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# Various Anatomical Factors in Female Infertility

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**Original Research Article**

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**Abstract:** Infertility is a major health issue and is a growing concern of the society. In many cases the exact cause of infertility may not be elucidated, whether it is tubal, ovarian, uterine, peritoneal or a combination of factors. This paper aims to understand the role of diagnostic laparo-hysteroscopy in evaluation of cases of infertility. This prospective study included 40 infertile women and it was conducted at department of Obstetrics and Gynaecology, GMC Hospital, during the period between June 2016 to May 2017. Forty cases of primary and secondary infertility were subjected to laparoscopy and hysteroscopy after taking informed consent. Causes of infertility were found out and association of various pathologies in female reproductive tract was studied. Prevalence of primary infertility was 57.14% and of secondary infertility was 42.86%. Commonest pathology responsible was uterine in both primary infertility and secondary infertility. Uterine causes contributed about 20 cases (50%), tubal cases contributed 16 cases (40%), ovarian and peritoneal factors both accounted for 9 cases each (22.5%) and unexplained infertility accounted for 6 cases (15%). Most common uterine factor was uterine synechiae (17.5%).
**Keywords:** Infertility, primary infertility, secondary infertility, Laparoscopy, Hysteroscopy.

## INTRODUCTION

According to World Health Organization, infertility is defined as "a disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse".

The etiological factor is found in female in 40% cases, male in 35% cases, combined in 10-20% cases and rest have unexplained infertility[1]. Causes of female infertility are due to ovarian, tubal, uterine and peritoneal factors. Diagnosis and treatment of female infertility stands out as the most rapidly evolving area in reproductive medicine. As routine examinations and procedures are often unable to diagnose some pelvic pathology, laparohysteroscopy has become an important diagnostic modality to detect hidden pathologies in the infertile female.

Combined laparohysteroscopy helps in evaluating tubal morphology and patency, ovarian morphology, unsuspected pelvic pathology and uterine cavity abnormalities. There is also an added advantage of being able to treat the cause in the same sitting. The present study aims to find out the association of various anatomical factors seen by laparohysteroscopy.

## MATERIALS AND METHODS

A prospective study was done on 42 patients presenting with infertility from 1st June 2016 to 31st May, 2017 to the Department of Obstetrics and Gynaecology, Gauhati Medical College, Guwahati. Required approval of Institutional Ethical Committee was obtained. After taking informed and written consent, detailed history of the patient, general physical and gynaecological examination was done and they were recorded in a proforma. Investigations were done to confirm normal ovulatory cycles, hormonal assays and seminogram report. Patients with any kind of contraindication for general anaesthesia or laparohysteroscopy were excluded. A pre-anaesthetic check-up was done.

Laparohysteroscopy was carried out in the early follicular phase of the menstrual cycle on in-patient basis under general anaesthesia, as a one-step procedure. Stryker hysteroscope (4 mm diameter) was used for diagnostic hysteroscopy. Hysteroscope was

introduced and the cervical canal, uterine cavity, endometrium and both ostia were thoroughly inspected.

Stryker laparoscope (5 mm diameter) was introduced after creating pneumoperitoneum infraumbilically and thorough inspection of uterus, anterior and posterior cul-de-sacs, fallopian tubes, ovaries, and rest of the pelvic peritoneum was performed. Any abnormality, including adhesions was noted. Chromopertubation was done in all the cases using dilute methylene blue dye. Any relevant positive findings in laparohysteroscopy were noted and tabulated. Appropriate statistical measurements were used for calculation.

## RESULTS

Out of 40 patients, 23 cases (57.5%) consisted of primary infertility and 17 cases (42.5%) consisted of secondary infertility patients. Association of prevalence of various pathologies in female reproductive tract is presented in Table 1. Out of the 40 cases of infertility studied, 6 (15%) had unexplained cause out of which 4 were primary infertility cases and 2 were secondary infertility cases.

**Table-1: Association of prevalence of various pathologies in female reproductive tract**

| Causes | Primary infertility | | Secondary infertility | | Total infertility | |
|---|---|---|---|---|---|---|
| | No | % | No | % | No | % |
| Uterine | 9 | 39.13 | 11 | 64.70 | 20 | 50.00 |
| Ovarian | 8 | 34.78 | 1 | 5.88 | 9 | 22.50 |
| Tubal | 8 | 34.78 | 8 | 47.06 | 16 | 40.00 |
| Peritoneal | 4 | 17.39 | 5 | 29.41 | 9 | 22.50 |
| Unexplained | 4 | 17.39 | 2 | 11.76 | 6 | 15.00 |

In the primary infertility group, commonest pathology responsible were uterine (39.13%) followed by ovarian (34.78%), tubal (34.78%), and peritoneal (17.39%). Commonest pathology responsible was uterine (64.70%) in the secondary group also. This was followed by tubal (47.06%), peritoneal (29.41%) and ovarian (5.88%). Thus considering both the groups together, cases of uterine pathology (50%) was highest followed by tubal (40%).

**Table-2: Causes of various uterine and ovarian factors responsible for infertility**

| Factors | Findings | Primary infertility | | Secondary infertility | | Total infertility | |
|---|---|---|---|---|---|---|---|
| | | No | % | No | % | No | % |
| Uterine | Fibroid | 2 | 8.69 | 0 | 0 | 2 | 5.00 |
| | Adenomyosis | 1 | 4.35 | 1 | 5.88 | 2 | 5.00 |
| | Septum | 0 | 0 | 1 | 5.88 | 1 | 2.50 |
| | Endometriotic deposits over uterus | 3 | 13.04 | 1 | 5.88 | 4 | 10.00 |
| | Uterine synechiae | 1 | 4.35 | 6 | 35.29 | 7 | 17.50 |
| | Endometrial polyp | 1 | 4.35 | 2 | 11.76 | 3 | 7.50 |
| | Cervical stenosis | 1 | 4.35 | 0 | 0 | 1 | 2.50 |
| Ovarian | PCO | 3 | 13.04 | 0 | 0 | 3 | 7.50 |
| | Simple cyst | 1 | 4.35 | 0 | 0 | 1 | 2.50 |
| | Dermoid | 1 | 4.35 | 0 | 0 | 1 | 2.50 |
| | Endometriosis of ovary | 3 | 13.04 | 1 | 5.88 | 4 | 10.00 |

It is seen from Table 2 that uterine factors constituted 50% of the total cases of infertility. Out of that, most common was uterine synechiae (17.5%) which is observed in 1 case of primary infertility and 6 cases of secondary infertility. Two cases (8.69%) of fibroid were seen in primary group out of which one was intramural detected by laparoscopy and other was submucosal detected by hysteroscopy. Septate uterus was seen in 1 case (5.88%) of secondary infertility and cervical stenosis was seen in 1 case (4.35%) of primary infertility. Endometrial polyp was seen in 1 (4.35%) and 2 (11.76%) cases of primary and secondary infertility respectively.

Ovarian factor accounted for 22.5% cases. Among various ovarian factors responsible for infertility, endometriosis of ovary was commonest (10%) followed by PCO (7.5%) which was observed in 3 primary cases but none in the secondary group. Ovarian cyst was seen in 2 cases of primary infertility, one was a case of simple cyst and the other, a dermoid cyst and none in secondary group.

**Table-3: Causes of various tubal and peritoneal factors responsible for infertility**

| Factors | Findings | Primary infertility | | Secondary infertility | | Total infertility | |
|---|---|---|---|---|---|---|---|
| | | No | % | No | % | No | % |
| Tubal | Tubo-ovarian mass | 0 | 0 | 2 | 11.76 | 2 | 5.00 |
| | Unilateral tubal block | 0 | 0 | 1 | 5.88 | 1 | 2.50 |
| | Bilateral tubal block | 6 | 26.08 | 5 | 29.41 | 11 | 27.50 |
| | Hydrosalpinx | 1 | 4.35 | 0 | 0 | 1 | 2.50 |
| | Genital tract tuberculosis | 1 | 4.35 | 0 | 0 | 1 | 2.50 |
| Perito-neal | Pelvic endometriosis | 3 | 13.04 | 1 | 5.88 | 4 | 10.00 |
| | Peritubal and periovarian adhesions | 1 | 4.35 | 4 | 23.53 | 5 | 12.50 |

Causes of various tubal and peritoneal factors responsible for infertility is presented in Table 3. Tubal factors accounted for 40% of the total cases. In the primary infertility group, out of 6 cases (26.08%), 3 were not associated with any other pathology. However rest of the 3 cases were associated with endometriosis in one, beaded appearance of tubes, i.e. genital tract tuberculosis in other and hydrosalpinx with intraperitoneal ahdhesions in the last one. In contrast, 6 cases observed in the secondary infertility group had associated factors, like, left tubo-ovarian mass, uterine synechiae, polyps and intraperitoneal adhesions.

Tubal occlusion was seen in 6 (26.09%) cases of primary infertility out of which all were bilateral tubal block. Six cases (35.29%) of secondary infertility had tubal occlusion out of which 1(5.88%) was unilateral and 5 (29.41%) was bilateral tubal block. Thus tubal occlusion accounted for 30% of the total cases. Peritoneal causes accounted for 22.5% of the total cases. Peritubal and periovarian adhesions accounted for 1 case (4.35%) in primary and 4 (23.53%) cases in secondary infertility group.

## DISCUSSION

Combining hysteroscopy with laparoscopy has become a standard tool in comprehensive evaluation of infertility particularly for detecting tubal blockages, peritoneal endometriosis, adnexal adhesions and bicornuate uterus. Due to increased awareness and eagerness to have a pregnancy, couples are seeking medical help early. In the present study of 40 patients, we observed that the commonest age group was 26 to 30 years in primary infertility and 26-35 years in the secondary infertility group. This also coincides with the study of other workers [1-3].

In both primary and secondary infertility, commonest pathology responsible was uterine (39.13% and 64.70% respectively). Ovarian and tubal pathology was same (34.78%) in the primary group. Considering both the groups together, uterine pathology (50%) was highest followed by tubal (40%). Hence it can be concluded that mostly uterine factors were responsible for infertility in this study. However, Sharma *et al*. [4] found that ovarian factors were commonly responsible for primary infertility (31.25%) while uterine (38.88%) and tubal (36.11%) factors were commonly responsible for secondary infertility. Samal *et al*. [5] recorded tubal (37.33%) as commonest factor in primary and ovarian (32%) as commonest factor in secondary infertility. While considering total infertility, ovarian factor was found to be highest [3,4]. Peritoneal factors constituted 22.5% in this study which is similar to that of Rai and Mishra [3] who reported 21%. Samal *et al*. [5] reported low incidence (7%) of peritoneal factor.

In the present study, unexplained infertility was more common in primary infertility than secondary infertility which coincides with the study [4]. Total unexplained cases were 15% which is similar to the finding of Samal *et al*. [5] who reported unexplained infertility in total 18% cases.

Uterine factors constituted 50% of the total cases of infertility among which 9 cases (39.18%) were of primary infertility and 11 cases (64.70%) were of secondary infertility. Sharma *et al*. [4] reported that uterine causes was found in 25 cases (25%) among which 11 cases (17.18%) were of primary infertility and 14 cases (38.88%) were of secondary infertility. Samal *et al.* [5] reported that uterine factors accounted for 14% cases while Shah *et al.* [6] reported that uterine factors were responsible for 40% cases of infertility. Thus it can be concluded that uterine factors are important cause of infertility and hence hysteroscopy has a major role in diagnosis of infertility.

The most common uterine pathology in primary infertility group was endometriotic deposits over uterus seen in 3(13.04%) cases. This was followed by 2 cases (8.69%) of fibroid and 1 case (4.35%) each of adenomyosis, uterine synechiae, endometrial polyp and cervical stenosis. Uterine synechiae was the most common finding in secondary infertility group, seen in 6 (35.29%) cases. It was followed by 2 cases (11.76%) of endometrial polyp and 1 case (5.88%) each of adenomyosis, endometriotic deposits over uterus and uterine septum.

Ovarian factors accounted for 22.5% cases which were seen in primary infertility group except for

one case of endometriosis observed in the secondary group. Several workers reported slightly higher percentage of ovarian factors. Shah *et al*. [6] reported 31%, Sharma *et al*. [4] reported 28% and Samal *et al*. [5] reported 27% ovarian factors.

Tubal factors accounted for 40% of the total cases. Tubal occlusion was the most common cause with an incidence of 26.09% in the primary infertility group and 35.29% in the secondary infertility group. In the primary infertility group, out of 6 cases of tubal occlusion, 3 cases were not associated with any other pathology.

Several workers reported slightly lower percentage of tubal causes than present study. Samal *et al*. [5] reported that tubal factors accounted for 34% cases among which 37.33% were of primary infertility and 24% were of secondary infertility while Sharma *et al*. [4] reported that tubal factors were responsible for 21% cases of infertility.

Pelvic-peritoneal adhesions constituted the single most common class of tubal pathology responsible for tubal infertility [7]. A single episode of pelvic inflammatory disease carries up to 10% risk of future tubal factor infertility [8].

Peritoneal causes contributed for 9 cases (22.5%) among which 4 cases (17.39%) were of primary infertility and 5 cases (29.41%) were of secondary infertility. Among pelvic pathologies, peritubal and periovarian adhesions constituted 12.5% and pelvic endometriosis 10%. Of that there were 3 cases of pelvic endometriosis in primary infertility group and 1 case in secondary infertility group. Peritubal and periovarian adhesions accounted for 4 cases (23.53%) of secondary and 1 case (4.35%) of primary infertility. Samal *et al.* [5] reported endometriosis, genital tuberculosis and adhesions as peritoneal causes which contributed 5 (6.66%) primary and 2 (8%) secondary cases.

Although exact prevalence of endometriosis in general population of reproductive age is not known, it is believed to be in the range of 3-10% [9]. Present finding is similar to the study by Sajida and Majidah [9] and Sharma *et al.* [4].

## CONCLUSION

The quest to improve diagnostic and therapeutic capabilities has led to the widespread acceptance of modern gynaecological endoscopy. Minimally invasive methods such as laparoscopy and hysteroscopy have come into play in finding the causes of infertility and further management of infertility. Diagnostic laparohysteroscopy is a safe and cost-effective method and should be considered in improving fertility when there is past history of pelvic infection, pelvic surgery and/or unexplained secondary infertility. It is an effective tool in comprehensive evaluation of infertility with the added advantage of treatment of some pathology in the same sitting. When done by experienced hands, diagnostic laparohysteroscopy is an indispensable tool which can be considered as a definitive day care procedure for evaluation and treatment of female infertility. It has now been considered as a basic skill which should be learnt by every gynaecologist in the advanced scientific era.

## REFERENCES

1. Shetty K, Shetty H. Diagnostic laparoscopy in infertility – A retrospective study. International Journal of Biomedical Research. 2013;4(7):343-48.
2. Nandhini V, Murugalakshmi. Role of diagnostic hysterolaparoscopy in primary infertility. Journal of Dental and Medical Sciences. 2016;15(8):25-28.
3. Rai A, Mishra MG. Diagnostic hystero-laparoscopy in work-up of female infertility. Int J Reprod, Contracept, Obstet and Gynecol. 2017;6(7):2852-57.
4. Sharma R, Pandey VP, Sharma ST and Masand, DL. Hysterolaparoscopy – 'See and Treat' infertility, is a reality in modern gynaecological practice. Annals of International Medical and Dental Research. 2016;2 (5):9-13.
5. Samal S, Agrawal S, Agrawal M. Role of laparoscopy in infertility in a rural setup hospital. Int J Reprod, Contracept, Obstet and Gynecol. 2014;3(1):185-8.
6. Shah SJ, Shah AC, Trivedi YN. Study of combined laparoscopic and hysteroscopic findings in 100 cases of infertility. J of medical sciences. 2014;3(2): 68-71.
7. Otolorin EO, Ojengbede O, Falase AO. Laparoscopic evaluation of the tuboperitoneal factor in infertile Nigerian women. Int J Gynaecol obstet. 1987;25 (1):47-52.
8. Speroff L, Marc AF.editors. Female infertility: Clinical Gyneocologic Endocrinology and infertility. 7th Ed. Lippincott Williams and Wilkins, Philadelphia. 2005;1013-68p.
9. Sajida P, Majidah K. Role of combined diagnostic laparoscopy and simultaneous diagnostic hysteroscopy for evaluation of female subfertility factors. J Surg Pak. 2010;15; 44-7.