

OUTCOME OF OVARIAN DIATHERMY IN INFERTILE PATIENTS WITH POLYCYSTIC OVARIAN DISEASE

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ABSTRACT

Background: Polycystic ovarian disease is a heterogeneous disorder characterized by disruption of the regular processes leading to ovulation. The majority of women anovulation leading to infertility. This study was carried out to determine the outcome of ovarian diathermy in infertile patients with polycystic ovarian disease.

Methodology: It was a descriptive study conducted at Department of Obstetrics & Gynaecology, Ayub Teaching Hospital, Abbottabad from July 2004 to June 2005. The study population included all cases presenting with primary or secondary infertility due to polycystic ovarian disease. All study subjects underwent a complete clinical workup including history, physical examination, relevant investigations. Minilaparotomy and ovarian diathermy was performed in all patients. A regular follow-up was done for ovulation and conception rates for one year. The data were collected on predesigned proforma and analysed by SPSS version 10.

Results: Eighteen (58.1%) patients presented with primary infertility, while 13(41.9%) had secondary infertility. Ovulation occurred in 21(67.7%) cases, while 16(51.6%) cases conceived the pregnancy. Nine (50.0%) cases with primary infertility and 12(92.3%) with secondary infertility had positive ovulation, $p=0.013$. Conception occurred in 6(33.3%) cases of primary infertility and 10 (76.9%) cases of secondary infertility, $p=0.017$.

Conclusion: Ovarian drilling by diathermy results in ovulation and conception in significant number of infertile patients with clomiphene resistant polycystic ovarian disease.

KEY WORDS: Polycystic ovarian disease, Infertility, Ovarian diathermy.

INTRODUCTION

Polycystic ovarian disease (PCOD) is a heterogeneous disorder characterized by disruption of the regular processes leading to ovulation. It is associated with hyperandrogenemia, normal or elevated estrogen levels, and elevated leutinizing hormone (LH) secretion, with a raised LH to follicle stimulating hormone (FSH) ratio.¹ It may present, at one end of the spectrum, with the single finding of polycystic ovarian morphology detected by ultrasound. At the other end of the spectrum symptoms such as obesity, hyperandrogenism, menstrual cycle disturbances and infertility may occur either singly or in combination. Metabolic disturbances (elevated serum concentrations of LH, testosterone, insulin and prolactin) are common and may have profound implications on the long term health of women with PCOD.²

Its prevalence is estimated to be about 5%.³ The majority of women with PCOD have anovulation leading to infertility as well as problems of dysfunctional uterine bleeding, endometrial hyper-

plasia and even endometrial cancer.⁴ It is also thought to increase the risk of premature heart attacks and cardiac disease due to associated obesity and diabetes, although this has been questioned.⁵

When infertility is the main problem affecting a patient suffering from PCOD, ovulation induction is necessary. Anovulation represents a major cause of infertility. Anovulation can be treated medically in some cases with antiestrogens (clomiphene citrate), but a proportion of patients fail to respond, and of those who ovulate, the pregnancy often occurs late and the miscarriage rate is high. Gonadotrophin therapy may be more successful but it is expensive, and there is a significant risk of hyperstimulation and multiple pregnancy. Therapy with leutinizing hormone releasing hormone has been used, but the results have been disappointing and the miscarriage rate has also been high.⁶

Recently ovarian diathermy is introduced as an alternative to the classical operation of wedge

resection with the drawback of risk of periovarian and peritubal adhesions. Ovarian drilling by diathermy is known to be a successful form of treatment in resistant cases of PCOD.⁷ Ovarian diathermy or electrocautery results in a spontaneous ovulation rate of ³ 50% and a subsequent mean pregnancy rate of 50% in those who ovulate.⁸ These effects can be seen upto 72 months after surgery and it has also been reported that 74% of women followed up were still ovulating 18-20 years after ovarian cautery.⁸ This study was carried out to determine the effectiveness and safety of minilaparotomy and ovarian diathermy for infertile women with clomiphene resistant polycystic ovarian disease.

MATERIAL AND METHODS

Thirty-one cases of primary/secondary infertility due to PCOD were subjected to ovarian drilling by diathermy. Patients with PCOD and clomiphene resistant infertility were included.

All the patients had undergone minilaparotomy and electrodiathermy of the ovaries. The main studied outcomes were ovulation and conception rates.

All patients were evaluated by doing ultrasonography to confirm features of polycystic ovaries, serum LH/FSH ratio and fasting blood glucose level. Hysterosalpingography was done for testing the patency of fallopian tubes. A diagnosis of polycystic ovarian disease was based on elevated serum LH:FSH ratio >3, and ultrasonographic evidence of ovarian stromal hypertrophy and multiple (10), small (6-8mm) follicles arranged in the periphery of the ovary. A detailed history was taken followed by thorough general physical, abdominal and pelvic examination.

Informed consents were taken and prophylactic antibiotics were given to all patients at the time of induction of anaesthesia. Operation was performed under general/spinal/epidural anaesthesia. Patients were cleaned and draped, a 2-3 cm suprapubic transverse incision was given. Abdominal walls were retracted with langhanbach's retractors. Ovaries were examined, held with Babcock's forceps and drawn out of the small wound. Eight to ten holes, each 2-4 mm deep were made on the surface and stroma of each ovary using diathermy. Each ovary was cooled by irrigation using normal saline solution, before release. At the end of procedure, about 200 ml of normal saline solution was left in the pelvis to minimize the risk of adhesion formation. Abdomen was then closed. Post-operative recovery was uneventful in majority of the patients. Post-operative antibiotics were given to all patients. Total hospital stay was around 24-48 hours.

Following ovarian diathermy, all patients were asked to keep a record of their menstrual cycle. If the patient started a menstrual period after surgery, a blood sample was taken on day 21 of the cycle for measurement of serum progesterone. Ovulation was confirmed when the progesterone level was 30 nmol/l. If spontaneous menstruation did not occur, a blood sample was taken to measure serum progesterone level. The patients were followed for one year after the procedure.

Data were processed by SPSS, version 10. Descriptive statistics were used to calculate means and frequencies. Chi square test was used to test for significant differences of frequencies between the groups. Student's t-test was used to test for significant differences of means in the groups.

RESULTS

Thirty-one patients of infertility due to PCOD were subjected to ovarian drilling by diathermy during the study period. Eighteen (58.1%) patients presented with primary infertility, while 13 (41.9%) had secondary infertility.

Table 1 gives the data for relevant symptoms in patients' families.

Table 1: History of relevant symptoms in patients' families (n=31).

Variables	Number of cases	Percentage
Oligomenorrhea	16	51.6
Hirsutism	12	38.7
Acne	18	58.1
Obesity	14	45.2
Type 2 Diabetes Mellitus	20	64.5
Hypertension	18	58.1

Outcomes of treatment showed: ovulation in 21 (67.7%) patients, while 16 (51.6%) cases conceived the pregnancy. Nine (50.0%) cases with primary infertility had ovulation, while ovulation occurred in 12 (92.3%) cases of secondary infertility. This difference of ovulation rate between the two groups was significant with p= 0.013. Conception occurred in 6 (33.3%) cases of primary infertility, while 10 (76.9%) cases with secondary infertility conceived. This difference of conception rates between the two groups was also significant with p=0.017. (Table 2)

Table 2: Outcome of treatment by infertility groups.

Variables	Type of Infertility		Total
	Primary	Secondary	
Ovulation			
Positive:	9 (50.0%)	12 (92.3%)*	21
Negative:	9 (50.0%)	1 (7.7%)	10
Conception			
Conceived:	6 (33.3%)	10 (76.9%)**	16
Not conceived:	12 (66.7%)	3 (23.1%)	15
Total	18	13	31

*p = 0.01 for the differences of proportions of positive ovulation between the two groups.

**p = 0.01 for the differences of proportions of positive conception between the two groups.

DISCUSSION

The results of present study indicate that ovarian drilling is an effective mode of treatment for infertile women with polycystic ovarian disease. It is increasingly being recommended as an early treatment option for women with clomiphene resistant PCOD, as documented in other studies as well.^{9,10} Ovarian diathermy is free of risks of multiple pregnancy and ovarian hyperstimulation, and does not require intensive ultrasound monitoring.¹¹ Laparoscopic ovarian diathermy has taken the place of wedge resection of ovaries, which resulted in extensive periovarian and peritubal adhesions.⁷ In present study, ovarian diathermy was done by minilaparotomy as compared to most other studies¹²⁻¹⁴ where laparoscopic approach was used. To overcome the problems of laparoscopic surgery like expensive equipment, need for skilled personnel, etc, diathermy by minilaparotomy is a better option.

A local study from Abbottabad Pakistan, using minilaparotomy for ovarian drilling showed ovulation rate of 90% and pregnancy rate of about 70%, reinforcing the view that minilaparotomy is a better option for ovarian drilling, especially in areas where laparoscopic instruments are not widely available.¹⁵ In present study, ovulation occurred in 67.7% patients, and pregnancy in 51.6% patients (Table 3), which is comparable to most of the studies where laparoscopy and ovarian diathermy was used as a surgical method to treat clomiphene resistant PCOD.¹⁰⁻¹²

Ovarian diathermy is increasingly being used as a treatment modality in PCOD, but local work in this regard is very sparse.

In a local study conducted at Lahore Pakistan, ovulation rate was 70%, and 60% of pa-

tients conceived after laparoscopic ovarian diathermy.¹³

A study conducted in Lahore Pakistan, to demonstrate the effect of laparoscopic ovarian diathermy in PCOD showed that 61.5% of patients had spontaneous resumption of ovulation while 53.8% cases conceived.¹⁴

The nearest regional study conducted in New Delhi, India showed ovulation rate of 81.8% and pregnancy rate of 54.5%.¹⁶

The results of present study are also comparable with other local and regional studies.

Regarding relevant symptoms in patients' families (Table 2), first degree relatives of 51.6% patients had oligomenorrhea, while hirsutism was found in relatives of 38.7% patients, 58.1% had family history of acne, and obesity was noted in families of 45.2% patients. Blood relations of 64.5% patients had diabetes mellitus, and relatives of 58.1% patients were hypertensive.

Other studies also support the view that PCOD is a familial condition, possibly autosomal dominant, and various aspects of the syndrome may be differentially inherited.¹ Women with PCOD often have a family history of PCOD, hirsutism, acne and menstrual dysfunction with relatives also more likely to suffer from hypertension and diabetes.

This study also favors PCOD as a familial condition, though hypertension and diabetes mellitus in some patients may be inherited without associated PCOD in family.

Outcome of treatment by infertility groups (Table 4), showed that most of the patients who ovulated had secondary infertility. Similarly, conception also occurred mostly in cases of secondary infertility.

CONCLUSION

Minilaparotomy with ovarian diathermy results in ovulation and conception in significant number of infertile patients with clomiphene resistant polycystic ovarian disease.

It can be recommended that minilaparotomy with ovarian diathermy should be used as treatment modality in hospitals where facilities for laparoscopic ovarian drilling are not available.

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