



USE OF DIAGNOSTIC LAPAROSCOPY IN CASE OF FEMALE INFERTILITY AT TERTIARY HEALTH CARE CENTRE.

Sejal Hiralal Patel*

M.S. OBS And Gynec, Assistant Professor Civil Hospital, Surat. *Corresponding Author

Pratik Patel

Olpad Multispecialty Hospital.

ABSTRACT

Background: With recent improvements in the assisted reproductive technology (ART), there has been a growing tendency that bypasses diagnostic laparoscopy and proceeds directly to ART. Therefore, the value of diagnostic laparoscopy in current fertility practice is under debate. The objective of this study was to study role of diagnostic laparoscopy in the management of unexplained infertility.

Methods: 70 case of primary or secondary infertility with unknown etiology that underwent diagnostic laparoscopy in a tertiary care institute. Diagnostic laparoscopy was offered as a final option for patients with normal diagnostic workup for infertility like semen analysis, ovulation testing, ultrasound examination, hysterosalpingogram, and testing for ovarian reserve. Outcomes in terms of cause detected and immediate laparoscopic management done which is helpful in improving fertility.

Results: Seventy women were enrolled in this study. Mean age was 31.4 ± 6.4 years (range from 19 to 44 years). Infertility was primary in 60%. The most frequent findings during diagnostic laparoscopy were: pelvic adhesions (42.86%), hydrosalpinx (14.29%), perihepatic adhesions (14.29%), uterine fibromas (8.57%), pelvic endometriosis (5.71%) and ovarian abnormalities (28.57%). The surgical procedures during laparoscopy were: adhesiolysis (34.29%), tuboplasty (2.86%), salpingectomy (5.71%), ovarian cystectomy (11.43%) and myomectomy (8.57%).

Conclusions: We concluded that Laparoscopy has important role in the diagnosis and treatment of unexplained infertility. It also helps in prediction and improvement of success rate of assisted reproductive technologies like IUI and IVF.

KEYWORDS : Infertility, laparoscopy, primary and secondary infertility

INTRODUCTION

Infertility has now days become not only a medical, but a social problem as well. Laparoscopy is the most rapidly evolving area in medicine.

Infertility is well-defined as failure to conceive during one year of unprotected frequent intercourse.¹ The problem of infertility was affecting approximately 9-16% of married couples.² Female factors contribute 40-45% in aetiology of infertility.³ Leading causes of infertility include tubal disease, ovulatory disorders, uterine or cervical factors, endometriosis and male factor infertility.^{4,5} Major investigates according to WHO are pelvic tuberculosis, malnutrition and puerperal infections leading to tubal blockage.^{6,7}

The traditional method to determine the pelvic cavity was hysterosalpingography but it has now been largely succeeded by hysteroscopy and laparoscopy. Diagnostic laparoscopy was found to be the safe and cost effective in the initial management of young women with infertility, particularly when infertility treatment dropout rates exceed 9% per cycle.⁷ It allows direct visualisation of the abdominal and pelvic organs where clinical evaluation and imaging techniques have failed or are equivocal. Thus, it is considered as an important tool not only in diagnosis of infertility but also in the treatment of selected cases.⁹

With recent improvements in the assisted reproductive technology (ART), there has been a growing tendency that bypasses diagnostic laparoscopy and proceeds directly to ART. Therefore, the value of diagnostic laparoscopy in current fertility practice is under debate.

In the present study, an effort was made to establish the role of laparoscopy in primary and secondary infertility cases in women and to detect the diagnostic efficacy of laparoscopy in uterine, pelvic and ovarian pathologies.

METHODS

We carried out a cross-sectional study based on medical records of 70 women followed up for infertility at the Obstetrics and Gynecology Unit of the SMIMER Hospital in Surat from February 2016 to February 2017. We included medical records of infertile women managed by laparoscopy during the study period. Diagnostic and/or operative laparoscopy was performed in the operating theatre under general anaesthesia, during the follicular phase of the menstrual cycle before the ovulatory period. During the diagnostic laparoscopy, inspection of the pelvis (genital organs) and the liver was performed,

followed by testing for tubal patency using methylene blue injected through the cervix via a lynch Wilkinson cannula. The presence of adhesions, structural abnormalities of the uterus, endometriosis and fallopian tube lesions were sought for. When necessary, operative laparoscopic procedures were performed (adhesiolysis, tuboplasty, cystectomy, myomectomy, salpingectomy, ablation of endometriotic lesions).

Data collection included, socio-demographic characteristics (age, marital status, religion and occupation), clinical and paraclinical parameters, findings during diagnostic laparoscopy and various operative procedures.

Operative complications were also registered.

RESULTS

Seventy women with a history of infertility who underwent laparoscopy were included in this study.

Table 1. General characteristics of patients (n = 70).

Characteristics	n	%
Age range (years)		
15 - 25	28	40
26 - 35	30	42.86
36 - 45	12	17.14
Profession		
House wife	60	85.71
Worker	10	14.29
Type of infertility		
Primary infertility	42	60
Secondary infertility	28	40

Table 1 shows the general characteristics of these patients. The mean age of the patients was 31.4 ± 6.4 years (range from 19 to 44 years). Primary infertility was more frequent (60%) than Secondary infertility (40%).

Table 2. Clinical characteristics of the study population; n=70.

Characteristics	n	%
History of chronic pelvic pain	38	54.29
History of dyspareunia	4	5.71
Past history of pelvic		
inflammatory disease	14	20
Past history of TB	14	20

Past history of pelvic surgery		
urine surgery	6	8.57
Myomectomy	0	0
**Others	12	17.14

Table 2 Shows the clinical characteristics of the study population. More than half of the women presented with chronic pelvic pain (54.29%).

Table 3. Distribution of patients in respect with findings at laparoscopy; n=70.

Laparoscopic findings	n	%
No pelvic lesion	24	34.29
Pelvic adhesions	30	42.86
Peri-hepatic adhesions	10	14.29
Tubal obstruction one side	8	11.43
two sides	10	14.29
Hydrosalpinx (one or two sides)	10	14.29
Pelvic endometriosis	4	5.71
Ovarian dystrophy and cysts	20	28.57
Uterine fibroids	6	8.57

Table 3 Shows the distribution of patients in respect with findings during diagnostic laparoscopy. Pelvic adhesions (42.86%), tubal obstruction (25.72%), tubal distension (14.29%) by hydrosalpinx, peri-hepatic adhesions (14.29%) and uterine fibroids (8.57%) were the most frequent lesions observed during diagnostic laparoscopy. Peritoneal endometriosis was also found in 5.71% of cases.

Table 4. Distribution of patients with respect to operative procedures during laparoscopy.

Operative procedures	n	%
Adhesiolysis	24	34.29
Distal tuboplasty	2	2.86
Salpingectomy	4	5.71
Ovarian cystectomy	8	11.43
Ovarian drilling	10	14.29
Myomectomy	0	0
Excision of pelvic endometriotic lesions	4	5.71

Table 4 Shows the distribution of patients following operative procedures performed during laparoscopy. Adhesiolysis (34.29%), distal tuboplasty (2.86%) and ovarian surgery (25.72%) were the main operative procedures during laparoscopy for infertility

DISCUSSION

Exploration of the female genital tract is one of the essential elements of infertility assessment. Laparoscopy provides both a panoramic view of the pelvic reproductive anatomy and a magnified view of pelvic organs and peritoneal surfaces. It is generally regarded as the most reliable tool in the diagnosis of tubal pathology and other intra-abdominal causes of infertility^{10,11}. We reviewed in this study 70 cases of laparoscopy at the SMIMER Hospital indicated for female infertility. Adhesions involving the fallopian tube are considered as causes of infertility¹³. Pelvic adhesion (42.86%) was the most frequent findings at diagnostic laparoscopy in our series. Our result is similar to the one reported by Mboudou *et al.* who found 71.6% of tubo-peritoneal adhesions among infertile women who underwent laparoscopy in Yaoundé²⁶. However, our result is high than 40.6% of pelvic adhesions reported by Mbayo *et al.* among women who underwent laparoscopy at Dakar University Hospital and 33% of pelvic adhesions reported by Jain *et al.* among women who underwent laparoscopy for infertility in India¹⁴. The difference in the prevalence of pelvic adhesions can be explained by the difference in the characteristics of the study population, in the prevalence of sexually transmitted infection and in the frequency of past history of pelvic surgeries between these studies. Tubal factor is the most frequent cause of infertility in Africa^{15,16}.

In accordance to previous African studies¹², we found a high frequency of tubal lesions (40.01%) in this study. Tubo-peritoneal factors of female infertility are mainly due to sexually transmitted infection, postabortion and post-partum infections^{17,18}.

The peri-hepatic adhesions are part of the Fitz-Hugh-Curtis syndrome found in genital *Chlamydia trachomatis* and gonococcal infections²⁰.

The high prevalence (14.29%) of peri-hepatic adhesions found in this study during diagnostic laparoscopy is closed to 40% of peri-hepatic at laparoscopy among infertile women at the Yaoundé Gyneco-Obstetric and Pediatric Hospital reported by Nzintcheu *et al.*²¹. Hence, in our setting, a lot of emphasis should be laid on developing a solid preventive strategy on female genital tract infections. Especially on prevention of sexually transmitted infections, a prevention of post abortion infection by reduce the unsafe abortion; the promotion of hygienic obstetrics techniques and early recognition and treatment of maternal infections.

The high incidence of endometriosis observed in infertile women has led many investigators and clinicians to the assumption that there is a causal relationship between these two entities²². We identified endometriosis in 5.71% of cases which is close to 9% reported by Jain *et al.* in India among infertile women underwent laparoscopy¹⁴.

Adhesiolysis (34.29%) and ovarian drilling (14.29%) were the two most frequent laparoscopic procedures in our series. Our results are similar to those of previous African studies^{26,27}.

The main limitation of our study is its retrospective design. However, this study is a contribution to the understanding of the patterns of female infertility.

CONCLUSION

Diagnostic laparoscopy reveals that tubal lesions and pelvic adhesions are still the major causes for female infertility in developing countries. Adhesiolysis and tuboplasty are the most frequently performed surgical procedures during laparoscopy indicated for female infertility. Therefore, training in endoscopic surgery should be regarded as an important issue in developing countries. Besides the training in endoscopy surgery, it is urgent to develop a preventive strategy of genital tract infection in our population to reduce the risk of tubo-peritoneal lesions.

REFERENCES

- Hammond MG. Evaluation of the infertile couple. *Obstet Gynecol Clin North Am.* 1987;14:821-30.
- Shaheen R. Infections & Infertility. *IJPD.* 2005;2(5):11-2.
- Vaid K. Pan endoscopic approach hysterolaparoscopy as an initial procedure in selected infertile women. *J Clin Diagn Res.* 2014;8:95-8.
- Jose Miller AB, Boyden JW, Frey KA. Infertility. *Am Fam Physician.* 2007;75:849-56.
- Howkins, Bourne. The pathology of conception. In: Shaw's textbook of Gynaecology. 13th edition. Elsevier; 2004.
- Mehmood S. An audit of diagnostic laparoscopies for infertility. *J Surg Pak.* 2003;8:8.
- Rehana R, Majid SS. Aetiological factors of infertility. *J Postgrad Med Inst.* 2004;18:166-71.
- Sharon EM, Henry CL, Ruth BL, Lynn MW, Amin AM, Alan MG. *Fertil Steril.* 2009;92(2):471-80.
- Wani QA, Ara R, Dangroo SA, Beig M. Diagnostic Laparoscopy in the Evaluation of Female Factors in Infertility in Kashmir Valley. *Int J Women's Health Reproduction Sci.* 2014;2(2):48-57.
- Tanahatoc, S.J., Hompes, P.G. and Lambalk, C.B. (2003) Investigation of the Infertile Couple. Should Diagnostic Laparoscopy Be Performed in the Infertility Work up Program in Patients Undergoing Intrauterine Insemination? *Human Reproduction*, **18**, 8-11. <http://dx.doi.org/10.1093/humrep/deg034>
- Mol, B.W., Collins, J.A., Burrows, E.A., Van der Veen, F. and Bossuyt, P.M. (1999) Comparison of Hysterosalpingography and Laparoscopy in Predicting Fertility Outcome. *Human Reproduction*, **14**, 1237-1242. <http://dx.doi.org/10.1093/humrep/14.5.1237>
- Tchente Nguefack, C., Mboudou, E., Tejiokem, M.C. and Doh, A. (2009) Les complications de la coelioscopie dans le service de gynécologie A de l'hôpital général de Yaoundé au Cameroun. *Journal de Gynécologie-Obstétrique et Biologie de la Reproduction*, **38**, 545-551. <http://dx.doi.org/10.1016/j.jgy.2009.06.008>
- Gomel, V. (1983) Salpingo-Ovariolytic by Laparoscopy in Infertility. *Fertility and Sterility*, **40**, 607-611.
- Jain, G., Khataja, R., Juneja, A. and Mehta, S. (2014) Laparoscopy: As a First Line Diagnostic Tool for Infertility Evaluation. *Journal of Clinical and Diagnostic Research*, **8**, Article ID: OC01-2. <http://dx.doi.org/10.7860/JCDR/2014/9822.4929>
- Okunlola, M.A., Adebayo, O.J., Odukogbe, A.A., Morhason-Bello, I.O. and Owonikoko, K.M. (2005) Assessment of Tubal Factor Contribution to Female Infertility in a Low Resource Setting (Southwest Nigeria): Hysterosalpingography vs. Laparoscopy. *Journal of Obstetrics and Gynaecology*, **25**, 803-804. <http://dx.doi.org/10.1080/01443610500328348>
- Steinkeler, J.A., Woodfield, C.A., Lazarus, E. and Hillstrom, M.M. (2009) Female Infertility: A Systematic Approach to Radiologic Imaging and Diagnosis. *Radiographics*, **29**, 1353-1370. <http://dx.doi.org/10.1148/rg.295095047>
- Umeora, O.U., Mbazor, J.O. and Okpere, E.E. (2007) Tubal Factor Infertility in Benin City, Nigeria-Sociodemographics of Patients and Aetio-Pathogenic Factors. *Tropical Doctor*, **37**, 92-94. <http://dx.doi.org/10.1258/004947507780609446>
- Okonofua, F.E., Ako-Nai, K.A. and Dighitoghi, M.D. (1995) Lower Genital Tract Infections in Infertile Nigerian Women Compared with Controls. *Genitourinary Medicine*, **71**, 163-168. <http://dx.doi.org/10.1136/sti.71.3.163>
- Kemfáng Ngowa, J.D., Mboudou, E.T., Toukam, M., Ngassam, A. and Kasia, J.M. (2014) Séro-prévalence de l'infection à Chlamydia trachomatis chez les femmes consultant pour infertilité à l'Hôpital Général de Yaoundé. *Guinée Médicale*, **83**, 17-21.
- Roy, B.N. and Tulandi, T. (2006) Syndrome de Fitz-Hugh-Curtis. *Journal of Obstetrics and Gynaecology Canada*, **28**, 860.
- Nzintcheu Youssa, J.M., Foumane, P., Mboudou, E.T., Nana, P.N., Fomulu, J.N. and Doh, A.S. (2012) Perihepatitis as a Laparoscopic Finding in Infertile Women at the Yaoundé Gyneco-Obstetric and Pediatric Hospital: Prevalence and Correlation with

- Tubo-Pelvic Lesions. *Clinics in Mother and Child Health*, **9**, 1-5. <http://dx.doi.org/10.4303/cmch/C120501>
22. Buyalosa, R.P. and Agarwal, S.K. (2000) Endometriosis-Associated Infertility. *Current Opinion in Obstetrics and Gynecology*, **12**, 377-381. [http:// dx. doi. org/ 10. 1097/ 00001703-200010000-00006](http://dx.doi.org/10.1097/00001703-200010000-00006)
 23. Berker, B., Mahdavi, A., Shahmohamady, B. and Nezhat, C. (2005) Role of Laparoscopic Surgery in Infertility. *Middle East Fertility Society Journal*, **10**, 94-104.
 24. Bruhat, M.A., Mage, G., Pouly, J.L., Manhes, H., Canis, M. and Wattiez, A. (1989) Coelioscopie opératoire. Medsi/ McGraw-Hill, Healthcare Group, Paris, 215 p.
 25. Kasia, J.M., Raiga, J., Doh, A.S., Biouele, J.M., Pouly, J.L., Kwiatkowski, F., et al. (1997) Laparoscopic Fimbrioplasty and Neosalpingostomy. Experience of the Yaoundé General Hospital, Cameroon (Report of 194 Cases). *The European Journal of Obstetrics and Gynecology and Reproductive Biology*, **73**, 71-77. [http://dx.doi.org/ 10.1016/ S0301-2115\(96\)02674-7](http://dx.doi.org/10.1016/S0301-2115(96)02674-7)
 26. Mboudou, E.T., Foumane, P., Morfaw, L.I.F., Minkande, Z., Dohbit, S.J. and Mbatsogo, E.B.A. (2013) Female Infertility and Laparoscopic Surgery: A Series of 415 Operations at the Yaounde Gyneco-Obstetric and Pediatric Hospital, Cameroon. *Open Journal of Obstetrics and Gynecology*, **3**, 663-667. [http://dx.doi.org/ 10.4236/ ojog. 2013.39121](http://dx.doi.org/10.4236/ojog.2013.39121)
 27. Mbaye, M., Cissé, M.L., Guèye, S.M.K., Diémé, F.M.E., Diouf, A.A., Guèye, M., et al. (2012) Premiers résultats de la coelioscopie gynécologique au Centre hospitalier universitaire (CHU) de Dakar série prospective de 128 cas. *Journal of Obstetrics and Gynaecology Canada*, **34**, 939-946.