

Comparison of Mini Laparotomy and Laparoscopic Ovarian Drilling in Management of Polycystic Ovarian Disease

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Objective: To evaluate the intra-operative and post operative morbidity associated with minilap and laparoscopic ovarian drilling in patients with polycystic ovarian disease. **Setting & Duration:** Gynae Unit I of Jinnah Hospital Lahore and Ghurki Trust Teaching Hospital, Lahore and Surgimed Hospital Lahore from January 1999 to June 2004. **Patients & Methods:** A total of 76 patients were included in this study. All patients required ovarian drilling. Patients were randomized into 2 groups – one undergoing laparoscopic drilling (36 patients) and the other group had drilling via minilap (40 patients). The intra operative complications and post operative morbidity were analyzed. **Results:** 36 patients had ovarian drilling via laparoscopy. Bleeding was seen in 6 (16.6%) patients, in 2 (5.5%) patients laparotomy had to be done to control bleeding; visceral perforation was seen in 2 (5.5%) patients. Of 40 patients undergoing laparotomy, bleeding was seen in 1 (2.5%) patients only. No visceral perforation was seen in this group. Easy approachability was seen in the minilap group. The duration of hospital stay in both groups was 1.5 days. **Conclusion:** Mini laparotomy as a route for ovarian drilling is a safer option; with no increase in duration of hospital stay and is associated with lower morbidity.

Key words: Mini laparotomy, laparoscopic ovarian drilling, ovarian disease

Stein & Leventhal in 1935 described a syndrome characterized by anovulation, infertility, weight gain and hirsutism¹. They noticed that a group of women had evidence of polycystic ovaries. The ovaries are 2-5 times the normal size. A cross section of the ovaries shows a white thickened cortex with multiple cysts typically less than 1 cm in diameter².

Large number of follicular cysts and a few atretic cysts show marked stromal hyperplasia and hyperthecosis. A varied picture may be a polycystic ovary with microscopic islands of leutinized theca cells scattered in the stroma, but usually there is a thickened fibrosed tunica with a large number of cystic follicles beneath this thickened capsule³.

In patients with PCO, the ovarian compartment is the most consistent contributor of androgens. These patients are also at risk for hyperinsulinemia and insulin resistance⁴.

The management options vary according to specific requirements of the patients. Medical management is usually carried out for regularization of menstrual cycles, ovulation induction and anti androgen therapy to decrease androgens. When medical management failed or in a selective group of patients surgery remains the only hope.

Wedge resection results in resumption of ovulatory cycles by removal of androgen secreting stroma and theca reduces the amount of abnormal steroid production in the ovary. The level of 17α hydroxyprogesterone, dehydroepiandrosterone, androstenedione and testosterone decrease along with a transitory decrease in estradiol. This results in normalization of LH:FSH ratio, and resumption of ovulatory cycles⁵. Wedge resection entails removal of a part of ovary, application of stitches in the ovary and can also had to excessive bleeding later on, adhesion formation is common. An alternative to this is ovarian drilling through electrocautery⁶. The same effects on androgens are

achieved by ovarian drilling, with less haemorrhage, less/ no adhesion formation and no loss of ovarian tissue.

Wedge resection or ovarian drilling can be carried out both laparoscopically as well as by mini laparotomy. This study was carried out with a view to evaluate and compare the intra operative and post operative morbidity between mini laparotomy and laparoscopic ovarian drilling for polycystic ovarian disease.

Setting & Duration

Gynae Unit I of Jinnah Hospital Lahore, Surgimed Hospital Lahore and Ghurki Trust Teaching Hospital, Lahore. The study period is from January 1999 to June 2004.

Patients & Methods

A total number of 76 patients were included in the study. All patients had failure of medical treatment with clomiphene citrate for ovulation induction. Patients who had had a previous laparotomy for any other reason were excluded from this study.

Patients were randomized into two groups. One group undergoing laparoscopic ovarian drilling (36 patients) while 40 patients underwent mini laparotomy.

In patients with mini laparotomy, a 5-6cms supra pubic transverse incision was made in the skin. Rectus sheath was opened and parietal peritoneum was excised.

Laparoscopy was done by a 10 mm laparoscope introduced below the umbilicus. CO₂ was insufflated. A 1 cm second puncture was placed supra pubically, through which suction irrigation or grasping of the tissue was performed. A third puncture was also placed suprapubically through which bipolar cautery was introduced to drill holes in the ovarian cortex several millimeters apart. Special care was taken to avoid

puncturing of hilum as this can result in excessive haemorrhage.

The cortex was penetrated at 10 to 15 sites for a depth of 3-5 mm. Smaller ovaries required lesser number of punctures. Haemostasis was secured. Port of entry of laparoscope was stitched by a single silk stitch.

In case of mini laparotomy, rectus sheath was closed by vicryl No. 0 and skin by prolene 2/0. Patients were discharged and were asked to report for follow up one week later.

Results

Total number of patients was 76. Laparoscopic drilling was done in 36 patients and mini laparotomy was done in 40 patients.

Out of 36 patients who underwent laparoscopic ovarian drilling, 6 patients (16.6%) had excessive bleeding, while visceral perforation was seen in 2 (5.5%) patients. Three (8.3%) patients requires subsequent laparotomy for repair of visceral perforation and 1 patient for control of haemorrhage.

Forty patients had mini laparotomy and ovarian drilling. Only one (2.5%) patient had excessive bleeding. No visceral perforation was seen in this group of patients.

Complications as seen in patients who had Ovarian Drilling (n=76)

Complications	N ₁ = 36		N ₂ = 40	
	No. of patients	%age	No. of patients	%age
Bleeding	6	16.66	1	2.5
Visceral perforation	2	5.55	---	---
Subsequent laparotomy	3	8.33	---	---
Wound infection	1	2.77	1	2.5

N₁ = Patients who had laparoscopic ovarian drilling

N₂ = Patients who had mini laparotomy

Easy approachability to ovaries was an added advantage in the mini laparotomy group. Mean duration of operation was 1.5 hours in laparoscopy and approximately 30 minutes in mini laparotomy group. Duration of hospital stay in both groups was 1.5 days, and complication rate was lower in the mini laparotomy group. In the post operative 1 week follow up, 1 patient each in both groups had wound infection.

Discussion

Patients with polycystic ovaries are obese, usually hirsute and have anovulation. Johnson reported an ovulation rate of 82% with clomiphene citrate while the conception rate was 50-60% as compared to conception rate of 86% reported by Stein & Leventhal for wedge resection¹.

Twenty seven studies were evaluated by Donaski and Adashi involving a total of 729 patients. The ovulation rate

following ovarian drilling was 84.2% and pregnancy rate was 55.7%⁷.

Complications occur with laparoscopic procedures as with any other surgical procedures. More expertise is required for laparoscopic procedures. Some complications are specific to the procedure and occur in laparoscopy alone⁸.

Some complications like those associated with blind insertion of a trocar are unavoidable. The Veress needle or trocar may traumatize omental or mesenteric blood vessels, or any major abdominal or pelvic vessels, sometimes requiring laparotomy⁹.

Injury to the intestine can occur during insertion of veress needle or trocars or at the time of operative laparoscopic procedures¹⁰. Bladder injuries can occur with insertion of trocar¹¹. Ureteric injuries are uncommon.

American Association of Gynaecological Laparoscopists published a report in 1993 with an audit of more than 80,000 laparoscopies performed during the year; they have calculated complication rate per 1000 laparoscopies with hospitalization of more than 24 hours in 36.7/ 1000 patients, unintended laparotomy in 8.5/ 1000 patients, haemorrhage in 7.9/ 1000 patients and bowel or urinary tract injury in 5.5/ 1000 patients.¹² Thermal injuries are also seen in patients in which electrocautery has been used¹³.

In one study, haemorrhage was a complication in 16.6% of patients with laparoscopic ovarian drilling which is much higher than the quoted 7.9/ 1000 which is 0.4%.

Rates of visceral perforation are excessive bleeding during laparotomy was encountered in 2.5% in one study which required blood transfusion.

The total length of three separate incision for laparoscopy is 3 cm while that of mini laparotomy is 5-6 cm, while access to viscera and complication rate is much higher in the first group.

Conclusion:

In this study it was concluded that mini laparotomy as a route for ovarian drilling is a safer option. Laparoscopic surgery requires specialized trained personnel, requires more time and has complication rate higher than mini laparotomy group.

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