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ORIGINAL ARTICLE

Role of Hystero-laparoscopy in Infertility

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Abstract

Background: One of the most frequent issues for which a couple seeks medical help is infertility. Unfortunately, standard clinical examinations and ultrasounds frequently overlook a number of illnesses that impair female fertility. We looked at the prevalence of different medical disorders that affect the female reproductive system and cause infertility. The effectiveness of hystero-laparoscopy as a diagnostic and treatment technique for infertility was evaluated, and patients' subsequent fertility was examined.

Material and methods: This is a retro-prospective descriptive study carried out on 75 infertility patients undergoing diagnostic hysterolaparoscopy in a tertiary care hospital from Jan 2017 to October 2019. This study was approved by the ethical committee. Primary parameters in terms of the prevalence of various pathological conditions leading to infertility were assessed. Secondary parameters in terms of fertility outcome after hysterolaparoscopy was studied.

Result: Adhesions were the most common findings (28%) followed by fibroid (16%), cyst (14.7%), PCOS and Endometriosis (8% each), tubal blockade (6.7% each unilateral and bilateral), unicornuate uterus and arcuate uterus with tubal block (2.7% each) and bilateral to mass (1.3%) respectively. A total of 69 (92%) patients underwent therapeutic hysterolaparoscopic procedures. Ovulation induction (48%) was the most common post-intervention (hysterolaparoscopy) treatment followed by in vitro fertilization (21.3%) and Ovulation induction with intra-uterine insemination (13.3%). No post-intervention treatment was offered to 13 patients (17.3%) out of which spontaneous conception was achieved in 6 patients. Overall, the conception success rate was 40%.

Conclusion: The findings of the study showed that hystero-laparoscopy was useful in finding out the cause of infertility in a large proportion of women. It was also useful in simultaneously offering the appropriate intervention depending upon underlying pathology. The use of hysterolaparoscopy followed by post-intervention infertility treatment was useful in achieving conception.

Introduction

One of the most frequent issues for which a couple seeks medical help is infertility. At some point in their lives, 8 to 15% of couples worldwide, and in some regions that number rises to one-third or more, struggle to conceive.[1-4] The World Health Organization estimates that the incidence of infertility is about 10% worldwide. Another 10-12% of all the other couples have only one child and wish to have more.[5]

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Infertility is increasingly becoming more common over the world, particularly in nations with inadequate sexual education, with 10% of these cases being documented in India.[6] More recently WHO estimates the overall prevalence of primary infertility in India to be between 3.9 and 16.8%.[7]

The majority of pelvic pathology in infertile women is frequently not well appreciated by routine pelvic examination and usual diagnostic procedures. Infertility in females has been under extensive research and novel techniques have been developed to diagnose and treat pathological problems like tubal block, intraperitoneal adhesions, and ovarian causes, any unsuspected pelvic pathology, and uterine cavity abnormalities in a single setting.[8]

Female infertility is being thoroughly assessed using the diagnostic hysterolaparoscopy (DHL) procedure, which has the added benefit of allowing for therapeutic measures in some circumstances.[9.] The value of DHL is found in the thorough, direct visualization and analysis it provides of the uterine cavity, endometrium, tubal morphology and patency, and uterine, ovarian, and adnexal disease. Aside from that, it is safe to combine therapeutic treatments including adhesiolysis, ovarian drilling, ovarian cystectomy, myomectomy, polypectomy, and release of uterine synechiae.

The goal of the current study was to examine the prevalence of different pathological conditions in the female reproductive tract that cause infertility, the effectiveness of hysterolaparoscopy as a diagnostic and therapeutic tool for infertility, and the fertility outcomes in patients who had the procedure.

Material And Methods

The present study was conducted in a tertiary care hospital after taking clearance from the ethical committee during the period January 2017 to October 2019. The study was retrospective during the period January 2017 to May 2019 and prospective during the period May 2019 to October 2019. Female patients with infertility undergoing DHL with adherence to the inclusion and exclusion criteria, subject to written informed consent were studied.

INCLUSION CRITERIA

Female patients of age 18-41 years of age with infertility visiting Gynecology OPD of tertiary care hospital and having at least 6-months post hystero-laparoscopy follow-up were included in the study.

EXCLUSION CRITERIA:

Patients suffering from active genital infections, having any contraindication to surgery and those not willing for surgery were excluded from the study.

The cause of infertility in patients undergoing DHL was noted in pre-tested proforma recorded. Post-hysterolaparoscopy treatment was offered to the patients as per the cause and subsequent outcome in terms of conception in patients was recorded.

Results

A total of 75 patients underwent hysterolaparoscopy. Adhesions were the most common findings (28%) followed by fibroid (16%), cyst (14.7%), PCOS and Endometriosis (8% each), tubal blockade (6.7% each unilateral and bilateral), unicornuate uterus and arcuate uterus with tubal block (2.7% each) and bilateral TO mass (1.3%), respectively. A total of 4 (5.3%) cases had normal findings on laparoscopy. Hysteroscopy subsequently was helpful in elaborating/confirming the diagnosis in 40 cases (Table 1).

Adhesiolysis was the most common procedure (28%) followed by cystectomy (13.3%), ovarian drilling (10.7%), polypectomy (9.3%), ovarian drilling, and myomectomy (8% each), adhesiolysis with cystectomy (5.3%), tubal cannulation (4%) and dilatation and resection of polypoidal endometrium (2.7% each). There were 6 (8%) cases in whom combined procedures were done. A total of 6 (8%) cases underwent only DHL in which fallopian tubes were opened under pressure (Table 2).

Ovulation induction (48%) was the most common post-hysterolaparoscopy treatment followed by in vitro fertilization (21.3%) and ovulation induction with intrauterine insemination (13.3%). A total of 13 (17.3%) did not receive any specific treatment (Table 3).

Table 1: Hystero-Laparoscopic Findings to establish the cause of infertility

SN	Laparoscopic Finding	Hysteroscopic Evaluation	No.	%
1.	Bilateral tubal blockade		5	6.7
	2 cases also had bulky uterus and unilateral hydrosalpinx	Endometrial polyps (n=2)		
2.	Unilateral tubal blockade		5	6.7
	Two cases had unilateral hydrosalpinx	Endometrial polyps (n=2)		
	Two cases had unilateral tortuous tubes	Stenosis of ostia (n=2)		
3.	PCOS One case also had unilateral blockade with delayed dye spillage in other side	In one case having B/L PCOS on laparoscopy unilateral fibrosis of ostia was observed (n=1)	6	8.0
4.	Fibroid		12	16.0
	Eight cases also had partial/complete blockade of tubes	Uterine synechiae were seen in one case, Endometrial hyperplasia with endocervical canal cyst in one case, hypoplastic endometrium with polyp in one case, uterine septum in one case, tubular endometrial cavity in two cases (n=6)		
5.	Endometriosis		6	8.0
	5 cases also had adhesions	Uterine synechiae revealed in two cases (n=2), Endometrial polyp (n=1)		
	1 also had adhesion + hydrosalpinx	Right ostia not visualized (n=1)		
6.	Cyst	One case having adnexal cyst had unilateral ostial block (n=1) One case having chocolate cyst had endometriotic spot (n=1)	11	14.7
	Hemorrhagic cyst with partial tubal block	Endometrial polyp (n=2)		
	One case also had adhesion, one case also had hydrosalpinx and adhesions			
7.	Unicornuate uterus (Both the cases had unilateral blockade too)	On hysteroscopy small cavity,unicornuate ,single ostia rt side (n=2)	2	2.7
8.	Bilateral TO Mass (The case also had adhesion)	uterine synechiae	1	1.3
9.	Adhesions (One case also had endometriosis)	White spots on endometrial cavity (n=2), Uterine synechiae (n=6), Osteal stenosis (n=2), Hyperplastic endometrium (n=1), Polyp (n=1)	21	28.0
10.	Arcuate uterus with tubal block	Endometrial polyp	2	2.7
11.	Normal		4	5.3
	Three cases had partial blockade too	Two confirmed to have Polypoidal endometrial cavity (n=2)		

Table 2: Therapeutic Procedures done

SN	Procedure	No.	%
1.	Adhesiolysis	21	28.0
2.	Cystectomy	10	13.3
3.	Ovarian drilling	8	10.7
4.	Polypectomy	7	9.3
5.	Myomectomy	6	8.0
6.	Adhesiolysis with cystectomy	4	5.3
7.	Tubal cannulation	3	4.0
8.	Dilatation	2	2.7
9.	Resection of polypoidal endometrium	2	2.7
8.	Others (2 cases – U/L tubal salpingectomy+polypectomy, 1 case each – cystectomy+adhe siolysis+polypectomy, bilateral cystectomy+partial oopherectomy, bilateral cystectomy+salpingectomy and myomectomy+adhesiolysis)	6	8.0
9.	None	6	8.0

Table 3: Post-intervention Treatments offered

SN	Treatment	No. of cases	Percentage
1.	In vitro fertilization (IVF)	16	21.3
2.	Ovulation induction (OI)	36	48.0
3.	OI with Intrauterine insemination (IUI)	10	13.3
4.	None	13	17.3

Overall, the conception success rate was 40% out of which spontaneous conception was achieved in 6 patients undergoing the study.

Discussion

Infertility is a great medical as well as social problem faced by a couple, especially in conservative societies like India. In 15-20% of cases of female infertility tubal and uterine factors play a main role. Hysterosalpingography, a radiographic technique that provides accurate information about the patency and morphology of the fallopian tubes, has long been regarded as the gold standard for evaluating the tubes. Additionally, they are advised for uterine cavity research in the diagnosis and planning of care for various gynecologic issues like intrauterine adhesions and congenital malformations. The drawbacks of this approach include patient discomfort, iodinated contrast medium use, and pelvic radiation exposure.[10] Despite their value, radiographic procedures are frequently linked to significant false-positive and false-negative rates.[11,12] One of the drawbacks of HSG is the inability to distinguish between tubal spasm and tubal blockage.[13] On the other hand, adhesions, one of the most frequent causes of tubal blockage, are difficult to diagnose with ultrasonography.[14]

Tubal and cornual blockade are one of the major reasons for female infertility and imaging techniques such as ultrasonography and hysterosalpingography are useful in the diagnosis of tubal and cornual blockade. These imaging assessments were part of the pre-laparohysteroscopy evaluation and have high utility in the diagnosis of tubal blockade and some other pathologies, however, the exact pathology is often missed.[15,16] Roma *et al*. (2004)[17] mentioned that information concerning the assessment of tubal morphology and patency is provided by hysterosalpingography and hence this ultrasonography and hysterosalpingography should be considered complementary in the evaluation of the uterine cavity.

In present study, adhesions were the most common findings (28%) followed by fibroid (16%), cyst (14.7%), PCOS and Endometriosis (8% each), tubal blockade (6.7% each unilateral and bilateral), unicornuate uterus and arcuate uterus with tubal block (2.7% each) and bilateral TO mass (1.3%) respectively. A total of 4 (5.3%) cases had normal findings on laparoscopy. Hysteroscopy subsequently was helpful in elaborating/confirming the diagnosis in 40 cases. On the other hand endometriosis (32%), ovarian disorder (22%), and intra-uterine synechiae and cervical stenosis together (14%) as the three major abnormal findings reported by Chimote *et al.* (2015)[18]. Endometriosis (48.5%), adhesions (34.7%), and tubal pathologies (21.2%) were detected as the major abnormal pathologies by Bhandari *et al.* (2015)[19].

In present study, a total of 69 (92%) patients underwent therapeutic laparohysteroscopy

procedures. Adhesiolysis was the most common procedure (28%) followed by cystectomy (13.3%) and ovarian drilling (10.7%) were the major procedures carried out.

Puri *et al*[20] in their study had a much lower rate of intervention. In their study only 52% patients underwent procedures. In their study too, adhesiolysis (22%), drilling (22%) and cystectomy (4%) were the most commonly performed procedures.

With respect to the type of procedure, a maximum (49.3%) underwent laparoscopic procedure only while 15 (20%) underwent hysteroscopic procedure only. There were a total of 17 (22.7%) cases who required both hysteroscopic and laparoscopic procedure.

Following laparohysteroscopic evaluation and procedures, in present study we adopted the subsequent infertility management strategy in consonance with clinical and hormonal profile of the patient. Ovulation induction (48%) was the most common post-intervention treatment followed by in vitro fertilization (21.3%) and ovulation induction with intrauterine insemination (13.3%). No specific treatment was given in view to 13 patients. The patients were then followed up for a period of 6 months. During the study period a total of 35 (40%) conceived. The conception rate was quite high in present study. Compared to present study, Puri *et al.* (2015)[20] reported conception in only 28.2% patients. The length of follow-up also affects the success rates after hysterolaparoscopic operation. Success rates as high as 81.3 percent have been recorded in another trial, which included patients with a minimum of a 2-year follow-up. In that study, 39.5% of pregnancies were spontaneous, 3.8% were the result of artificial insemination (AIH), and 56.8% were the result of in vitro fertilization with embryo transfer (IVF-ET).

In present study, we found that hystero-laparoscopy provides a level ground for infertility treatment by detecting and treating the abnormal pathologies, especially among those women in whom ovulatory, male-factor, hormonal and other factors have been excluded. One of the limitations of present study was short follow-up despite that there was a high success rate in conception rate. Further studies on a larger sample size with longer duration of follow-up are recommended to evaluate the impact of hystero-laparoscopy in terms of transformation in successful pregnancy.

Conclusion

The findings of study showed that hystero-laparoscopy is useful in finding out the cause of infertility in women. It is also useful in simultaneously offering the appropriate intervention depending upon underlying pathology. Use of hysterolaparoscopy followed by post-intervention infertility treatment is useful in achieving conception. The findings thus suggest a high efficacy of hysterolaparoscopy in the management of infertility in women.

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