Introduction (1)

- Tubo-peritoneal infertility?
- Deteriorations of the tube
- Pelvic adhesions
- Endometriosis, etc.

Introduction (2)

- Causes
- Current incidence
- Nosology
- Means for diagnosis
- Laparoscopic treatment
- Results
Causes

- Infectious (chlamydia)
- Dystrophic (endometriosis)
- Congenital abnormalities
- Iatrogenic (sterilisation)
- No cause found = about 30 %

Epidemiology

- Incidence depends on a large number of factors
- France:
- Thonneau (1992): 25 %
- FIVNAT: 40-50 % of indications
- Role of chlamydia trachomatis
  (screening and early treatment)
Tubal infertility: incidence

- Population studies: couples %
  - Thonneau (91) 1219 29
  - Collins (95) 2198 23
  - Bilateral
  - FIVNAT (2004) 40
  - Estimation 12-33

Nosology

Tubal lesions

- Adhesions
- Distal lesions
- Mid tubal lesions
- Proximal lesions
Distal lesions

- Fimbrial occlusions:
  - peri fimbrial adhesions
  - agglutination of fringes
  - serosal covering of fringes
  - pre fimbrial phimosis
- Hydrosalpinx:
  - various degrees
Tubal lesions

- Not always easy to classify
- After adhesiolysis and tube reconstruction
- Doubtful cases.....

Procedures

<table>
<thead>
<tr>
<th>Adhesions</th>
<th>Adhesiolysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fimbria</td>
<td>Hydrosalpinx</td>
</tr>
<tr>
<td>Fimbrioplasty</td>
<td>Salpingoneostomy</td>
</tr>
</tbody>
</table>
Diagnosis

Means of diagnosis (1)

- 1- Past history
- 2- Hysterosalpingography
- 3- Other imaging methods
- 4- Chlamydia serology
- 5- Endoscopy:
  fertiloscopy & laparoscopy

Means of diagnosis (2)

1- Screening:
   - Risk factors
   - Clinical examination
   - Hysterosalpingography
   - Other imaging methods
   - Chlamydia serology
2- Operability work-up:
   - Endoscopy
Past history

- Infections:
  - peritonitis, salpingitis, recurrent lower genital tract infections...
- Surgery
- Endo-uterine procedures
- Painful episodes of unknown origin
- None (50 %)

Hysterography (1)

- An investigation disparaged and almost unknown in some countries ... irreplaceable
- However, it is necessary to know:
  - the technical conditions
  - the limits
  - the risks
- The performance is assessed better today

Hysterography (2)

- Risks: infectious above all (0.5 to 2.9 %)
  - Especially with Hydrosalpinx & Positive CT serology
- Limits:
  - adnexal adhesions
  - proximal occlusion (selective catheterism)
- Irreplaceable:
  - assessment of the proximal portion and tubal isthmus
Hysterography (3)

- Meta-analysis (Swart 1995):
  - 20 studies = 4179 cases v laparoscopy
- Prospective study (Mol 1999):
  - 794 cases v laparoscopy
  
  Sensitivity: 65-81 %
  Specificity: 75-83 %

HSG: recommendations (5)

- HSG is essential for tube assessment
- Especially with a risk factor or suggestive sign
- Valuable for orientation, but limits
- Any anomaly requires endoscopic investigation.

Other imaging techniques

- Ultrasound
- Hysterosonography
- Echovist
- Screening...
Chlamydia (1)

- In 1990s = 70 % of infertility cases 1994:
  265 plasties - threshold = 1/64
- Endocervical location: 70 % of cases asymptomatic
- Screening and prevention in populations at risk:
  Scandinavia: 20 --> < 5 %
- France ? (5.1-7.1%)

Chlamydia (2)

- Probably still the agent most often responsible for tubal lesions
- Serology seems to be a useful marker
- Correlation between CTS+ and tube lesion established
- What threshold value to chose?

Chlamydia serology

- Useful marker even if incidence has dropped.
- Meta analysis Mol (97) study by Land (98)

<table>
<thead>
<tr>
<th>Sensitivity: 30-88 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specificity: 45-100 %</td>
</tr>
<tr>
<td>Recommended threshold: 1/16</td>
</tr>
</tbody>
</table>
**CTS: recommendations**

- CTS a good marker for tube damage
- Assay CTS even when no past history depending on endemism
- CTS essential before carrying out HSG
- Threshold value = 1/16

**Endoscopy (1)**

- CTS & HSG are only means of detection ......
- If there is any suspicion of anomaly endoscopy is indispensable
- It confirms the lesions and provides the means to assess the operability

**Endoscopy (2)**

- Laparoscopy is the gold standard for investigation
- Given the risks involved, other less invasive methods are currently being assessed:
  - micro laparoscopy under local anaesthesia
  - fertiloscopy (transvaginal)
Laparoscopy (3)

- Technical aspects:
  - methodical work-up:
    - to search for lesions
    - Staging
    - estimation of the prognosis
    - complete report

  --- surgical procedure

Tubal endoscopy

- Fallopanscopy (Kerin 1990)
- Tuboscopy (Cornier, Henry 1982)
- Assessment of the mucosa
  & search for adhesions
### French scoring system (Mage 1994)

<table>
<thead>
<tr>
<th>Permeability</th>
<th>Mucosa</th>
<th>Wall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal=0</td>
<td>Normal=0</td>
<td>Normal=0</td>
</tr>
<tr>
<td>Partial=2</td>
<td>Reduced=5</td>
<td>Fine=5</td>
</tr>
<tr>
<td>Occluded=10</td>
<td>None=10</td>
<td>Thick=10</td>
</tr>
</tbody>
</table>

**STAGES:** I, II, III, IV  
**Scores:** 2-5, 6-10, 11-15, >15

### Other classifications

- Amer. Fertility Society (US)  
- Boer-Messel  
- Hull & Rutherford (UK)  
- Tuboscopic score.....
3 situations in practice

- 1 - the tube is normal (fertiloscopy)
- 2 - The tube is inoperable (salpingectomy?) (laparoscopy) ---> IVF
- 3 - The tube is operable

Counter indications

1 - Tubal
   - Tuberculosis
   - Bifocal lesion
   - Reocclusions
   - Active inflammation

2 - Other
   - Age (RO)
   - Associated factor (sperm)
   - Surgical risk
   - Associated lesions

Operability work-up

- During the laparoscopy, but it is a multidisciplinary decision
- Take account of:
  1 - complete work-up for the couple
  2 - alternative treatments
  3 - the couple's preference, after prior information concerning risks and expected results = counseling
Laparoscopic technique

General principles
- Atraumatism
- Minute haemostasis
- Permanent irrigation
- Preservation of healthy tissue
- Anatomic restoration
- Rigorous reperitonization
- Prevention of secondary adhesions

Instrumentation
- Uterine canula for patency test
- Atraumatic grasping forceps
- Fine scissors (straight-curved)
- Needle holder
- Fine bipolar coagulation
- Fine monopolar electrode
- Irrigation system
- Micro instruments for anastomosis
Peri operative measures

- Pre operatively:
  - corticotherapy, pill, A-Gn-RH...
  - antibioprophylaxis
- Adhesion prevention:
  - operative technique
  - adjuvants: Adept......

Adhesiolysis

- First procedure
- Performed atraumatically
- Adhesions exposed and stretched
- Permanent irrigation
- Haemostasis as required
- May be difficult when severe

Fimbrioplasty

- Identification of the ostium
- Gentle lysis of adhesions
- Freeing of the fringes with or without section
- Excision of serosa
- Maintain eversion of fringes
Salpingoneostomy

- Distension of the hydrosalpinx
- Identification of the site of incision & tubal opening
- Assessment of the mucosa
- Eversion of the mucosa by “flowering effect” or stitches
Tubal anastomosis

- Magnification with scope placed closer
- Identify sites of transection
- Transections of both portions
- Patency assessment
- Anastomosis with 8/0 nylon
- Suture of mesosalpinx
- Serosal suture
- Control of patency
Results

### Adhesiolysis

#### Results

<table>
<thead>
<tr>
<th>Method</th>
<th>% IUP</th>
<th>% EP</th>
<th>% D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro</td>
<td>21-68</td>
<td>0-16</td>
<td>17-57</td>
</tr>
<tr>
<td>Laparoscopy</td>
<td>44-55</td>
<td>4-8</td>
<td>47-62</td>
</tr>
</tbody>
</table>

### Distal occlusions

#### RESULTS

<table>
<thead>
<tr>
<th>Procedure</th>
<th>N.</th>
<th>% IUP</th>
<th>% EP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsurgery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fimbrioplasty</td>
<td>562</td>
<td>43.7</td>
<td>4</td>
</tr>
<tr>
<td>SNT</td>
<td>2450</td>
<td>37.3</td>
<td>9.1</td>
</tr>
<tr>
<td>Laparoscopy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fimbrioplasty</td>
<td>677</td>
<td>47.4</td>
<td>8.1</td>
</tr>
<tr>
<td>SNT</td>
<td>687</td>
<td>26</td>
<td>7.5</td>
</tr>
</tbody>
</table>
Salpingoneostomy (Score)

- **Meta analysis (6 series):**

<table>
<thead>
<tr>
<th>Stage</th>
<th>N</th>
<th>% IUP</th>
<th>% EP</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>166</td>
<td>42</td>
<td>1.2</td>
</tr>
<tr>
<td>II</td>
<td>302</td>
<td>35</td>
<td>7.6</td>
</tr>
<tr>
<td>III</td>
<td>184</td>
<td>13.5</td>
<td>9.2</td>
</tr>
<tr>
<td>IV</td>
<td>88</td>
<td>1.1</td>
<td>3.4</td>
</tr>
</tbody>
</table>

Distal plasties

Audebert A: 1988-2000= 422 cases
- 151 IUP: 35.8 %
- Delivery: 23 %

<table>
<thead>
<tr>
<th>Stage</th>
<th>N.</th>
<th>% DEL.</th>
<th>% EP</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>95</td>
<td>28.5</td>
<td>8.4</td>
</tr>
<tr>
<td>II</td>
<td>133</td>
<td>30.8</td>
<td>8.2</td>
</tr>
<tr>
<td>III</td>
<td>133</td>
<td>18</td>
<td>9.8</td>
</tr>
<tr>
<td>IV</td>
<td>61</td>
<td>8.2</td>
<td>4.9</td>
</tr>
</tbody>
</table>

Chlamydia

- **Rates of positive CT Serology**
(Audebert 1997)

<table>
<thead>
<tr>
<th></th>
<th>Tot</th>
<th>% IUP</th>
<th>EP</th>
<th>Failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fimb.</td>
<td>74.3</td>
<td>68.7</td>
<td>100</td>
<td>82</td>
</tr>
<tr>
<td>SNT</td>
<td>70.7</td>
<td>51</td>
<td>80</td>
<td>69</td>
</tr>
</tbody>
</table>
Reversal of sterilisation

Results of microsurgery

<table>
<thead>
<tr>
<th>Method</th>
<th>N.</th>
<th>% Deliv.</th>
<th>% Ab.</th>
<th>%Ect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pommeroy</td>
<td>467</td>
<td>50</td>
<td>-</td>
<td>2.6</td>
</tr>
<tr>
<td>Electrocoag.</td>
<td>347</td>
<td>45.5</td>
<td>-</td>
<td>4.6</td>
</tr>
<tr>
<td>Bands</td>
<td>176</td>
<td>77</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Clips</td>
<td>100</td>
<td>82</td>
<td>4.5</td>
<td>3</td>
</tr>
</tbody>
</table>

Laparoscopic anastomosis

Meta analysis: 506 cases

<table>
<thead>
<tr>
<th>Operation</th>
<th>Microsurg.</th>
<th>Laparos</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adhesiolysis</td>
<td>17-57 %</td>
<td>47-62 %</td>
</tr>
<tr>
<td>Fimbrioplasty</td>
<td>15-60 %</td>
<td>21-37 %</td>
</tr>
<tr>
<td>Salpingoneostomy</td>
<td>12-42 %</td>
<td>0-32 %</td>
</tr>
<tr>
<td>Ligature reversal</td>
<td>50-82 %</td>
<td>25-65%</td>
</tr>
</tbody>
</table>

No RCT comparing results with IVF

Microsurgery v operative laparoscopy

Delivery rates published
Conclusions

- Non invasive methods for investigating tube function have limited value
- From the surgical point of view, laparoscopic surgery is equally efficient as microsurgery via laparotomy and should therefore be preferred
- Many factors affect the decision, requiring multidisciplinary analysis with respect to IVF

Thank you and welcome to Bordeaux!