Bibliographic Review Presentation on
Adhesion Prevention in Tubal Surgery

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Rationale

- Clinical question in view of tubal infertility management IN MY ENVIRONMENT
- Adhesion prevention - global perspective
- Indicate possible solution to improve the condition
Objectives

- Acquire knowledge on pathogenesis of adhesion formation and re-formation to prevent it in clinical practice.
- Participate or undertake clinical research trials that involve adhesion prevention activities in tubal surgery.
Review Methods

- Electronic data bases: MEDLINE, OVID
- Terms used: Adhesion prevention, tubal surgery, postoperative procedures
- Human and animal models
- 137 publications (16 reviews, 3 Cochrane)
Adhesion Pathogenesis

- **SURGICAL INJURY**
  - Stromal mast Cells disruption
  - Release of vasoactive substances (histamines, kinines, leucotrienes)
  - Increased blood vessel permeability
  - Formation of fibrin exudates
Pathogenesis continued...

Fibrin Exudate

- Plasminogen..Plasmin
  - Plasminogen activator
- Fibrinolysis
- Mesothelial regeneration
- No Adhesion

- Plasminogen..Plasmin
  - Decreased activator
- Decreased fibrinolysis
- Fibroblast proliferation
- Adhesions
## Staging of tubal disease


<table>
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<tr>
<th>Stage</th>
<th>Characteristics</th>
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| Stage I | • Thin wall with good mucosa  
          • Flimsy adhesions limited to the ampulla and ovary only  
          • Ovary present and mainly free |
| Stage II| • Thick wall with good mucosa  
          • Thin wall with altered mucosa  
          • Intraluminal adhesions  
          • Fibrous thick adhesions involving tube and/or ovary |
| Stage III| • Thick wall with altered mucosa  
            • Clean hydrosalpinx with nodularity of patent isthmus  
            • Ovary incarcerated against pelvic side wall or absent |
| Stage IV| • Tubo ovarian mass or fibrous adherent hydrosalpinx with incarcerated ovary and or isthmic damage |
Cumulative pregnancy rate after surgery for infective tubal damage adapted from Wu et al. 1988
Laparoscopic salpingosotomy: fertility results according to tubal mucosa appearance

Adapted from Dubuisson et al. 1994

![Graph showing cumulative pregnancy rate over months for different tubal mucosa grades. The graph includes lines for Normal, Grade I, Grade II, Grade III, and Grade IV. The cumulative pregnancy rate is measured on the y-axis, and months are on the x-axis. The graph illustrates the varying rates of pregnancy for each grade over time.]
Postoperative adhesion prevention strategies
Classification of Adjuvant

Nature
- bio-degradable or not
- liquid or solid

Application time
- preoperative
- intraoperative
  - before tissue injury
  - after tissue injury
- postoperative
  - hydrotubation
  - 2nd look laparoscopy

Administration route
- intraperitoneal
- oral
- parenteral

Mechanism of action
- mechanical (barrier)
- anti-inflammatory
- Fibrin inhibitors
- fibrinolytics
- protect tissue damage
Mechanisms of action

- **Anti-inflammatory**
  - corticosteroids, other steroids, NSAID, Promethazine, calcium channel blockers, pentoxifylline.

- **Fibrin inhibitors**
  - heparin, sodium citrate, Ringer`s lactate

- **Promote fibrinolysis**
  - tissue enzymes

- **Mechanical barriers**
  - solid
    - PTE, (Gare-Tex) TC7,
  - liquid or gelatinous
    - Seprafilm, Sepracoate, fibrin glue, surgicel, polyethylene glycol hydrogel, 32% dextran 70, Ringer lactate etc.

- **Prevention of tissue damage**
  - hydrophilic polymer solutions
Review Summary - Surgery

- Surgical techniques (microsurgery vs laparoscopy) and modalities
Review Summary - Adjuvant

- No ideal adjuvant
- Among the available in priorities
  - PTFE (Gore-Tex, Preclude)
  - Interceed (TC-7)
  - Seprafilm, Genzyme
  - Polyethylene glycol hydrogel
  - Hyaluronic acid
  - Chondroitin Sulphate
  - Fibrin sealants (glue)
Conclusion

- Is the clinical question answered?
- Knowledge and practical skills.
- How about conventional and adjuvant?
- Can barriers be specific for tubo-ovarian surface?