PCOS Ovarian Drilling

via Transvaginal Hydrolapraroscopy

- Techniques and Results

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Treatment of infertile women with polycystic ovary syndrome (PCOS)

- The first-line treatment for ovulation induction --anti-estrogen clomiphene citrate (CC)
- The second-line intervention--either exogenous gonadotropins or laparoscopic ovarian surgery (LOS)
- The third-line treatment -- in vitro fertilization

The Thessaloniki ESHRE/ASRM-Sponsored PCOS Consensus, 2007,

Laparoscopic ovarian drilling

- Unifollicular ovulation with no risk of OHSS or high-order multiples.
- Intensive monitoring of follicular development is not required

Ovarian drilling via transvaginal hydrolapraroscopy

Transvaginal hydrolapraroscopy (THL)

Gordts et al 1998

- A miniature endoscope introduced through the vaginal wall
- Normal saline solution as distending medium
- Visualize the pelvic organs, evaluate tubal patency and perform salpingoscopy

Fertiloscopy - Watrelot

Complete endoscopic investigation of the female reproductive tract

- Hysteroscopy
- Transvaginal hydrolaparoscopy (THL)
- Salpingoscopy
- Patency test

THL Benefits

- Less invasive
- Local anesthesia
- High degree of concordance with laparoscopy
  Watrelot ,2003
- Low complication---bowel perforation
  0.25%.- 0.65% of 3667 procedures
  Gordts ,2005

THL for infertility investigation

- US and HSG: insufficient
- Laparoscopy: too invasive
- THL: at least as precise as diagnostic laparoscopy

THL applications

- For women with abnormal HSG results but with no obvious pelvic pathology, THL should be recommended and about 50% could avoid unnecessary laparoscopy.
- Adhesiolysis and coagulation of endometriotic lesions under THL in mild adhesion and endometriosis cases could lead to encouraging results.

Rui Yang , **European Journal of Obstetrics & Gynecology and Reproductive Biology 155 (2011) 41–43**

Ovarian drilling via THL

- PCOS patients rarely have pelvic adhesion
- Ovarian drilling in a watery medium—reduce the possibility of adhesion and the extent of tissue damage

Techniques

- Within 3–10 days after menstruation
- Bimanual vaginal examination and vaginal ultrasound to check the position of the uterus and rule out adnexal pathology or obliteration

Techniques (ctnd.)

- Diagnostic hysteroscopy
- Place a #10 Foley catheter in the uterine cavity
- A trocar system is positioned in the midline 10-15 mm below the insertion of the posterior vaginal wall on the cervix and continuous flow of pre-warmed saline solution

Techniques (ctnd.)

- Endoscopy is introduced and the pelvic organs were inspected in the following sequence: posterior wall of uterus, ovaries, fallopian tubes and the pouch of Douglas.
- Tubal patency test performed by injection of methylene
- Salpingoscopy

Techniques—ovarian drilling

- Shift to surgery instruments
- A 5 Fr bipolar needle insulated with 8mm free length and 0.19–0.20mm diameter
- Rotate the 30° endoscope to place the 5 Fr bipolar needle perpendicular to the ovarian surface before any activation of electric power.

Our results

- 56 subjects included from Jan 2008 to Jan 2010
- Average age 28.34±2.96 yr
- Infertility time 42.79±38.43 months
- BMI 23.83±2.97kg/m^2

Results

Our results (ctnd.)

- 11 patients converted to laparoscopic ovarian diathermy
- No intra- or post-operative complication
- Follow-up period 10.57±5.54 months

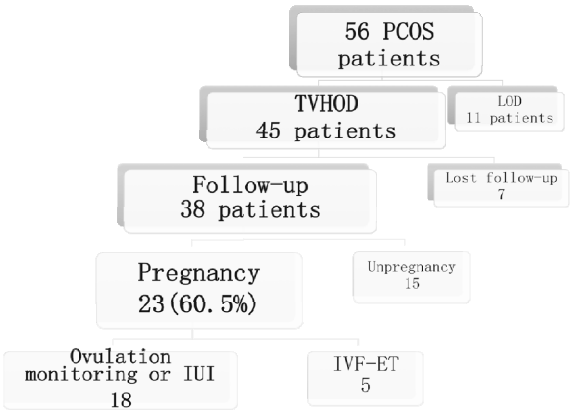
Results

Our results (ctnd.)

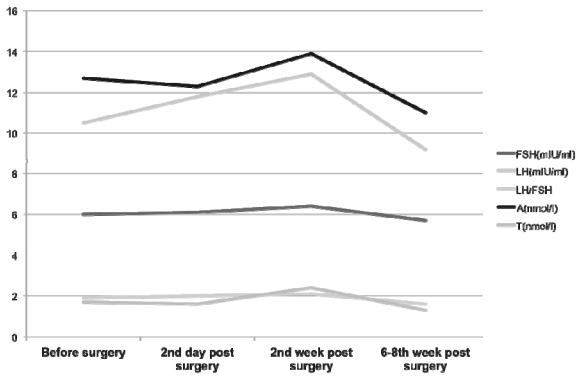
- Seven patients were lost for follow-up
- 21 of 38 patients (55.3%) resumed regular cycle

Results

- 22 of 38 patients (57.9%) with normal sonographic features



Our results– Hormone level



Existing results from literature

- Operative transvaginal hydrolaparoscopy for treatment of polycystic ovary syndrome: a new minimally invasive surgery

  Herve´ Fernandez, 2001

- Patient(s): thirteen clomiphene citrate–resistant anovulatory women with PCOS

Results [Herve Fernandez]

- Six patients recovered with regular cycles
- Six pregnancies occurred; 3 spontaneous, 2 after stimulation and IUI, and 1 after IVF
- The cumulative pregnancy rate 33% at 3 months after THL, 71% at 6 months after THL
- No miscarriage

Hydrolaparoscopy in the treatment of polycystic ovary syndrome

Stephan Gordts, Fertil Steril 2009

- Thirty-nine PCOS patients
- 25 out of 33 patients (76%) - pregnant
- 13 of the 16 patients (81%)- Natural conception
- 17 patients to IVF program, 12 pregnant

Open problems yet to be investigated

Electrical energy

- needle 8 mm long, 2 mm diameter
- monopolar
- puncture
  - number 4
  - duration 5 seconds

Standard

THL

- needle 8 mm long, 0.2 mm diameter
- Bipolar
- puncture
  - number ?
  - duration ? seconds

Our recent study

Evaluation of the tissue damage of porcine ovaries after bipolar drilling under transvaginal hydrolaparoscopy – an in vitro experiment.

Ma CH, Gynecol Endocrinol. 2010

Our findings

- The monopolar drilling caused more tissue damage than the bipolar needle ($P<0.01$)
- The ratio of the damage of monopolar electrocoagulation (40w , 3s) over that of bipolar diathermy in saline solution (70w , 15s) was 7.4 [$(16.74\pm1.30)\ mm^3$ /$(2.27\pm0.49)\ mm^3$]

Our findings

- In the bipolar groups, the 70w power set (15s and 20s) caused significantly more tissue damage than the 50w ones ($P<0.05$)
- In THL drilling using a 5 Fr bipolar electrode, the current is more crucial than stimulation time

Conclusions

- Transvaginal hydrolaparoscopy with ovarian drilling using bipolar electrosurgery appears to be an alternative minimally invasive for patients with PCOS who are resistant to clomiphene therapy.

Summary –THL for Ovarian Drilling

- Safety of the transvaginal access
- Advantage of transvaginal access in obese patients
- Reduced risk of postoperative adhesion formation
- The number of holes should be individualized and further study is needed