

Findings in diagnostic laparoscopy in patients with unexplained infertility

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ABSTRACT

Goal: Concern over infertility is growing among the general public. The exact cause of infertility is frequently unknown, regardless of whether it is the tubal factor, male factor, uterine factor, or a combination of these. The couple's emotional suffering is made worse by this. For these cases of infertility that cannot be explained, a number of previous research have tried to determine the underlying cause and the best course of treatment. The choice is frequently made between a diagnostic method that emphasises laparoscopic evaluation and a treatment strategy that favours the use of assisted reproductive technologies.

This study aims to understand the role of diagnostic hysterolaparoscopy in cases of inexplicable infertility, when it should be used, and how it might change the course of treatment. Design: The study was carried out in retrospect. Procedures and Patients: Information about the chosen patients, such as age, the kind and duration of infertility, the outcomes of clinical exams, and gynaecological ultrasounds, were gathered from patient case records. The preceding treatment history includes information on ovulation stimulation, intrauterine insemination (IUI), and other treatments. Intraoperative findings included peritubal adhesions, endometriosis, tubal pathology, perihepatic adhesions, and hysteroscopic findings. Results: Our study shows that diagnostic hysterolaparoscopy is helpful when infertility cannot be explained, especially in people who have had two or more unsuccessful IUIs. In conclusion, performing a diagnostic hysterolaparoscopy prior to ovulation induction or IUI has not proven to be beneficial.

Keywords: Diagnostic hysterolaparoscopy, intrauterine insemination (IUI), unexplained infertility

INTRODUCTION

Society is becoming increasingly concerned about infertility. Ten to fifteen percent of Indian couples are thought to be infertile. Finding the cause of infertility is difficult, and 20–30% of couples will not have a clear cause following a conventional evaluation.[1,2] These estimations do, however, take into account couples where the female spouse may not have undergone a comprehensive laparoscopic evaluation for pelvic pathology (such as endometriosis). According to estimates, employing laparoscopy as a routine screening for tubal function would lower the apparent prevalence of inexplicable 10% to 3.5% infertility.[3]

The last stage in identifying the reason of infertility is diagnostic laparoscopy, which is also often carried out as a routine surgery.[4] The Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which permits others to remix, modify, and expand upon the work non-commercially as long as the author is given credit and the new works are licensed under the same conditions, governs this open access article. However, for a number of reasons, the use of laparoscopy as a routine method for treating infertility is still debatable. It is challenging to determine which individuals would benefit from surgery, despite the fact that endometriosis is more common among infertile women (estimated at over 30%).[5,6] Fecundity is significantly improved by modern reproductive therapies, particularly in vitro fertilisation (IVF); it is uncertain whether these procedures are hampered by undetected endometriosis. As a result, more and more patients choose not to have surgery, especially if they are generally asymptomatic and the results of their first diagnostic tests, such as the hysterosalpingogram (HSG), are normal.[7, 8]

Theoretically, consistently doing laparoscopy on infertile women might be beneficial. First, the direct and indirect financial and societal expenses of fertility treatments, such as multiple gestation pregnancies, may be avoided [5,9].

Second, intraoperative results may direct postoperative care, avoiding expensive and ineffective therapies.[10] Third, endometriosis surgery may improve fertility therapy responsiveness or lessen the impact of comorbidities such pelvic discomfort.[11]

In order to determine the best course of action, diagnostic laparoscopy is crucial.[4] Similarly, hysteroscopy has become an equally significant technique in the examination of infertility due to its ability to see the uterine cavity and detect any abnormalities. Although the precise function of hysteroscopy in infertility that cannot be explained has not yet been determined, the combination of hysteroscopy and laparoscopy has become a common assessment technique.[12–15]

The purpose of this research is to comprehend the function of diagnostic hysterolaparoscopy in instances of infertility that cannot be explained, when it should be performed, and how it may alter the course of treatment.

PATIENTS AND METHODS

This is a retrospective study of every patient who had a diagnostic laparoscopy between January and December of 2013 at Sri Aurobindo Institute of Medical Sciences in Indore, MP, India. Patients with regular cycles, normal HSG, and infertility lasting more than three years were taken into consideration for the research. The examination did not include patients having a history of abdominal surgery, suspected Koch's abdomen, or ultrasonography indicative of fibroid, adenomyosis, chocolate cyst, or tubo-ovarian mass. Excluded were hormonal disorders such polycystic ovarian syndrome, hyperprolactinemia, and thyroid dysfunction that are known to induce anovulation. Additionally, this research excluded couples with abnormal semen analysis. Gynaecological ultrasonography, clinical examination results, and January of infertility. Details of intrauterine insemination (IUI), ovulation stimulation, and other treatments were included in the prior treatment history. Peritubal adhesions, endometriosis, tubal pathology, perihepatic adhesions, and hysteroscopic findings were among the intraoperative findings noted. Patients' informed permission was not required since this was a retrospective cohort research. Before beginning the trial, the institutional review board granted specific permission.

RESULTS

198 patients in all met the requirements. Table 1 lists the group's demographic characteristics. Of the 198 women, 89 (44.9%) experienced secondary infertility and 109 (55.1%) had main infertility. While laparoscopic abnormalities were more prevalent in the main infertility group, hysteroscopic abnormalities were more common in the secondary infertility group. Both laparoscopy and hysteroscopy problems were more common in patients receiving laparoscopy after a prior unsuccessful IUI. The most frequent abnormalities seen during laparoscopy in the main and secondary infertility groups were endometriosis and adnexal adhesions, respectively. Periosteal adhesions were the most prevalent intrauterine pathology in both groups. At laparoscopy, 103 (52%) of the 198 patients in the study exhibited abnormal findings [Table 2]. However, hysteroscopy revealed abnormal findings in just 46 individuals [Table 3]. Forty-two of the 198 patients had their scheduled treatments changed as a result of laparoscopic results. Twenty-three of these patients were recommended for further IUI, whereas 19 were recommended for straight IVF [Table 4].

DISCUSSION

There is ongoing discussion over the use of diagnostic laparoscopy in modern fertility procedures. According to World Health Organization recommendations and the American Fertility Society's 1992 guidelines, laparoscopy was the last diagnostic method for female fertility investigation until recently.[16] According to a 1997 study by Glatstein et al., 89% of reproductive endocrinologists in the United States regularly conducted laparoscopies as part of their diagnostic work-up for infertility.[17] A total of 546 individuals underwent hysterolaparoscopy between 2013 and December 2013, yet some researchers demonstrated that diagnostic laparoscopy revealed either no disease or very little. Of these, 198 patients had regular ovulation cycles, normal ultrasonography, and normal HSG results. The lack of intrauterine adhesions [1] and the visualisation of bilateral tubal spill of contrast media without hydrosalpinx were the criteria for normal HSG in this investigation.

Patient case records were used to gather information on the selected patients, including age, duration, and type (*) values provided as mean, (#) values presented as percentage, and BMI = body mass index. In 124 out of 495 patients (25%) in Tanahatoo et al.'s retrospective analysis [20], diagnostic laparoscopy altered the planned course of therapy. This is similar to our research, in which 42 patients (21.1%) had their post-laparoscopy therapy altered. Similar to other publications, the added utility of diagnostic laparoscopy is restricted to 9 out of 198 patients (8%), excluding the existence of minor and moderate endometriosis as pelvic disease without therapeutic consequences.[20] This is consistent with earlier research conducted by Tanahatoo et al. [10], who similarly came to the conclusion that diagnostic laparoscopy is a dependable technique for identifying anomalies and supporting the treatment strategy. According to some earlier research,

laparoscopy has a very little effect on overall pregnancy rates. This has caused the investigation and treatment of the infertile couple to shift from a "diagnostic work-up" to a "prognosis-oriented approach." As a result, many thought it made sense to treat individuals with a normal HSG with a combination of gonadotropins and IUI for three to six months, then transition to assisted reproductive technology (ART) if that didn't work.[21] According to Goldman et al., standard laparoscopy was not required if an unexplained infertility examination yielded no results. Most patients who continue their therapy will get pregnant. However, rather than comparing laparoscopy results, this research evaluated pregnancy outcomes in women with infertility that could not be explained.[22] Since there was no discernible difference in the cumulative pregnancy rate between patients who proceeded to direct IVF and those who did so following laparoscopy, Shimizu et al. came to the conclusion that diagnostic laparoscopy should be made available as a choice for younger patients who want spontaneous conception. However, the likelihood of spontaneous conceptions was greater in the latter.[23]

However, in our research, individuals who had experienced two to three unsuccessful IUI cycles had notable pelvic abnormalities. 60 of the 76 participants in our research who had previously failed IUI got favourable laparoscopic results. After several unsuccessful IUI cycles, one could anticipate a greater pregnancy rate after laparoscopic therapy. Tanahatoe et al. conducted a retrospective analysis to determine if laparoscopy should be done before or after IUI [10].

Hysteroscopic and laparoscopic results are seldom discussed in the literature on imaging modalities in infertility that cannot be explained. Hysteroscopy has shown no noteworthy results in several prior investigations. This is not unexpected since other writers have also shown that homogenous endometrial structure and a regular myometrial-endometrial interaction

Table 2: Findings at laparoscopy

Type pathology	ofOchoa et al. ^[19] (%)	Tanahatoe et al. ^[20] (%)	Tsuji al. ^[25] (%)	etBonneau et al. ^[26] (%)	Drake al. ^[3] (%)	et Jayakuma ri et al. ^[15] (%)	Present study (%)
Normal	33/92 (35.9)	33/64 (51.6)	11/57 (19.3)	19/114 (16.7)	6/24 (25)	16/127 (12.6)	95/198 (47.9)
Minimal endometriosis	21/92 (22.8)	28/64 (43.8)	14/57 (24.6)	7/2114 (63.2)	11/24 (45.9)	48/127 (37.8)	48 (24.2)
Mild endometriosis	6/92 (6.5)		7/57 (12.3)			42/127 (33.1)	41 (20.7)
Moderate endometriosis	8/92 (8.7)		8/57 (14)			8/127 (6.3)	7 (3.5)
Severe endometriosis	2/92 (2.2)		7/57 (12.3)				
Endometriotic cyst	8/92 (8.7)						
Adhesions	30/92 (32.6)	3/64 (4.7)	5/57 (8.8)	5/57 (8.8)	5/57 (8.8)	4/127 (3.1)	35 (17.8)
Tubal pathology	1/92 (1.1)	0/64	3/57 (5.3)	24/114 (21.1)		22/127 (17.3)	42 (21.2)
Perihepatic adhesions							33 (16.9)
Tubercular granuloma							2 (1.2)

Table 3: Findings at hysteroscopy

Type of pathology et al. ^[14]	Makled Jayakrishnan ^[15] et al. (%)	Present study (%)
Normal	14	127/127 (76.8)
Periosteal adhesions		13 (6.6)
Polyps	31/93	9 (4.5)
Stenosis of internal os	6	3 (1.5)
Deep-seated ostia — small cavity		4 (2)
Septum		1 (0.5)
Fundal adhesions	7	6 (3)
Endometritis	14/93	6 (3)
Endometrial hyperplasia	15	4 (2)

mild endometriosis in 40-70% of all cases.[4]

The data that is currently available for the use of laparoscopy prior to ovulation induction only compares the results of HSG and laparoscopy for the diagnosis of tubal disease, the diagnosis and management of adhesions, and the management of minor and mild endometriosis. Additionally, compared to individuals who have never received therapy, this research considers the effect of laparoscopy in patients who have previously failed IUI. In our analysis, tubal pathology was seen in 21% of patients despite a normal HSG, whereas mild endometriosis was the most prevalent pelvic pathology [Table 2]. Lessey et al. discovered a significant incidence of endometriosis in individuals with infertility that was not explained in a cohort analysis.[12] In a related investigation, Poncelet et al. discovered that 95 out of 114 patients had pelvic disease detected by laparoscopy. Of these, 24 had tubal disease, 46 had pelvic adhesions, and 72 had endometriosis.[18]

92 patients underwent diagnostic laparoscopy in a retrospective study by Capelo et al. [19] after four unsuccessful cycles of clomiphene citrate ovulation induction therapy. Only 36% of laparoscopic results were technically normal (compared to 48% in our research), whereas 50% and 33% of patients had endometriosis and/or pelvic adhesions, respectively. Unfortunately, the authors did not report any conception rates after laparoscopic surgery, but they did find that laparoscopy is still a valuable tool in the work-up of an infertile couple.[19] These outcomes are similar to what we found in our investigation. Because there were more individuals in our research who had never had treatment, the proportion of normal results was somewhat greater. Our study's tubal pathology is noticeably greater, perhaps as a result of India's higher TB prevalence. Table 4: Treatment plan following laparoscopic Lavy et al. [7] Tsuji et al. [25] Jayakrishnan et al. [15] The current study IUI/fertile period: 60/63 (95.2%) 49/57 (86%) 151/172 (87.8%) 179/198 (90.4%)

3/63 (4.8%) 8/57 (14%) 21/172 (12.2%) Direct IVF 19/198 (9.6%) showed a normal endometrium on transvaginal sonography, negating the necessity for a diagnostic hysteroscopy.[13] 77% of the individuals in our research obtained normal results [Table 3]. Periosteal adhesions, whose clinical relevance is questionable, were the most often seen disease during hysteroscopy. On ultrasonography, polyps that had not previously been visible were found in nine instances. According to reports, 10–32% of hysteroscopic findings are asymptomatic endometrial polyps. Although a prospective study of 224 infertile women who had hysteroscopy found a 50% pregnancy rate after polypectomy, the exact function of endometrial polyps in infertility remains unclear.[24] Without cost-effectiveness, laparoscopy's efficacy would not be sufficiently shown. Sadly, not enough research has been done to allow us to evaluate the cost-benefit ratio of laparoscopy in cases of infertility that cannot be explained. The American Society of Reproductive Medicine's Practice Committee recommends that before using harsh empirical therapies that have a high cost and/or possible dangers, laparoscopy should be carefully evaluated.[2] Moayeri et al. discovered that following surgical treatment of endometriosis, laparoscopy followed by expectant care was economical. They found that the dropout rate was the most significant factor in deciding whether laparoscopy was the best option, particularly when the dropout rate from fertility treatments surpassed 9%. This was because the dropout rate had the most influence on the incremental cost-effectiveness ratio.[24] There has also been disagreement about when laparoscopy should be performed. Even if a laparoscopy before starting therapy seems appealing, the expense of this surgical procedure is substantial, particularly when patients are responsible for covering the expenses. Therefore, before doing a laparoscopy, many doctors opt to treat couples with infertility that cannot be explained with a few cycles of ovulation stimulation with IUI. The considerably greater identification of pelvic disease in this research (78.9%) indicates that having a laparoscopy after at least three cycles of ovulation stimulation with IUI should have logically resulted in a decrease in the frequency of negative laparoscopies. In these situations, a laparoscopy would have either improved fertility or changed the course of therapy.

CONCLUSION

In summary, laparoscopy has been shown to be a successful part of managing infertility, particularly in individuals who have failed three or more IUI cycles. Laparoscopy may assist avoid needless therapy with poor success rates, even if the result in terms of clinical pregnancy may not be significant according to prior research. To compare the effects of laparoscopy with IUI in patients with infertility that cannot be explained, more carefully monitored prospective randomised studies are needed.

REFERENCES

1. Smith S, Pfeifer SM, Collins JA. Diagnosis and management of female infertility. JAMA 2003;290:1767-70.
2. Practice Committee of the American Society of Reproductive Medicine. Effectiveness and treatment for unexplained infertility. Fertil Steril 2006;86(Suppl 1):S111-4.

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3. Drake T, Tredway D, Buchanan G, Takaki N, Daane T. Unexplained infertility. A reappraisal. *Obstet Gynecol* 1977;50:644-6.
4. Bosteels J, Van Herendael B, Weyers S, D'Hooghe T. The position of diagnostic laparoscopy in current fertility practice. *Hum Reprod Update* 2007;13:477-85.
5. Nezhat C, Littman ED, Lathi RB, Berker B, Westphal LM, Giudice LC, *et al.* The dilemma of endometriosis: Is consensus possible with an enigma? *Fertil Steril* 2005;84:1587-8.
6. Adamson GD. Laparoscopy, *in vitro* fertilization, and endometriosis: An enigma. *Fertil Steril* 2005;84:1582-4.
7. Lavy Y, Lev-Sagie A, Holtzer H, Revel A, Hurwitz A. Should laparoscopy be a mandatory component of the infertility evaluation in infertile women with normal hysterosalpingogram or suspected unilateral distal tubal pathology? *Eur J Obstet Gynecol Reprod Biol* 2004;114:64-8.
8. Ketefian A, Hu J, Bartolucci AA, Azziz R; Society of Reproductive Surgeons, Inc. Changes in the outpatient and inpatient utilization of female reproductive surgery, 1998-2002: Analysis of the Healthcare Cost and Utilization Project. *Fertil Steril* 2006;86:S302.
9. Adashi EY, Barri PN, Berkowitz R, Braude P, Bryan E, Carr J, *et al.* Infertility therapy — associated multiple pregnancies (births): An ongoing epidemic. *Reprod Biomed Online* 2003;7:515-42.
10. Tanahat S, Hompes PG, Lambalk CB. Accuracy of diagnostic laparoscopy in the infertility work-up before intrauterine insemination. *Fertil Steril* 2003;79:361-6.
11. Surrey ES, Schoolcraft WB. Does surgical management of endometriosis within 6 months of an *in vitro* fertilization — embryo transfer cycle improve outcome? *J Assist Reprod Genet* 2003;20:365-70.
12. Lessey BA, Forstein DA, Miller PB, Egbuniwe MN, Dodds R. Laparoscopic surgery improves outcome and diagnostic accuracy in unexplained infertility. *Fertil Steril* 2010;94:S38.
13. Nayak PK, Mahapatra PC, Mallick JJ, Swain S, Mitra S, Sahoo J. Role of diagnostic hystero-laparoscopy in the evaluation of infertility: A retrospective study of 300 patients. *J Hum Reprod Sci* 2013;6:32-4.
14. Makled AK, Farghali MM, Shenouda DS. Role of hysteroscopy and endometrial biopsy in women with unexplained infertility. *Arch Gynecol Obstet* 2014;289:187-92.
15. Jayakrishnan K, Koshy AK, Raju R. Role of laparohysteroscopy in women with normal pelvic imaging and failed ovulation stimulation with intrauterine insemination. *J Hum Reprod Sci* 2010;3:20-4.