

THE CONCEPT OF MICROSURGERY

D.K. TRAN

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DINOSAUR IS BACK !!!

- OPEN TUBAL
MICROSURGERY
- 30 years of practice
(1977 – 2007)
- D.K. TRAN (NICE)
- Can this experience be
still helpful for tubal
infertility treatment?

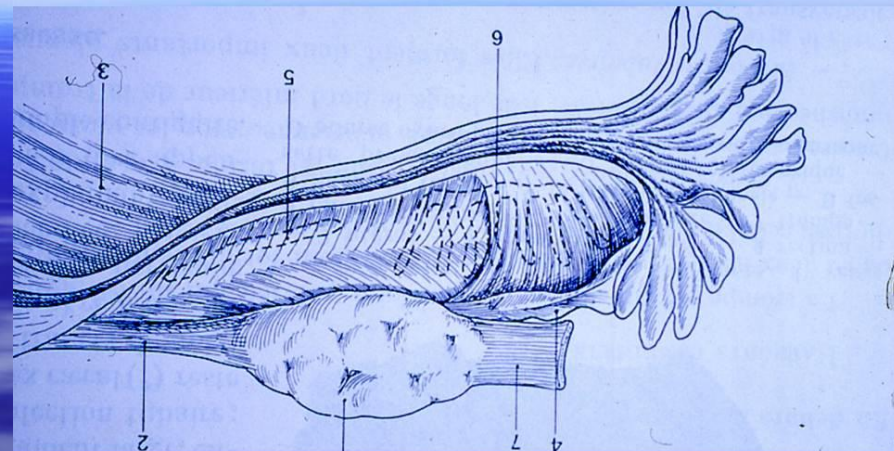


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FIRST MICROSURGERY

- Ophthalmology , Neurosurgery...
- 1976/77 : Gynecology : Tubal Surgery

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FINE INTERNAL CALIBRE OF THE TUBE

- AMPULLA :
 - L (length) : 7-8 cm
 - T.D. (total diameter) : 7-8 mm
 - I.C. (internal calibre) : 6-7 mm
- ISTHME :
 - L : 3-4 cm
 - T.D. : 2-3 mm
 - I.C. : 1,5-2 mm
- INTRAMURAL SEGMENT:
 - L : 1-1,5 cm
 - T.D. : 1-2 mm
 - I.C. : 0,5-1 mm

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FIRST : MICROSURGEY = OPEN MICROSURGEY USING A MICROSCOPE

Magnification :x10 ,
x25 , X40



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SURGERY CAN BE DANGEROUS

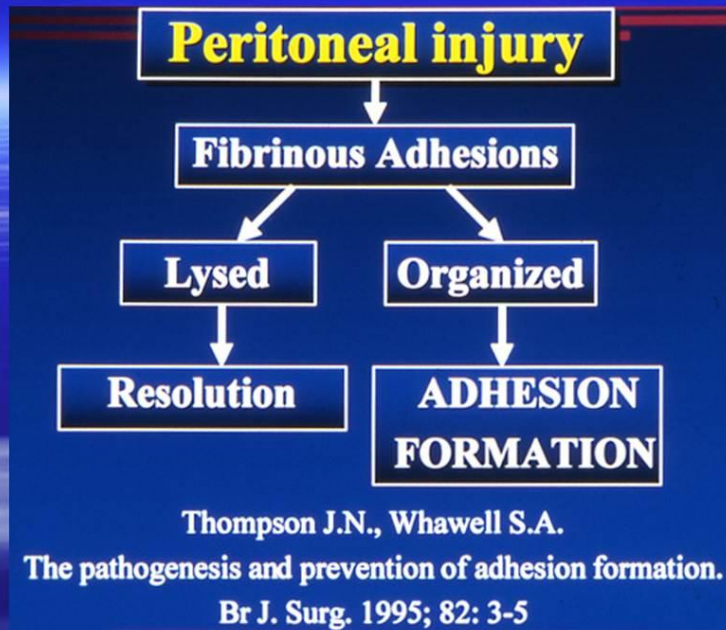
- SURGERY → Hemorragiae
 - Necrosis (by ischemia or by excessive electrocoagulation)
 - Visceral & Peritoneal injury by excessive handling of the tissue

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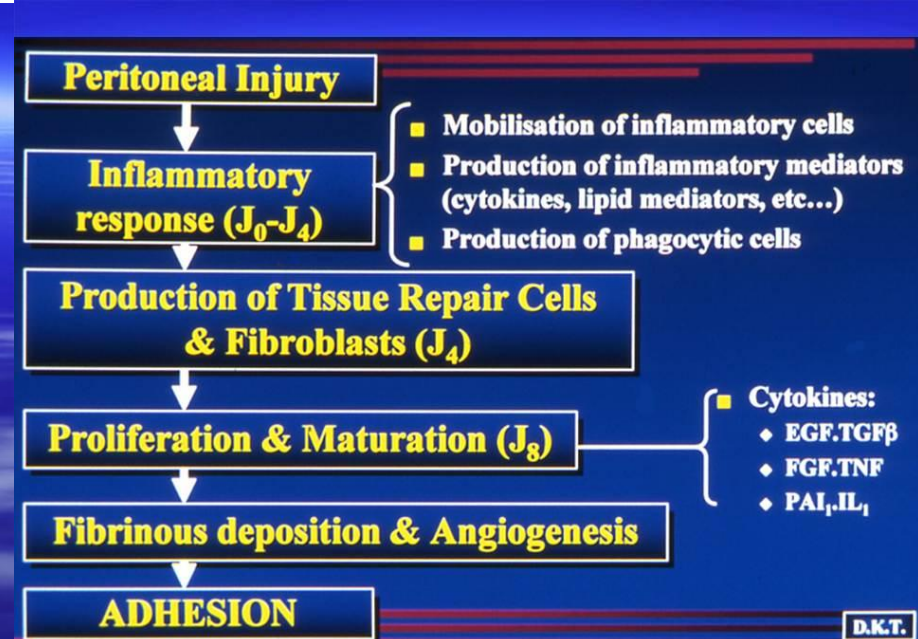
SURGERY → TISSUE DAMAGE

- VISCERAL DAMAGE :
 - Destruction of the ovary
 - Tubal lesions de novo
 - Etc...
- PERITONEAL DAMAGE = ADHESION
 - Radical surgery = Bowel obstruction (Miller G.& al:2000: 552 patients with bowel obstruction:74% of cases:adhesions were judged responsible)
 - Reconstructive surgery = Infertility
 - lack of mobility of the tube & the ovary
 - tubal obstruction
 - enclosure of the ovary & dysovulation

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ADHESION IN CLASSIC SURGERY BY LAPAROTOMY

DIAMOND MP – Fertil Steril 1987 :

51% de novo adhesion in laparotomy (86% if previous adh.)

JANSEN: Adhesion in laparotomy :

-Myomectomy : 55% (ant),
93% (post)

-Ovary : 74%

- Tube : 70%

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MICROSURGERY = OPEN MINIMALLY INVASIVE SURGERY

-Best technique :
less tissue aggression

-Finest instruments :
extremity : only 1 mm

-finest suture :
7/0,8/0,9/0



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ADHESION REFORMATION & FORMATION

- 1111 patients didn't have previous adhesion :
 - Laparoscopic control one year after surgery for 327 non-pregnant patients
 - Only 10% = filmy adhesion (0 reversal, 5 proximal, 27 distal)
- 406 patients have had previous adhesions
 - 5 reversal+20 prox.+381 distal
 - Laparoscopic control for 215 non-pregnant:
 - Previous filmy adhesion: reformation = 25%
 - Previous dense adhesion reformation = 77%



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TUBAL REVERSAL

- Techniques = Anastomosis
 - Isthmo-isthmic, Isthmo-isthmic with discrepancy of the caliber, Isthmo-ampullary, Ampullo-ampullary
- Two layers:
 - Deep muscularis submucosal: 4 stitches 8/0
 - Superficial seromuscular: running suture – 7/0



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Tubal Reversal:Results

- Patients = 485 (45% > 40 years old)
- Intra Uterin Pregn. = 411 (84,7%)
Pregn. + Delivery = 388 (80%) – (91% during the first year)
- Ectopic Pregn. = 7 (1,5%)
- LOST OF FOLLOW-UP = CLASSIFIED AS FAILURE
- Special case :endosalpingiosis of the proximal segment = high risk of ectopic pregnancy →isthmo-ostial anastomosis (resection of the totality of the intra-mural segment)

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DISTAL TUBAL LESIONS WITH FAVOURABLE PROGNOSIS

- Possible restoration of the fimbria = fimbrioplasty 273 patients:
 - Pregnancy = 218 (79.8%)
 - Pregnancy + delivery = 205 (75.1%)
 - Ectopic pregnancy = 11 (4%)

Lost of follow up patients = failure



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DISTAL TUBAL LESIONS WITH FAVOURABLE PROGNOSIS

- Salpingoneostomy: 254 patients
 - Pregnancy = 153 (60%)
 - Pregnancy + delivery = 140 (55%)
 - Ectopic pregnancy = 17 (6.7%)



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TECHNIQUE = Isthmo-ostial anastomosis



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PROXIMAL TUBAL LESIONS

- 505 patients with favourable prognosis (non extended lesions)
 - Pregnancy = 378 (74.8%)
 - Pregnancy + delivery = 343 (68%)
 - Ectopic pregnancy = 20 (4%)

Lost of follow up patients
> 2 years = failure



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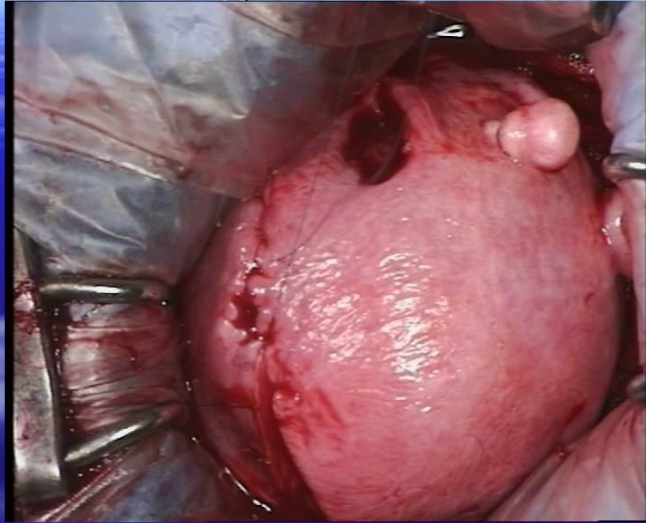
OPEN MICROSURGERY = BEST CONSERVATIVE SURGERY FOR ECTOPIC PREGNANCY

- In emergency, it is always possible to preserve the tube with open microsurgery.
- Perfect hemostasis of the bleeding zone in the inferior wall of the tube.
- It is better to close the tubal incision avoiding secondary haemorrhagia and adhesion



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Microchirurgie sans microscope



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Is Laparoscopy a Microsurgery ?

- Magnification : x6,x8 + HD video
- Minimal invasion of the abdomen : no large incision, less pain, rapid recovery of the intestinal transit, etc ...
- **YES FOR ALL GYNECOLOGIC RESECTIONS:**
- **Hysterectomy, Adnexectomy**
- **Laparoscopic surgery for prolapse**
- **Lymphatic Resection for cancer**
- **Surgery of Deep Infiltrating Endometriosis (C. KOH, POSSOVER...)**

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AN EXAMPLE



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IS LAPAROSCOPIC SURGERY A MICROSURGERY ?

= NOT YET FOR GYNECOLOGICAL RECONSTRUCTIVE SURGERY (tube, ovary, myoma)

For 2 reasons : Adhesion formation and reformation – Destruction of functional tissue (tube, ovary ..)

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ADHESION FORMATION AND REFORMATION

Comparable Risks for Open and Laparoscopic surgery :

DIAMOND MP (1991): Reformation after Laparoscopy : 97% - De Novo : At least 23%

JANSEN : Myom.= 93% (post) – 55% (ant)

Ovary : 80% - Tube : 67%

SCAR GROUP (Lower A.M.) ☹ 2004)

PRACTICE COMMITTEE of the ASRM (2007)

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RISK OF DESTRUCTION OF FUNCTIONAL OVARIAN TISSUE

- Huang Hy & al : 1997
- Williams C.M. & al : 1998
- Loh FH & al : 1999
- Hachisuga T & al : 2002
- Exacoustos C & al : 2004
- Busacca & al : 2006
- Matsusaki S & al : 2009
- Roman H & al : 2010

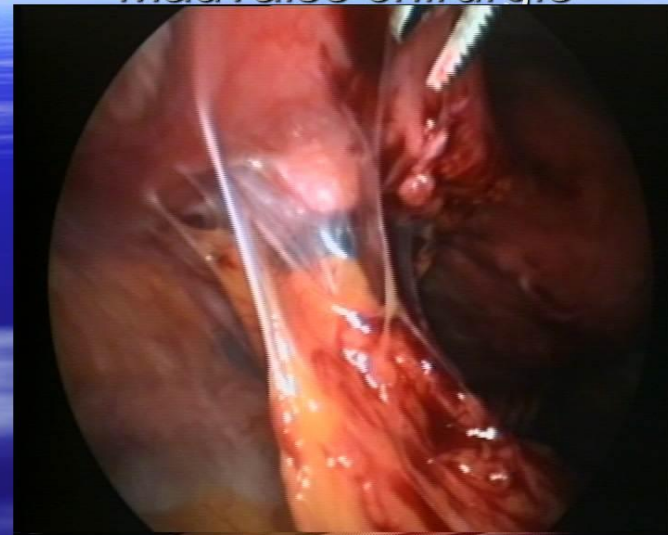
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THE REASONS OF ADHESION FORMATION & TISSUE DESTRUCTION:

- Instruments not enough fine
 - Coagulation (even bipolar) too large
 - Technique not enough meticulous
- (ASRM : 2007 : ..**the extent of tissue injury, not the surgical approach, is the determining factor**)

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Mauvaise chirurgie



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HOW CAN LAPAROSCOPIC
SURGEONS DO TO PERFORM
REALLY MICROSURGERY =
MINIMALLY INVASIVE SURGERY
FOR GYNECOLOGICAL
RECONSTRUCTIVE SURGERY ?

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FIRST = ADHESION TO
MICROSURGICAL PRINCIPLES
EVEN IN LAPAROSCOPY

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CONCLUSION 2 : SCAR GROUP

- To minimize the risk of adhesion formation
 - Gentle tissue handling
 - Meticulous haemostasis
 - Minimal tissue traumatism
 - Constant irrigation
 - Minimal foreign body contact
- Holmdahl and al.:1997 – Ling and al.:2002

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M. Canis, R. Botchorishvili, A. Wattiez,
B. Rabischong, C. Houlle, G. Mage,
J.L. Pouly, H. Manhes, M.A. Bruhat

Prévention des adhérences péritonéales.
J. Gynecol. Obstet. Biol. Reprod. 2001; 30:305-24

...peritoneal adhesions are a major problem for health and economy. An adequate and atraumatic surgical technique is essential in the prevention of peritoneal adhesions. Laparoscopic microsurgery should be developed and promoted...

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RECOMMENDATIONS.....

- **ADHERENCE TO MICROSURGICAL PRINCIPLES, MINIMALLY INVASIVE SURGERY**, and some peritoneal instillates

may help to reduce postoperative adhesion.

There is no evidence that anti-inflammatory agents reduce postoperative adhesions.

Whereas some surgical barriers have been demonstrated effective for reducing postoperative adhesions, there is no substantial evidence that their use improves fertility, decreases pain or reduces the incidence of postoperative bowel obstruction.

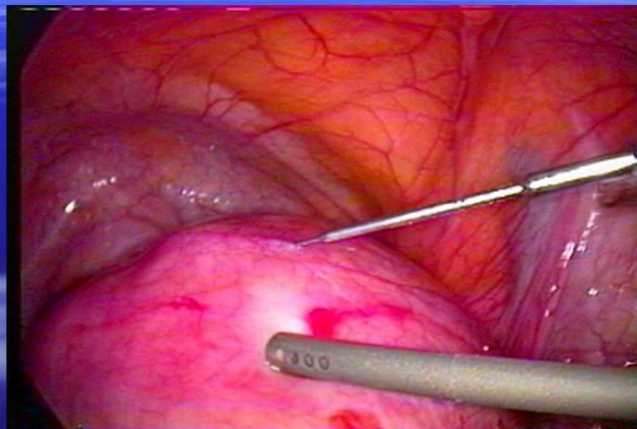
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microsurgical principles never die

- **Contra-indication of tubal surgery (temporary):** active pelvic infection & inflammation (red endometriotic lesions)
- **Microsurgical principles :**
 - Gentle handling of the tissue
 - Meticulous dissection minimizing ischemia
 - Selective hemostasis by bipolar coagulation and not excessive coagulation
 - Permanent irrigation avoiding tissue desiccation
 - Perfect peritonisation
 - Use of fine suture material



SECOND : Perfect technique of suturing (C.KOH)



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OPERER VITE = BIEN ?

D'ABORD ET AVANT TOUT OPERER
BIEN :

- Respecter les indications
- Respecter les contre-indications ; pas de chirurgie reconstructrice en territoire inflammatoire (infection ou inflammation par endométriose active)

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OPERER VITE = BIEN ?

Parfaite technique :

- Exérèse complète si chirurgie carcinologique
- Chirurgie minimale invasive QUELLE QUE SOIT LA VOIE D'ABORD :
 - Microtraumatisme dans l'immediat
- Minimum de retentissement fonctionnel dans les suites lointaines en cas de chirurgie conservatrice

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OPERER BIEN D'ABORD, LA RAPIDITE VIENT ENSUITE

Un exemple : la chirurgie tubaire proximale :

- début : 1977: 5 à 6 heures –
- 1997 : 3 à 4 heures-
- 2007 : 1h30 à 2h 30

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