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Dr. Madhukar Shinde
MD Obstetrics and Gynae.
Consultant & Associate Professor
Obstetrics & Gynaecology DY
Patil University, DPU
Maharashtra India

Dr. Umesh Sable
MS Obstetrics and Gynae.
Consultant & Assistant Professor
Obstetrics & Gynaecology DY
Patil University, DPU
Maharashtra India

Dr. Rajendra Shitole
DNB; DGO Obstetrics and Gynae.
Consultant & Assistant Professor
Obstetics & Gynaecology DY Patil
University, DPU,
Maharashtra India

Correspondence
Dr. Madhukar Shinde
MD Obstetrics and Gynae.
Consultant & Associate proff
Obstetrics & Gynaecology DY
Patil University, DPU
Maharashtra India

Should diagnostic hysteroscopy and diagnostic laparoscopy be a combined primary work up in evaluating primary & secondary infertile women?

Dr. Madhukar Shinde, Dr. Umesh Sable and Dr. Rajendra Shitole

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Abstract
The aim of this study was to clarify the role of simultaneous combined diagnostic approach using laparoscopy and hysteroscopy in the primary evaluation of female infertility.
Also to study its significance in etiopathology of primary and secondary infertility.
Materials and Methods: In a prospective study of 100 infertile female, patient were thoroughly examined, evaluated & underwent Hysterolaparoscopy as a primary work up. Patient divided into 2 categories 50 patient of primary infertility & 50 patients as 2^0 infertility
Results: In this study it was found that tuberculosis (TB) were present in 7 patients of primary (1^0) & 2 patients of secondary (2^0) infertility. Pelvic adhesions were found in 7 patients of 1^0 & 5 patients of 2^0 infertility. Bilateral tubal black seen in 4 patients of 1^0, none of the patient of 2^0 infertility were found to have bilateral tubal block. Unilateral tubal block – seen in 4 patients of 1^0 & 2 patients of 2^0 infertility
Also on hysteroscopy uterine anomalies were present in 3 patients of 1^0 & 5 patient of 2^0 which includes Arcuate, Bicarnuate, unicornuate, Septate uterus. Submucous fibroid were found in 1 patient of 1^0 & 3 patient of 2^0 infertility.
Hysterolaparoscopy plays very important role as diagnostic tool in the infertile women.
Also, diagnostic hysteroscopy has significant role in the evaluation of the cause of female infertility both primary & secondary. Furthermore hysterolaparoscopy can be used simultaneously for treatment of any pathological condition like septal resection, polycystic ovary drilling, fimbrial block & many more. However, one can rarely expect to find the definite underlying reason for infertility in all other methods of evaluation.
Conclusion: We consider combined laparoscopy and hysteroscopy to be the most important procedures in the evaluation of female infertility & combined diagnostic laparoscopy and hysteroscopy should be performed in all infertile patient of primary & secondary infertility before subjecting her for further treatment.

Keywords: Hysterolaparoscopy, diagnostic, infertile

Introduction
Infertility is a growing concern of the society. It is estimated that 10-15% of couples in India are infertile. Identifying the cause of infertility is complex and after a standard evaluation 20-30% of couples will have no clearly identifiable cause of their infertility [1-2]. However, these estimates include couples in which the female partner may not have been thoroughly evaluated with laparoscopy for pelvic pathology (such as endometriosis). It has been estimated that using laparoscopy as a standard test have tubal function would reduce the apparent incidence of unexplained infertility from 10% to 3.5% [3].
Laparoscopy and Hysteroscopy are diagnostic and therapeutic procedures. If pathology is discovered, it can often be treated immediately. Generally, diagnostic laparoscopy and hysteroscopy are not part of the initial primary work up in infertility evaluation. Diagnostic laparoscopy is normally a standard procedure performed as the final test in the infertility work up before progressing to infertility treatment. There has been a growing tendency to bypass diagnostic laparoscopy and hysteroscopy after normal hysterosalpingogram and instead starting direct infertility treatment. A number of reports have shown that laparoscopy is an effective procedure for diagnosis and treatment of long term infertility. Laparoscopy has been suggested as a mandatory step to preclude the existence of Peritubal adhesion and endometriosis as the cause of infertility.

Also, diagnostic hysteroscopy is a very important method for investigation of the reason of female infertility. However, one can rarely expect to find the definite underlying reason for infertility by other means.

Changing lifestyle, late marriage, longer family planning, incidence of infertility increases day by day. Also the patience of patient is also reducing to wait for long duration of evaluation & treatment. It's a 21st century of "T-20" Quick diagnosis & quick treatment is expected in today's era. Hysterolaparoscopy that's why emerging as a gold standard method for quick evaluation of infertile female. There is tendency of delaying hysterolaparoscopy until 6-12 months of treatment ovulation induction with follicular study. But there are certain condition which are actually diagnosed only by hysterolaparoscopy like endometriosis, tuberculosis, pelvic inflammatory diseases (PID), septate uterus & also in same setting it can be converted into therapeutic procedure. Also hysteroscopy is must for evaluation of endometrium. Sometimes Hysterosalpingogram (HSG) may give false results due to corneal spasm & sometime it gives false impression of patent tube though on laparoscopy tube might not be functional because of TB or PID.

Secondary infertility sometimes taken lightly and aggressive evaluation & treatment is not given in these patients. That's why they fall into a trap as ovarian reserve go on lower side, quality of sperms & ovum also decreases so it will be added to actual cause of infertile women. Certain causes of 2^0 infertility which can only be diagnosed by hysterolaparoscopy like endometriosis, septate uterus, Asherman syndrome.

In the light of above, diagnostic hysteroscopy should be included routinely in the work-up of invasive examinations for infertile patient & combined laparoscopy and hysteroscopy should be included in the primary evaluation of both primary & secondary female infertility.

Materials and Methods

We have done a prospective study on 100 patients of infertility. We choose 50 patient of 1^0 & 50 patients of 2^0 infertility. Prior consent of couple taken before they are included in any study group. Hysterolaparoscopy were carried out on these 100 patient successfully in Dr. D.Y. Patil hospital Pimpri, Pune 18 between May 2018- May 2019. Before posting patient for hysterolaparoscopy basic work up of infertility were completed: Semen analysis, Hormonal profile, USG pelvis, Pap smear. Duration of infertility was ranging from 2yrs -10yrs Mean age of the patient were 33yrs ranging from 25-38yrs.

This procedure was carried out in premenstrual phase of the menstrual cycle under general anesthesia. Hysteroscopy were routinely done in every patient. Dye test were done at laparoscopy with methyl blue.

Exclusion criteria – History of previous hysterolaparoscopy with or without treatment

Results

Table 1: Laparoscopy: Findings In Both Primary & Secondary Infertility

Sr. No.	Pathology diagnosed	Primary infertility	Secondary infertility
1	Pelvic adhesions	7	5
2	Tuberculosis	7	2
3	Bilateral Tubal Block	4	0
4	Unilateral Tubal Block	4	2
5	Fibroid	1	3
6	Endometriosis	6	3
	Total	29	15

In total 100 infertile women underwent combined laparoscopy and hysteroscopy as a part of routine infertility evaluation. 58% of 1^0 & 30% of 2^0 infertile females had found some or the other kind of pathology on laparoscopy. Also 16% of 1^0 & 24% 0f 2^0 infertility patients had some pathology on hysteroscopy. Bilateral tubal patency was demonstrated in 92% patient of 1^0 & 100% of 2^0 infertility. Bilateral tubes were blocked in 4 (8%) and unilateral tubal occlusion had 4(8%) of patients of 1^0 infertility. On the contrary bilateral tubal block was not found in any of the 2^0 infertile patient while 2(4%) patients had unilateral block. Pelvic adhesions were confirmed by laparoscopy in 7 (14%) & 5(10%) of patients in 1^0 & 2^0 infertility respectively in our study. In this study it was found that tuberculosis (TB) were present in 7(14%) patients of 1^0 & 2(4%) patients of secondary 2^0 infertility. Among 100 women there were 6 (12%) patients of 1^0 & 3(6%) patients of 2^0 found to have endometriosis.

Table 2: Hysteroscopy: Findings In Both Primary & Secondary Infertility

Sr. No.	Pathology diagnosed	Primary infertility	Secondary infertility
1.	Uterine anomaly	3	5
	a) Arcuate	2	2
	b) Bicornuate	0	1
	c) unicornuate	1	0
	d) Septate	0	2
2.	Submucouse fibroid	1	3
3.	Polyp	4	3
4.	Asherman's	0	1
	Total	8	12

Our study revealed myomas in 2(4%) & 6(12%) patients of 1^0 & 2^0 infertility respectively, out of that 4(8%) by hysteroscopy and 4(8%) by laparoscopy. Endometrial polyps were revealed in4 (8%) & 3(6%) patients. Asherman syndrome was present in single patient of 2^0 infertility. Uterine anomaly were revealed in 3(6%) & 5(10%) of cases in primary & secondary infertility respectively. Septate uterus were diagnosed in 2(4%) patient of 2^0 infertility. Incidence of Arcuate uterus was similar in both primary & secondary infertility i.e, 2(4%) in each group. Bicornuate uterus found in one patient of 2^0 infertility &

unicornuate uterus in one patient of 1^0 infertility. Fitz Hugh Curtis syndrome was present in 9(18%) patients among both groups.

Discussion

Infertility is defined as inability to achieve pregnancy within a year of regular unprotected intercourse. The role of diagnostic hysterolaparoscopy in current fertility practice is still under debate. Intracavitary pathology includes submucous myomas and endometrial polyps. Those pathologies often result in infertility. Congenital anomalies of the female reproductive system are associated with higher rate of infertility. Diagnostic hysteroscopy offers a reliable evaluation of the uterine cavity and subsequent detection of intrauterine disease [3]. Complication rate of diagnostic hysteroscopy are low as of 0.012% [4]. Incidence of uterine congenital anomalies is not accurately known. Discrepancy is a result of inaccurate diagnostic method, lack of uniform system of classification and many of them are asymptomatic. Mean prevalence of uterine malformation in general population and in the population of fertile woman is approximately 4.3% & infertile patients approximately 3.5 % and in patient with recurrent pregnancy losses approximately 13% [5]. Our study had shown that the incidence is approximately 6% in primary & 10% in secondary infertility.

Anomalies of the uterus are considered to be one of the reason for infertility in women and for this we believe diagnostic hysteroscopy is fundamental in screening for infertility [6].

Until recently, laparoscopy was the final diagnostic procedure of female fertility exploration, as outlined by the American Fertility Society in 1992 and by the World Health Organization guidelines. In 1997, Glatstein *et al.* reported that 89% of all reproductive endocrinologists in the USA routinely performed a laparoscopy in the diagnostic work-up of infertility. However, some investigators showed that diagnostic laparoscopy did not reveal any pathology or only minimal and mild endometriosis in 40-70% of all cases [4].

In infertile patients in our study about 40% of hysteroscopy examination show some grade of intrauterine abnormalities (Table2) out of that 16% were found in 1^0 & 24% in 2^0 infertility. With the view of the low complication rate minimal time requirement, and a negligible effect on the postoperative course, hysteroscopy could be performed on all infertile patient undergoing diagnostic laparoscopy [14]. The hysteroscopy showed a normal cavity in 60 % cases, giving a false negative rate of 20% hysterosalpingography [8]. Routine diagnostic hysteroscopy should be a part of an infertility work up in primary and secondary infertility. Laparoscopy was helpful in making a decision to go to assisted reproductive technology particularly when infertility has been of long duration and in older women [9]. Our result of laparoscopy and dye studies performed with methylene blue, presented 8% bilateral tubal block and 12% patient has unilateral tubal occlusion. Laparoscopy very often revealed pelvic pathology as endometriosis, tuberculosis, pelvic and per adnexal adhesions that resulted in change of treatment decision [15]. Our study revealed pelvic adhesion in 14% of primary & 10% of secondary infertility. Women whose basic infertility survey revealed know abnormalities, laparoscopy confirmed in overall, 24% of patients with evidence of pelvic diseases. Cundiff *et al.* also showed that pelvic pathology was found in 56% of patient who underwent laparoscopy and recommended that laparoscopy be carried out after a normal hysterosalpingography if pregnancy had not occurred within one year because of high incidence of pelvic pathology [10]. In our study [11], pelvic pathology by laparoscopy was confirmed in58% of primary & 30% of secondary infertility (table 1). In many cases, evidence of per hepatitis and adhesions between liver and anterior abdominal wall or diaphragm could be confirmed only by laparoscopy. Fitz- Hugh-Curtis syndrome present in 16.8% in infertility patient. Our study revealed Fitz-Hugh-Curtis syndrome (18%) of patients [16]. Therefore, laparoscopy should be carried out in all patients to look for a tubal or pelvic cause of infertility when all other examinations performed were normal. Our study [12] revealed myomas in 3.05% by hysteroscopy and 8.6% on laparoscopy. We found endometrial polyps in 7.22% of infertile patient. In 100 patients who underwent hysteroscopy intrauterine finding were Submucosal myomas in 2% of 1^0 & 6% of 2^0 infertility patient, endometrial polyps in 8% in 1^0 & 6% of 2^0 infertility. It is very important to perform simultaneous diagnostic laparoscopy and hysteroscopy in all infertile women.

Conclusion

From the results of our study we conclude, considering advanced age of the patient, long duration of family planning method, late marriage & on other hand reduced complication, negligible post-operative care added benefits of single setting therapeutic value & 100% diagnosis of certain conditions, hysterolaparoscopy should be considered Gold standared for evaluation of infertile female & should be included in primary workup Etiopathology of 1^0 & 2^0 infertility might be totally different & 2^0infertility also has definitive role of hysterolaparoscopy. From this study we concluded that hysterolaparoscopy play an important role in evaluation of infertile female not only in primary but also in secondary infertility.

Combined diagnostic laparoscopy and hysteroscopy should be performed in all infertile patients before further treatment. Many diagnostic test for female infertility only have screening value and gold standards are laparoscopy and hysteroscopy

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