

Pregnancy rate after laparoscopy in the infertile women referring to Peymanieh hospital, Jahrom, Iran from 2008 to 2010

*¹ Jamali S

² Rasekh Jahromi ,A

¹ Department of Midwifery, jahrom University of Medical Sciences, jahrom, Iran.

² Professor of Gynecology & Obstetrics. University of Medical Sciences, jahrom, Iran.

Received:2012/1/20

Accepted:2012/3/20

*Corresponding Author:
School of Nursing and Midwifery, jahrom University of Medical Science, jahrom, Iran.

Tel: +989173061189

Email:

safieh_jamali@yahoo.com

Abstract

Introduction: Approximately 80 million people in the world suffer from infertility. Laparoscopy is a golden standard method which helps diagnose peritoneal and the fallopian tube problems. It is also provides the opportunity to examine all the pelvic organs. The aim of this study was to assess the pregnancy rate after laparoscopy in the infertile women referred to the Paymanieh hospital, Jahrom.

Materials & Methods: In this cross-sectional study, 162 infertile women referring to the Honari Clinic of Jahrom from 2008 to 2010 were enrolled. Laparoscopy was applied for these women due to other unsuccessful treatments. Information about patients including age, job, number of marriages, type of infertility, results of hysterosalpingography and rate of pregnancy after surgery was collected. Data was analysed using descriptive statistics including frequency, mean and standard deviation by SPSS 16.

Results: The mean age was 27.2 ± 5.31 (16-43 years). The rate of pregnancy after laparoscopic surgery was 54.9%, which most of them (84.6%) had happened after cauterization of polycystic ovaries. All of these pregnancies were spontaneous, of which 83.15% had led to termination and 16.85% has ended in abortion. None of the cases were ectopic pregnancy or any other problem.

Conclusion: The most common cause of women's infertility in Jahrom is polycystic ovaries, 89 out of 162 cases were conceived, which most of them (84.26%) conceived after electro-cautery, ovarian cyst removals or treatment of polycystic ovaries. This shows that the spontaneous ovulation after ovarian cauterization have been very satisfactory, which in turn is comparable to other similar studies. Hence cauterization of ovaries by laparoscopy has proved as an effective treatment for infertility.

Keywords: Infertility, Polycystic ovary, Laparoscopy, Pregnancy

Introduction

Fertility is of great value in a large number of cultures and having a child is one of the major human motivations (1). Nevertheless, almost 15% of the couples during their reproductive age have infertility problems (2).

Fertility refers to the ability of reproduction, while infertility is defined as the inability to conceive after one year of unprotected intercourse (3). Almost 85-90% of healthy young women become pregnant through one year, 43% of infertile couples seek for treatment, and only 24% require intensive care (4-6).

During the recent decades, the prevalence of infertility has remained constant due to the increase in using diagnostic-therapeutic services. The probable causes of infertility have been identified as follow; 40% due to the ovulation problems, 40% related to the pelvic pathology, and less than 10% are related to anatomic as well as thyroid disorders. Besides, male factors comprise of 35% of the causes of infertility and 10% of the causes are still unknown (7).

Diagnostic laparoscopy is one of the methods used for investigation of tubal and intra-pelvic disorders (4). In general, laparoscopy is utilized for investigation and treatment of infertility, diagnosis of pelvic masses, examination of amenorrhea and oligomenorrhea. Diagnosis and treatment of endometriosis, adhesiolysis, using cautery and laser, evacuation of ovarian cysts, cauterization of polycystic ovaries are also possible using the laparoscopy. Other application of laparoscopy are including; investigation of abnormal hysterosalpingography, evaluation of the

location of tubal obstruction for tube reconstruction surgery, myomectomy and obtaining oocytes for In Vitro Fertilization (IVF). Infertility generally comprises almost 80% of the therapeutic cases of laparoscopy (8-10).

Carson et al., conducted a study in the U.S. on 100 normal infertile patients who had no considerable pelvic pathology regarding fertility. After laparoscopy, 68, 24, 24, and 43 patients showed pelvic pathology, tubal diseases, adhesions around the fallopian tubes, and endometriosis respectively. This study suggested laparoscopy as a useful method for making decisions about the treatment particularly in older infertile women with long infertility periods (11).

In the same line, a study conducted by Tanahat et al. in Amsterdam showed; diagnostic laparoscopy as a gold standard method in tubal pathology which is necessary in case that pregnancy does not occur after receiving gonadotropins and Intra Uterine Insemination (IUI) (12).

Polycystic ovary syndrome is one of the most prevalent endocrine disorders in women and most of such women refer to physicians with symptoms, such as menstrual disorders, obesity, hirsutism, and acne. Polycystic ovarian syndrome was first reported in 1935 and is considered as the most prevalent cause of infertility resulting from ovulation disorder. Polycystic ovaries syndrome affects 4-7% of the women which most of whom refer for consultation or treatment because of infertility resulting from chronic anovulation (13-16). This syndrome can also be transferred hereditarily and up to now, various medications as well as surgical treatment

methods have been proposed for solving this syndrome (4).

Several laparoscopic treatment methods, including biopsy, electro-cautery and laser, have been investigated for polycystic ovary. Among these techniques, electro-cautery is more widely used because its required instruments are available in most of the hospitals.

In comparison to using gonadotropins, laparoscopic methods are more advantageous because of lower morbidity, fewer need for periodical monitoring and lower risk of multiple births (17, 18). Moreover, women who are not responding to clomiphene, respond to clomiphene again after treatment by laparoscopy (18, 19).

In the study performed by Malkvawi et al., in Jordan, the rate of pregnancy following laparoscopy and ovarian cauterization in the clomiphene citrate-resistant women with polycystic ovary was reported as 64.1% (20). In addition, Roodsari and Ayati conducted a study in Mashhad and reported the rate of pregnancy after laparoscopy as 34.7% (21).

Laparoscopy has been used in various studies in order to diagnose and treatment of infertility and has been accompanied by an increase in the rate of fertility (17-21). In the study performed by Farquhar et al., in New Zealand, the rate of ovulation was reported as 52% and 62% in ovarian cauterization with laparoscopy and ovulation stimulation with gonadotropins groups respectively (22). Besides, the rate of pregnancy in the ovarian cauterization with laparoscopy and ovulation stimulation with gonadotropins groups was 17% and 24%, correspondingly (22).

Kaya et al., also conducted a study in Turkey and reported the rate of pregnancy as 35.3% and 33.3% in ovarian cauterization with laparoscopy and ovulation stimulation with gonadotropins groups respectively (23). According to the study carried out by Kovacs et al., in Germany, due to the potential advantages of ovarian cauterization, it is considered as the second-line treatment after clomiphene (24).

According to what was mentioned above, laparoscopy is widely being used in treatment of infertility. However, no studies have been conducted on the rate of pregnancy after laparoscopy in Jahrom University of Medical Sciences, Jahrom, Iran. Therefore, the present study aims to investigate the rate of pregnancy after laparoscopy in infertile women of Jahrom.

Materials and Methods

The present study was a cross-sectional study and the data were gathered from the medical records of the patients. This study was conducted on 162 infertile patients who had referred to Peymanieh clinic, Jahrom, Iran from 2008 to 2010 and had undergone laparoscopy due to diagnosis of infertility and lack of response to different treatments. The data were obtained using patients' medical records, examining their status, and following them up through telephone contacts.

Patient's information e.g. age, occupation, level of education, blood group, number of marriages, type of infertility, Body Mass Index (BMI), result of the husband's spermogram, menstrual history, history of hysterosalpingography, laparoscopic findings, family history (premature ovarian

failure and premature menopause), history of IUI, and percent of pregnancy and miscarriage after laparoscopy was gathered through a questionnaire. Complete obstetrics and gynecology history was obtained from the patients and the results of their physical examination were recorded in their profiles.

Patients with the history of previous abdominal surgery, history of other diseases, such as cardiovascular diseases, diabetes and hypertension, those receiving other treatments in addition to the treatment of infertility after laparoscopy and the patients with incomplete information in their records were excluded from the study.

In order to analyze data, descriptive statistics, including Mean and SD, were used for the quantitative variables, while frequency percentage was used for the qualitative variables.

Results

The age range of infertile women was from 16 to 43 years old with the mean age of 27.20 ± 5.31 years. The mean age of patient's husbands was 32.67 ± 6.19 years and most of patients were homemakers (151 subjects, 93.8%). In addition, five cases (3.1%) were illiterate, while 41 (25.5%), 110 (68.1%), and 5 (3.1%) patients had primary school education, secondary school to diploma and bachelor's degrees respectively. Moreover, 155 participants (95.7%) had been married for the first time and 130 (80.2%) had primary infertility (Table 1).

Investigation of the husbands' addiction showed that 37 individuals (23.1%) were addicted to cigarettes. Also, investigation of their spermogram showed 148 individuals

(91.5%) had normal and 12 (7.5%) had abnormal spermatogram.

Most blood group of patients 66(40.7%) was B. Furthermore, 31 patients (19.4%) had BMI>29 and were considered as obese.

Among the study participants, 51 (32.1%) had regular and 108 (67.9%) had irregular menstrual cycles. In addition, the hormonal results were normal in 92 (57.5%) patients, while 68 (42.5%) of cases had abnormal hormonal results. Moreover, 94 patients (58.8%) had hirsutism, while 66 (41.3%) did not.

Hysterosalpingography of the study patients showed that 126 subjects (77.8%) were normal and had open uterine tubes, while 36 (22.2%) were abnormal. Furthermore, investigation of the patients' history revealed that eight individuals (4.9%) had the history of hereditary premature menopause and 21 cases (13%) had the previous history of ovarian cyst. Also, 30 patients (18.5%) had the history of IUI.

According to the laparoscopic findings, adhesion, endometriosis, and ovarian cyst were observed in 7 (4.3%), 16 (9.9%), and 107 (66%) patients respectively. Combined cases were including; endometriosis + adhesion, endometriosis + ovarian cyst, and adhesion + ovarian cyst which were found in 4 (2.5%), 19 (11.7%), and 9 (5.6%) patients respectively (Table 2).

The rate of pregnancy after laparoscopy was 89 (54.9%) and all the pregnancies had occurred normally. It is worth mentioning that; 74 cases (83.15%) had term pregnancies, while 15 (16.85%) ended with miscarriage. Also, none of the patients revealed any complications or ectopic pregnancy after laparoscopy.

Table 1: Demographic characteristics of the study participants

Variable		Number	Percent
Patient's occupation	Homemaker	151	96.8
	Employed	11	6.2
Number of marriages	One	155	95.7
	Two	7	4.3
Type of infertility	Primary	130	80.2
	Secondary	32	19.8
Husband's occupation	Self-employed	137	80.6
	Employee	25	14.4
	BMI>19.8	16	10
Patient's BMI Kg/m ²	19.8≤BMI<26	55	34.4
	26≤BMI<29	59	36.2
	BMI≥29	32	19.4

Table 2: Frequency and percentage of pregnancy among the study participants

Laparoscopic findings		Number	Percent	Pregnancy cases	
				Positive	Negative
Ovarian problems	Tubal adhesion	7	4.3	3	4
	Endometriosis	16	9.9	4	12
	Ovarian cyst	107	66	69	38
Combined findings	Endometriosis and tubal adhesion	4	25	3	1
	Endometriosis and ovarian cyst	19	11.7	4	15
	Adhesion and ovarian cyst	9	5.6	6	3
Total		162	100	89	73

Among the occurred 89 pregnancies, for 75 cases (84.26) the ovarian cysts were removed or their polycystic ovaries were treated with laparoscopy. Besides, eight (8.98%) and six pregnancy cases occurred following endometriosis and tubal adhesion therapy with laparoscopy, respectively.

Discussion

Laparoscopy is a gold standard method for diagnosis of fallopian tube disorders and provides the opportunity to see all the pelvic organs. Laparoscopy is used for investigation and treatment of infertility. The present study aimed to investigate the rate of pregnancy after laparoscopy among the infertile women who referred to the hospital in Jahrom, Iran.

The study findings showed polycystic ovary to be the most prevalent laparoscopic findings among patients. This syndrome is the most prevalent cause of infertility resulting from ovulation problems and affects 4-7% of the women. However, the response rate following laparoscopy is quite high. In this study, the highest incidence of pregnancy (84.26%) was observed following the ovarian cyst cauterization. This shows desirable outcomes regarding spontaneous ovulation after ovarian cauterization, which is in consistent with other studies. The result obtained in this study is quite desirable compared to the study conducted by Popvic et al. in Serbia reporting the pregnancy rate as 37.1% (8). Moreover, pregnancy rates of 73.2%, 83%, and 90% were reported in the studies performed by Felemban et al. in Canada in 2000 (25), Gasper and Greenblatt in the U.S. in 1987 (26), and Kovacs in Victoria in 2002 (24) which all show the

increase rate of pregnancy after laparoscopy. In the same line, 40-50% success rate was reported in the studies conducted by Daniel et al. (1989) in the U.S. (27) and Camp et al. (1993) in Italy (28), which is in agreement with the results of the current study. Also, this rate was reported as 48% in the studies performed by AbdelGhadir et al., (1993) in Kuwait (30) and Adash et al., (1981) in the U.S., which is consistent with the findings of the current study.

In the research carried out by Unlu and Atabekoglu (2006) in Ankara about ovarian cauterization, results revealed some advantages, such as lower irregularities in menstrual cycles (31). Furthermore, in the study conducted by Kaya et al. (2005) in Turkey, no adhesion was detected in any of the study subjects during the ovarian cauterization (23), which is in line with the present study.

Up to now, several laparoscopic methods including biopsy, electro-cautery and laser have been investigated for polycystic ovary. Among these techniques, electro-cautery is more widely used because its required instruments are available in most of the hospitals. In comparison to using gonadotropins, laparoscopic methods are more advantageous because of lower morbidity, less need for periodical monitoring and lower risk of multiple pregnancies (17, 18).

In the present study, the rate of pregnancy loss was reported as 16%, which is similar to the other studies conducted on this issue (30, 32). Overall, the rate of pregnancy loss is quite high among the polycystic ovary patients and has been reported as about 30% (33). This is due to the high serum

Luteinizing Hormone (LH). In this study, 42% of the cases had abnormal LH level which can be justified by the high rate of miscarriage.

Conclusion

The results of the current study showed that; polycystic ovary is the most prevalent laparoscopic finding among the patients. Also, the pregnancy rate after laparoscopy was quite high compared to other studies. Overall, due to the diagnosis of background

factors of infertility using laparoscopy, this technique can be used as a simple, effective, and safe diagnostic and therapeutic method with low complications in infertile women.

Acknowledgements

The authors would like to thank the in-charge of medical records of Peymanieh hospital and the research Vice-Chancellor of Jahrom University of Medical Sciences, Jahrom, Iran for their cooperation in the study.

References

1. Ryan kj, Kistner RW. Kistners Gynecology and Womans Health. 7thed. Michigan: Mosby; 1999: 660.
2. Mosher WD, Pratt WF. Fecundity and infertility in the United States: incidence and trends. Fertil Steril. 1991; 56(2): 192-3.
3. Speroff L, Kase RH, Glass NG. Clinical gynecologic endocrinology and infertility. 6th ed. Baltimore: Lippincott Williams & Wilkins; 1999: 487-522.
4. Berek JS. Berek & Novak's Gynecology. 14th ed. Philadelphia: Lippincott Williams & Wilkins; 2007: 749-787.
5. Speroff L, Fritz MA. Clinical Gynecologic Endocrinology and Infertility. 7th ed. Philadelphia: Lippincott Williams & Wilkins; 2005: 1175-1205.
6. Speroff L, Fritz MA. Clinical Gynecologic Endocrinology and Infertility. 7th ed. Philadelphia: Lippincott Williams & Wilkins; 2005: 474-486.
7. Mol BW, Oijkam B, Wertheim P, Lijmer J, Van Der Veen F, Bossuyt PM. The accuracy of serum chlamydial antibodies in the diagnosis of tubal pathology, a meta analysis. Fertil Steril. 1997; 67(6): 1031-7.
8. Popovic J, Sulovic V, Vucetic D. Laparoscopy treatment of adnexal sterility. Clin Exp Obstet Gynecol. 2005; 32(1): 31-4.
9. Rock JA, Joens HW. Te Linde's operative gynecology. 10thed. New York: Lippincott Williams & Wilkins; 2008: 319-35.
10. Cheong YC, Wong YM, Tucker D, Li TC, Cooke ID. The changing nature of elective laparoscopic surgery: a review over a 7 year period in a reproductive surgery unit. Hum Fertil (Camb). 2001; 4(1): 31-6.
11. Corson SL, Cheng A, Gutmann JN. Laparoscopy in the normal infertile patient: a question revisited. J Am Assoc Gynecol Laparosc. 2000; 7(3): 317-24.
12. Tanahatoe S, Hompes PG, Lambalk CB. Accuracy of diagnostic laparoscopy in infertility work up before intrauterine insemination. Fertil Steril. 2003; 79(2): 361-6.
13. Hull MG. Epidemiology of infertility and polycystic ovarian disease: endocrinological and demographic studies. Gynecol Endocrinol. 1987; (3):1235-45.
14. Knochenhauer ES, Key TJ, Kahsar-Miller M, Waggoner W, Boots LR, Azziz R. Prevalence of the polycystic ovary syndrome in unselected black and white women of the Southeastern United States: A prospective study. J Clin Endocrinol Metab. 1998; 83 (9): 3078-82.

15. Diamanti-Kandarakis E, Kouli RC, Bergiele TA, Filandra AF, Tsianateli C, Bartzis A. Survey of the polycystic ovary syndrome in the Greek Island of Lesbos: Hormonal and Metabolic Profile. *J Clin Endocrinol Metab.* 1999; 84(11): 4006-11
16. Asunción M, Calvo RM, San Millán JL, Sancho J, Avila S, Escobar-Morreale HF. Prospective Study of the Prevalence of the Polycystic Ovary Syndrome in Unselected Caucasian Women from Spain. *J Clin Endocrinol Metab.* 2000; 85 (7): 2434-38.
17. Cohen J. Laparoscopic procedures for treatment of infertility related to polycystic ovarian syndrome. *Hum Reprod Update.* 1996; 2(4): 337-344.
18. Farquhar C, Vandekerckhove P, Lilford R. Laparoscopic "drilling" by diathermy or laser for ovulation induction in anovulatory polycystic ovary syndrome. *Cochrane Database Syst Rev reviews.* 2007;18(3): 1122.
19. Bayram N, Van Wely M, Kaaijk EM, Bossuyt PM, Van der Veen F. Using anelectrocautery strategy or recombinant follicle stimulating hormone to induce ovulation in polycystic ovary syndrome: randomized controlled trial. *Br Med J.* 2004; 328 (7433): 192-195.
20. Malkawi HY, Qublan HS, Hamaideh AH. Medical vs. surgical treatment for clomiphene citrate-resistant women with polycystic ovary syndrome. *Obstet Gynaecol.* 2003; 23(3): 289-93.
21. Vahid Roudsari F, Ayati S, Hasanzadeh Bashtian M, Shakeri MT. Fertility rate following laparoscopy in infertile women. *J Babol Univ Med Sci;* 2009; 11(1):25-29.
22. Farquhar CM, Williamson K, Gudex G, Johnson NP, Garland J, Sadler L. A randomized controlled trial of laparoscopic ovarian diathermy versus gonadotropin therapy for women with clomiphene citrate-resistant polycystic ovary syndrome. *Fertil Steril.* 2002; 78(2): 404-11.
23. Kaya H, Sezik M, Ozkaya O. Evaluation of a new surgical approach for the treatment of clomiphene citrate-resistant infertility in polycystic ovary syndrome: laparoscopic ovarian multi-needle intervention. *J Minim Invasive Gynecol.* 2005; 12(4): 355-8.
24. Kovacs GT, Clarke S, Burger HG, Healy DL, Vollenhoven B. Surgical or medical treatment of polycystic ovary syndrome: a costbenefit analysis. *Gynecol Endocrinol.* 2002; 16(1): 53-5.
25. Felemban A, Lintan S, Tulandi T. Laparoscopic treatment of polycystic ovaries with insulated needle cautery, *Fertility and sterility,* 2000; 73(2): 266-9.
26. Greenblatt E, Casper RF. Endocrine changes after laparoscopic ovariectomy in polycystic ovarian syndrome. *Am J Obstet and Gynecol.* 1987; 156(2): 279-85.
27. Daneil JF, Miller W. Polycystic ovaries treated by laparoscopic laser vaporization. *Fertil Steril.* 1989; 51(62): 232-6.
28. Camp S, Felli A, Lamanna MA, Barini A, Garcea N. Endocrine changes and clinical outcome after laparoscopic ovariectomy in women with polycystic ovaries. *Human Reproduction.* 1993; 8(3): 359-363.
29. Adashi EY, Rock JA, Guzick D, Wentz AC, Jones GS, Jones JR, HW. Fertility following bilateral ovarian wedge resection: A critical analysis of 90 consecutive cases of the polycystic ovary syndrome. *Fertil Steril.* 1981; 36(3): 320-25.
30. Abdel Gadir A, Khatim MS, Almaser HMI, Mowafi RS, Shaw RW. Ovarian electrocautery responders vs, nonresponders. *Gynecological, endocrinol.* 1993; 7(1): 43-8.
31. Unlu C, Atabekoglu CS. Surgical treatment in polycystic ovary syndrome. *Curr Opin Obstet Gynecol.* 2006; 18(3): 286-292.
32. Li Tc, Saravels H, Chow MS, Chisabingo R, Cooke ID. Factors affecting the outcome of laparoscopic ovarian drilling for polycystic ovarian syndrome in women with anovulatory infertility. 1998; 105(3): 338-44.
33. Saak M, Bishysk Ridly N, Alexander FM, Michel M, Bonney RC. Recurrent early miscarriage and ovaries. *Br Med J.* 1988; 297(6655): 1027-8.