

Ovarian Drilling for Clomiphene Citrate Resistant Polycystic Ovarian Disease

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This study was conducted at National University Hospital Singapore and Surgimed Hospital (Teaching Hospital) from 30th June 1998 to 24th April, 2001. 140 patients were recruited. This study evaluated the outcome of laparoscopic ovarian drilling in 140 patients who failed to conceive on clomiphene citrate (treatment started from minimum dose of 50 mg/day to 150 mg/day from day 2-6 of menstrual cycle). Various symptoms were evaluated which were infertility (72.8 % primary, secondary infertility 27.2 %), menstrual problems, hirsutism and obesity. In every case 8-10 holes were created in both the ovaries. Levels of the raised hormone were significantly reduced. By the end of first year 82% had normal menses, 71.6 % ovulated spontaneously 56% were pregnant. At 18 month 66 % were pregnant and 78 % at the end of two years.

Key words: PCO, Laparoscopic drilling, infertility.

Incidence of Polycystic Ovarian Disease is on the rise these days and around 30% of women harbour this problem all over the world (Pelson et al). It is probably most common endocrinological disorder among women during their reproductive years. Stein and Leventhal first described association of anovulation, hyperandrogenism and infertility in 1935.

PCO has a variety of biochemical and clinical features which vary from individual to individual. One common problem is sub-fertility. Even if patients get pregnant miscarriage rate is very high. About 70% of patients will ovulate on clomiphene citrate but only 40-50% will get pregnant (Afaf Felemban). Those who do not respond to clomiphene citrate next option may be injectable gonadotrophins. Laparoscopic drilling using electrocautery has been found to be effective for those who do not respond to clomiphene citrate.

Material and methods

This study was conducted at National University Hospital Singapore and Surgimed Hospital (Teaching Hospital) from 30th June 1998 to 24th April, 2001. About 140 patients were recruited. Patient selection was done from those patients who were already diagnosed as PCO and had taken clomiphene citrate (starting from the minimum dose of 50 mg/day to 150 mg/day from day 2-6) for a period of 3-6 months. Various treatment options were discussed with the patients including the gonadotrophins and ovarian drilling. Patients were told the efficacy side effects and cost of both the options.

Techniques

Patient is placed in the lithotomy position with the head down tilt. Abdomen and perineum are cleaned with antiseptic solution and clean drapes are placed. The patient is catheterized and pelvic examination performed. A volsellum forceps is applied to the anterior lip of cervix and Speckman's cannula is inserted to manipulate the uterus. Apparatus for pneumoperitoneum is checked for

any leaks or blocks. A small incision is made along the inferior margin of the umbilicus. Verres needle is inserted through the small incision, loss of resistance is noted on entering the peritoneal cavity and CO₂ is insufflated. A firm distension is obtained by 2-3 litres of gas confirming its intraperitoneal position by the loss of liver dullness on percussion. The verres needle is removed. The trocar and cannula are then inserted into the peritoneal cavity with firm controlled pressure. The angle of insertion of trocar and cannula should be along an imaginary line between the umbilicus and tip of the sacrum. The trocar is then withdrawn and replaced by the telescope attaching the source of light and the CO₂ insufflating apparatus. A good view is obtained by attaching camera to the eye piece of telescope. A thorough assessment of the pelvic organs is made. The position, size and mobility of the uterus is noted. Fallopian tubes are examined, and any abnormality noted. Particular attention is paid to the size and appearance of the ovaries. Before proceeding any further, the patency of the tubes should be checked.

Laparoscope is used to transilluminate the anterior abdominal wall in left iliac fossa and a small incision is made avoiding any large blood vessel in the area. A 5 mm trocar and cannula is inserted through this incision under direct vision. A similar site is selected on the right side of abdomen and another trocar and cannula is inserted, again under direct vision.

A toothed grabbing forceps is inserted through the left cannula and right ovarian ligament is grabbed as near the ovary as possible and the forceps is locked. This can be used to position and stabilize the ovary.

Armar ovarian drilling probe (made by Rocket of London) is inserted into the right portal under clear vision. It is connected to Eschmans Diathermy unit, which is fixed at power level 7 for coagulation. The drilling probe is brought near to the ovary. The diathermy pedal is pressed and immediately the probe is inserted into the ovary. A gush of fluid can be seen coming out each time a hole is

made. In this way equally spaced 8-10 holes are made in the ovary. During whole of the procedure, ovary is kept away from the surrounding structure and in the middle of the visual field. once the drilling has finished, the drilling probe is taken out and a combined irrigating and suction cannula is inserted. The ovary is sprayed with the normal saline to reduce its temperature. Then diathermy lead is attached to the grabbing forceps holding the ovarian ligament. Diathermy pedal is again pressed and grabbing forceps removed. This is to avoid any bleeding from the point where toothed forceps were used. Fluid is sucked from the pouch of Douglas. The same procedure is repeated on the other side. Then 300 mls of Dextran 70 is left in the pelvis. Both small cannulas are removed under direct vision and note is taken if there is any bleeding from the point where the trocars were inserted. Then the telescope is taken out and gas is released from the abdomen. The main 10 mm cannula is also removed. The incisions is closed with vicryl 3/0 sub-cuticular stitch and dressings are applied. Patient is transferred to the recovery area and then to the ward.

Results

Table 1. Age distribution

| Age | n= | %age |
|-------------|----|------|
| 20-25 years | 50 | 35.7 |
| 25-35 years | 64 | 45.7 |
| 35-40 years | 26 | 18.5 |

Table 2 Symptoms

| Symptoms. | n= | %age |
|--------------------|-----|------|
| Sub-Fertility | | |
| Primary | 102 | 72.8 |
| Secondary | 38 | 27.2 |
| Menstrual problems | | |
| Irregular | 110 | 78.6 |
| Total Amenorrhoeic | 30 | 21.4 |
| Hirsutism | 96 | 68.6 |
| Obesity | 85 | 60.7 |

Endocrinal profile before drilling

| | | |
|-----------------|--------|------|
| LH | Normal | 18% |
| | Raised | 82 % |
| FSH | Low | 0 % |
| | Normal | 69 % |
| | Raised | 1 % |
| Testosterone | Low | 38 % |
| | Normal | 45 % |
| | Raised | 55% |
| DHEAS | Normal | 70% |
| | Raised | 30% |
| Androstenedione | Normal | 75% |
| | Raised | 25% |

After drilling hormonal profile changed significantly

| | BEFORE | AFTER |
|--------------|------------------|--------------|
| LH levels | 13-14 IU/L | 6-7 IU/L. |
| Testosterone | 3-3.5 pmol/l | 2-2.2 pmol/l |
| DHEAS | 6.5 - 7.5 nmol/l | 4-5 nmol/l |

Androstenedione 7-8 nmol/l 5-5.5 nmol/l

Improvement in symptoms

Regular menses 82 %
 Irregular menses 16 % at the end of one year.
 Amenorrhoea 2 %

Ovulation

71.6% ovulated spontaneously, remaining ovulated with clomiphene citrate and gonadotrophins

Hirsutism improved in 75 % of cases. At the end of first year 56 % achieved pregnancy, 18 months 66 % achieved pregnancy, at the end of two years 78 % got pregnant. 19 patients could not conceive. Second look laparoscopy and drilling was done. Out of these 19 patients 7 got pregnant

Discussion

Laparoscopic ovarian drilling may be particularly suitable form of treatment in our set-up because due to various reasons it may not be possible for the patient to undergo gonadotrophin therapy, if they have not responded to anti-estrogens. The high cost of these drugs, necessity of intensive monitoring, requiring the appropriate facilities and the frequent visits by the patient often from a long distance are few of the problems faced in this part of world.

I agree that laparoscopic ovarian drilling also requires appropriate skills to be made available but from the patients point of view they can have this form of treatment and then go back to try naturally for the pregnancy or just to require anti-estrogen drugs. Keeping in mind the success rate of laparoscopic ovarian drilling I strongly feel that this therapy is the next logical step in the patients who do not respond to anti-estrogen therapy.

References

1. Ammar NA: Laparoscopic ovarian diathermy: an effective treatment for anti-oestrogen resistant infertility in women with PCO. Br. J Obstet Gynaecol 1993. 100, 161-164.
2. Barbieri R.L.: Polycystic ovarian disease. Annu-Rev-Med; 1991, 42, 199-204.
3. Barbieri R.L., Smith S: The role of hyperinsulinemia in the pathogenesis of ovarian hyperandrogenism. Fertil Steril 1988. 50, 197-212.
4. Adams J., Polson D.W & Franks S.: Prevalence of polycystic ovaries in women with anovulation and idiopathic hirsutism. BMJ 1986. 293, 335-359.
5. Daniell J., and Miller W. Polycystic ovaries treated with laparoscopic laser vaporization. Fertil and Steril, 1989. 51, 232-236.
6. Duugnan N.M.: Polycystic ovarian disease. Br. Jr. Obstet & Gynaecol, 1976. 83, 593-602.
7. Duigran N.M., Shaw R.W, Glass M.R.: Sex Harmon levels and gonadotrophin release in polycystic ovarian disease. Clin Endocrinol. 1975. 4: 287-295.
8. Eden J.A.: Which is the best test to detect the polycystic ovary? aust NZJ obstet Gynaecol 1975. 28, 221-224.
9. Franks S., Polycystic ovary syndrome: a changing prospective. Clin Endocrinol 1989. 33, 645-651.
10. Garcea N. et al : Polycystic ovarian disease. Am J Obstet Gynaecol. 1985. 151, 635.