- Women presenting with other gynecological pathologies or coexisting causes of infertility besides endometriosis
- Not keen to conceive (including unmarried).
- Women who not provide consent for the study

A total of 185 patients were operated laparoscopically for endometriosis, out of which 120 patients were eligible according to the inclusion criteria for our study.

Socio-demographic data, detailed history, clinical presentation and examination were done in all the patients. All routine investigation (CBC, RBS, Urine examination, TFT), semen analysis of husband and USG lower abdomen was done

Various stages of the endometriosis were identified by direct visualization, in accordance with the revised American Society for Reproductive Medicine classification. Laparoscopic Surgery was performed under general anaesthesia; treatment and follow-up were performed in a standardized manner following departmental protocols.

For most of the patients, biopsy specimens were taken during the surgery and diagnosis was confirmed by Histopathological examination. Then, we followed up the patients to know about the conception, mode of conception, and pregnancy outcome.

Outcomes Pregnancy rates, mode of conception (natural or IVF), and pregnancy outcomes (term, preterm, or spontaneous miscarriage) were measured in the patients with endometriosis undergoing laparoscopic surgical management after staging them according to revised American Society for Reproductive Medicine.

Statistical analysis: Data were recorded in a purpose-built database using Statistical Package for Social Sciences, version 22 (SPSS, Chicago, IL). Appropriate statistical measurements such as mean, rates, ratios, percentages, proportions, and number were used. Student *t*-, ANOVA, and Chi squared tests was used. P values of <0.05 were considered significant.

RESULTS

Total of 120 eligible women undergoing laparoscopic surgery for endometriosis was analysed in the present study. Majority of the patients (40%) were in the age group of 26-35 years. with Mean \pm SD was 33.57 +3.41 years. Most of our cases (41.7%) had come after 10-15 years of married life. Most of the cases (55%) were from rural area and 42.5% cases were from lower class socio-economic group. Majority of them belong to primary infertility (80.8%) and 40% of women were under obese category [Table 1].

Table 1: Socio demographic characteristics of the study participants

Socio-demographic characteristics		Frequency (n=120)	Percentage
Age group (in years)	18-25	13	19%
	26-35	60	40%
	36-40	47	32%
	Age (mean \pm SD) = 33.57 +3.41		
Residential status	Rural	66	55%

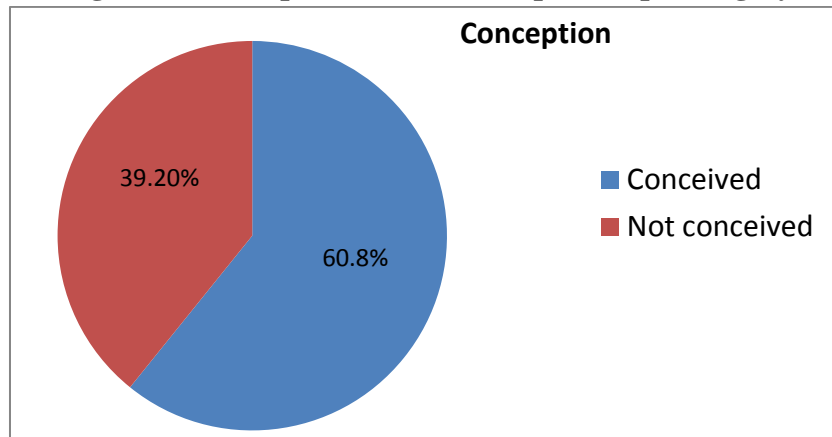
	Urban	54	45%
BMI (kg/m ²)	Underweight	18	15%
	Normal weight	54	45%
	Obese	48	40%
Socio-economic status	Lower	51	42.5%
	Middle	42	35%
	Upper	27	22.5%
Type of infertility	Primary	97	80.8%
	Secondary	23	19.2%
Diagnosed years following married life	1-5 yr	18	15%
	5-10 yr	30	25%
	10-15 yr	50	41.7%
	>15 yr	22	18.3%

Among laparoscopic findings all cases had endometriosis of ovary. Both ovaries were involved in 58.3% cases. 75 % had patent tubes and 25% had blocked tubes. 76.6% patient had peritoneal adhesions, among associated lesion fibroid was most common (40%) [Table: 2].

Table 2: Laparoscopic findings of women with endometriosis

Laparoscopic findings		Frequency (n=120)	Percentage
Site of endometriosis	Unilateral ovary	50	41.7%
	Bilateral ovary	70	58.3%
	POD	90	75%
	Posterior surface of uterus	30	25%
Adhesions	Present	92	76.6%
	Absent	28	23.4%
Associated lesions (n=65)	Fibroid	18	27.6%
	Hydrosalpinx	26	40%
	Polycystic ovary	21	32.4%

Out of total eligible cases, 73 (60.8%) patients conceived after successful laparoscopic surgery of endometriosis and 47 (39.2%) did not conceive (Figure: 1).

Figure 1: Conception rates after laparoscopic surgery

Among total endometriosis cases, Moderate endometriosis was most common (45%) followed Mild endometriosis (33.3%), severe endometriosis (11.7%) and minimal endometriosis was in 10% cases [Table: 3].

Table 3: Stage of endometriosis and conception rates after laparoscopic surgery

Stage of endometriosis	Conceived	Not conceived	Total
Minimal endometriosis	10	2	12 (10%)
Mild endometriosis	25	15	40 (33.3%)
Moderate endometriosis	30	24	54 (45%)
Severe endometriosis	8	6	14 (11.7%)
Total	73 (60.8%)	47 (39.2%)	120 (100%)

Among total conception, most of them (68.5%) had term pregnancy, 20.6% had pre-term pregnancy and 10.9% cases had spontaneous miscarriages. In 30 patients who conceived in moderate endometriosis group, 66.6% were term pregnancies, 23.4% were preterm pregnancies, and 10% had spontaneous miscarriages. Details shown in table: 4.

Table 4: Pregnancy outcomes in different stages of endometriosis

Pregnancy outcome	Term pregnancies	Pre-term pregnancies	Spontaneous miscarriages
Minimal endometriosis	7	2	1
Mild endometriosis	19	4	2
Moderate endometriosis	20	7	3
Severe endometriosis	4	2	2
Total (n=73)	50 (68.5%)	15 (20.6%)	8 (10.9%)

Among total conceived participants, most common mode of conception were natural in 50.7% followed by COH-IUI (27.4%) and IVF (21.9%). All of them conceived within 6 months of surgery [table:5].

Table 5: Stage of endometriosis and modes of conception after laparoscopic surgery

Mode of conception	Natural	COH-IUI	IVF
Minimal endometriosis	7	3	0
Mild endometriosis	14	6	5
Moderate endometriosis	15	8	7
Severe endometriosis	1	3	4
Total (n=73)	37 (50.7%)	20 (27.4%)	16 (21.9%)

DISCUSSION

Endometriosis is a difficult gynecological disease to treat and sometimes to diagnose. Laparoscopy & histological biopsy is the best way to confirm it. Laparoscopic surgical excision of moderate-to-severe stage endometriosis has been demonstrated to improve women's pain symptoms, quality of life and improved fertility outcomes; resulting in successful live birth rate [15].

In our study report mean age of the participants were 33.57 +3.41 years, Increasing age is associated with declining fertility, concordance with the previous work reports [16-17].

In the present study higher BMI has been reported as a factor related to a endometriosis and poor pregnancy rate, in agreement with the Shah DK, *et al* [18].

In the current study, we demonstrated that a longer period of infertility without treatment negatively influences the time until pregnancy, which is also confirmed by Sindan N, *et al* [19] and Shi J, *et al* [20].

The conception rates and pregnancy outcomes after laparoscopic surgery of endometriosis was higher (60.8%) in our study, similar finding also reported by Mooney SS, *et al* [21] and Li H, *et al* [22], in contrast to our results lower conception rates and pregnancy outcomes was reported by Li H, *et al* [23] and Donnez J, *et al* [24].

In the present study majority of the participants were moderate endometriosis followed by mild, severe and minimal, our sequence were comparable with the study done by David S, *et al* [25].

Ovarian endometriosis was found in 100% cases predominantly bilateral involvement and 76.6% cases had peritoneal adhesions, consistent results seen by Sahu L, *et al* [26]. Operative laparoscopy offers several advantages to laparotomy, primarily because of better visualization, less tissue trauma, and much shorter recovery time. The guiding surgical principle is complete removal of all endometriosis lesions, fibrosis, and adhesions.

Among pregnancy outcomes majority of them was term pregnancy in current study, accordance with the Bettaiah R, *et al* [27].

In our study among conceived women, more than half occur natural conception, followed by COH-IUI and IVF, our results correlate with the many other studies: Chapron C, *et al* [28], Keresztúri A, *et al* [29] and Morva, *et al* [30]. Patients should be advised to begin attempting to conceive naturally

soon after laparoscopy. When pregnancy does not occur naturally, they should move on to COH-IUI, later on to IVF.

In women with moderate to severe endometriosis, operative laparoscopy increases the spontaneous pregnancy rates based on controlled trials, mild endometriosis almost doubles the spontaneous pregnancy rate then moderate and severe.

According to a study done by Coccia ME, *et al* [31], the correct management of infertile women with endometriosis is a combination of surgery and in absence of a spontaneous post surgery pregnancy, IVF-ET (embryo transfer). This integrated approach (surgery-IVF-ET) produced a pregnancy rate of 56.1% compared with a significantly lower pregnancy rate of only 37.4% after surgery alone.

CONCLUSION

We have concluded that the pregnancy and live birth rates seem to be significantly improved after successful laparoscopic surgical management of endometriosis. Reproductive outcome were closely associated with stage of endometriosis. A significant inverse correlation was observed between disease severity and spontaneous conception. There is good evidence that in experienced hands laparoscopic surgery has a lot to offer in infertile women with moderate to severe endometriosis.

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