Reproductive (endometriosis) Surgery in the era of IVF

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Disclosure : shareholder EndoSAT
The aim: pregnancy ---time at an affordable cost

Do not ask the wrong questions ...

**IVF** versus reproductive surgery

And do not misuse statistics

*Significant = Clinically relevant*
Mis-use of statistical significance

• Research: Significance
  - Increases with N
  - Does not permit a conclusion of the population

• Clinically useful
  - Outcome = population
  - Sensitivity/specificity
  - Accidents

Length of women
Length of men

170 cm
180 cm

Increases with N
Does not permit a conclusion of the population
Basics of infertility: MFR & CPR

- In a 100% fertile population
  - With 30% monthly fecundity rate, 90% is pregnant after 6 months
  - With a 7% MFR -> 55% after 1 year

- If half of the women have a frozen pelvis
  - A 30% MFR generates a plateau after 1 year (i.e., severe adhesions, tubal re-anastomosis)
Basics of infertility: MFR & CPR

- A real population is composed of very fertile and infertile.
- The very fertile get faster pregnant and the remaining group has a lower median fertility over time.
- Women delivering in Leuven:
  - 60% was pregnant after 1 month.
  - If not pregnant after 6 months, MFR is 10%.
Fertility basics 1

• Unexplained infertility: population model
  • of 1 year 20% conceive next year, 50% CPR after years
  • Of 3 years < 5% <20%
  • Of 5 years < 1%
  • This is the basis for initiating investigation, treatment, IVF

• Following fertility surgery
  • A typical 2 population model: almost all pregnancies occur in the first 6 months -1 year

• IVF
  • The MFR decreases over time
  • The CPR, including drop-outs, hardly exceeds 60% of the initial population
Fertility basics 2: Diagnosis and treatment

• CPR and MFR  Multifactoreal
  • First: age or duration of infertility
  • mechanical
  • Ovulation – luteal phase – endometriosis-implantation
  • Cervical mucus and antibodies
  • Sperm quality and survival

• Varies with Attitude
  • Either Progressive and expectant
  • Either fast and complete diagnosis
Approach to infertility

• Slow and progressive
  • Eg the Netherlands: 6 months of expectant management after HSG
  • Eg UK: temporize to avoid a diagnostic laparoscopy

• Fast and complete diagnosis: 3 months work-up
  • Including a diagnostic laparoscopy/hysteroscopy (and surgery)

• Considerations
  • Age
  • A decreased male infertility
    Severe: an argument for IVF or
    Moderate: a complete investigation
Infertility: when a laparoscopy?

- Yes
  - if associated symptoms of pain
  - If big cystic endometriosis

- ? When infertility is the only symptom
  - Calculated risk: overtreatment missing treatable pathology
  - The exact place of THL is still unclear

- No when IVF is anyway indicated
Adhesion of oviduct only
Pain: Torsion of Morgani
During Diagnostic laparoscopy (THL ?)

- If surgery is indicated
  - Perform surgery if skilled
  - Otherwise refer

- 3 Groups
  - Surgery indicated for reasons other than fertility
    - Very severe pain + deep endometriosis, cystic ovarian endo, frozen pelvis
    - Symptomatic myoma
  - Surgery indicated beyond reasonable doubt
    - Hysteroscopic polypectomy, small myomectomy, septum
    - Superficial endometriosis
    - Filmy peritubal-peri-ovarian adhesions
  - Unclear indications Surgery<->IVF
    - Ovarian drilling (under water) for PCO
    - Deep endometriosis without pain, asymptomatic adhesions
    - Smaller cystic ovarian endo
    - Tubal occlusion : hydrosalpinx , cornual block
Surgery beyond reasonable doubt

**Hysteroscopy**

- Polyp
- Smaller myoma
- Septum

- No arguments not to do
  - No surgical risk
  - Fast
  - Even if positive fertility outcome is not that clear
Superficial endometriosis

- Subtle lesions

- Typical lesions
  - Pelvis
  - Diaphragm?

- **Guidelines: Superficial endometriosis**
  - Surgery is indicated
  - *If not pregnant after .... months IVF*
Diagnosis and treatment during laparoscopy

• Is this a cause of infertility?
Diagnosis and treatment during laparoscopy

• Is this a cause of pain?? infertility?
Diagnosis and treatment during laparoscopy

- Is this a cause of pain? Infertility?
Diaphragm
Results of treatment

• Infertility
  • Surgical treatment: Endocan study (R. Maheux et al)
    Stage I and II and no other infertility factor

• Discussion
  – Patient not blinded to treatment
  – Increase in treatment or decrease in non treatment?
  – LUF and stress
  – Trait anxiety and fertility
The LUF Syndrome

- Peritoneal fluid
- LUF Exists
- Associated
  - with typical E
  - not with subtle E
- A cofactor?

Results of treatment

- Infertility
  - Surgical treatment: Gruppo Italiano per lo studio dell’Endometriosi (Hum Reprod 1999, 14, 1332-1334)

  Stage I and II and no other infertility factor

  RCT

  ![Graph showing birth rate comparison between surgery and no surgery](image-url)
**Conclusion**

- **Subtle endometriosis**
  - ? Whether it is a cause of infertility or pain
  - ? Whether treatment is useful
  - A physiologic condition occurring intermittently in all women

- **Typical endometriosis**
  - Can cause pain
  - Associated with infertility and with LUF
  - Unclear whether treatment is effective
  - Surgical excision
  - Recurrence rate around 20 %

- **But is it acceptable not to treat?**
Surgery for reasons other than infertility

- Deep endometriosis and severe pain
- Large cystic ovarian endometriosis
- Bulky uterus: when hysterectomy is indicated
  - Myoma
  - Adenomyosis

Surgery or IVF?

- Smaller asymptomatic cystic ovarian endometriosis
- Tubal occlusion
Cystic ovarian endometriosis

• > 6 cm = 2 step

• Smaller
  • Excise
  • Do not destroy the ovary
  • Fertility : CPR 60%

• The Questions are
  • Judgment without a laparoscopy ?
  • During laparoscopy : is no treatment an option ?
  • Unclear : smaller and recurrences
Vaporisation

- Slow
- Incomplete
- Depth?
- Too deep bleeding
Diagnosis and treatment during laparoscopy

cystic ovarian endometriosis
Scissor excision

Excision:

PROTECT THE HILUS
Deep endometriosis & infertility

• If severe pain (95%) : surgery needed

• If no pain and infertility
  • We suggest surgery since Frozen pelvis after IVF
  • Complications of pregnancy

• CPR after surgery : 25-50 % in 6-12 months

• Expertise required
  • to avoid unnecessary bowel resections, nerve damage and adhesions
Expertise required

pain ++
perineal
Radiation

All exams  Negative
Clinical, MRI, contrast enema

hysterectomy
Pregnancies in deep endometriosis

N=2500

50% without children

50% with children

full analysis with age diameter of lesion duration of surgery not done yet
Pregnancy rates

Cox Regression

- Duration I: 0.001
- rAFS: 0.06
- Deep: 0.057
- E-oma: 0.09
- Age: 0.04

MODEL

- Duration: 0.01
- Endometriosis: 0.02
- or Volume (deep): 0.05
- E-oma: 0.09

age # duration

6 Months
Conclusions:
Deep Endometriosis and infertility

• Huge variability in techniques
• Poorly documented fertility explorations
• Series too small for meaningful analysis eg size
• spontaneous pregnancy rates of 25-60%

• Prognostic factors?
• Indication for surgery is pain not fertility

• Data suggest a negative effect upon fertility-MFR:
The future of fertility surgery.

Quality of surgery
No adhesions
Videoregistration
Adhesion free surgery is realistic
(Fertil Steril Oct, 2016)

Microsurgical principles and postoperative adhesions: lessons from the past

Role of the peritoneal cavity in the prevention of postoperative adhesions, pain, and fatigue
Conclusions

• Infertility is a clinical problem

• Requiring a diagnostic laparoscopy before IVF
  In most couples

• Surgery during laparoscopy
  Requires skills

• Recommended
  Videoregistration as a quality control

• Adhesion free surgery is realistic
  Quality of surgery
  Microsurgical tenets ie Peritoneal conditioning + barrier
## Basics of endometriosis lesions

<table>
<thead>
<tr>
<th></th>
<th>Prevalence</th>
<th>Pain</th>
<th>Infertility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subtle</td>
<td>80%</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Typical</td>
<td>25%</td>
<td>in 50% +</td>
<td>?</td>
</tr>
<tr>
<td>Cystic</td>
<td>10%</td>
<td>in 80% +++</td>
<td>++++</td>
</tr>
<tr>
<td>Deep</td>
<td>2-3%</td>
<td>in 95% ++++</td>
<td>???</td>
</tr>
</tbody>
</table>

- Adenomyosis
- Peritoneal pockets – Müllerianosis - Choristoma
Surgery and IVF are complementary

but surgery comes first

Provided it is well done
Quality control needed

CPR

Surgery

IVF