Late bowel perforations in deep endometriosis surgery

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Disclosure : EndoSAT www.endosat.com
In the early nineties

• Type I - II - III lesions
  • -> adenomyosis externa
• Becoming bigger each year
• With conservative CO2 laser excisional surgery
• ..... we had
  • a late bowel perforation
  • And a colostomy
  • And a law suit

After 3 days – little symptoms – all specialists of the hospital –
peritonitis 4 days later - colostomy – high care
Complications of CO₂-laser endoscopic excision of deep endometriosis

Philippe R. Koninckx¹, Brigitte Timmermans¹, Christel Meuleman¹ and Freddy Penninckx²

- N=225 deep endometriosis excisions
- Type II & III: adenomyosis nodules larger
- Duration decreased with expertise
- increased with size
- 6.3% full thickness resection
- 7 late bowel perforations = 2-3%
  - 3 after 1 week

Table I. Deep endometriosis age of the women, indications for surgery and depth, volume and revised AFS score

<table>
<thead>
<tr>
<th>Deeply infiltrating endometriosis</th>
<th>Type I (n=99)</th>
<th>Type II (n=55)</th>
<th>Type III (n=71)</th>
<th>Total (n=225)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)*</td>
<td>32.1 (26.3-40.9)</td>
<td>30.9 (26.1-38.1)</td>
<td>29.5 (24.5-38.5)</td>
<td>31.0 (25.0-39.4)</td>
</tr>
<tr>
<td>Depth (mm)*</td>
<td>8 (6-15)</td>
<td>11 (8-20)</td>
<td>15 (8-25)</td>
<td>10 (6-20)</td>
</tr>
<tr>
<td>Volume (ml)*</td>
<td>22 (0.5-10.6)</td>
<td>19 (0.5-12.3)</td>
<td>43 (0.8-21.2)</td>
<td>2.5 (0.5-12.6)</td>
</tr>
<tr>
<td>% in revised AFS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>class I</td>
<td>24.2</td>
<td>9.8</td>
<td>22.7</td>
<td>24.2</td>
</tr>
<tr>
<td>class II</td>
<td>40.0</td>
<td>41.2</td>
<td>36.4</td>
<td>40.0</td>
</tr>
<tr>
<td>class III</td>
<td>25.3</td>
<td>19.6</td>
<td>24.3</td>
<td>25.3</td>
</tr>
<tr>
<td>class IV</td>
<td>10.5</td>
<td>25.3</td>
<td>16.7</td>
<td>10.5</td>
</tr>
</tbody>
</table>
Expertise required

pain ++
perineal
Radiation

All exams Negative
Clinical, MRI, contrast enema

hysterectomy
Morks AN, Ploeg RJ, Sijbrand Hofker H, Wiggers T, Havenga K. Colorectal Dis. 2013 May;15(5): The incidence of early anastomotic leakage (EAL) within 30 days after surgery was 13%. The LAL rate was 6%.

Resection anastomosis.

Complications

- 1% leak
- 5-15% leak

Sigmoid

Rectum

L Ret Davalos, de Cicco, D’Hoore, P Koninckx J Min Invas Surg 2007 a review of all cases since 1990 = > 10,000
Late bowel Perforation: symptoms

- Acute pain disappearing spontaneously
- No other clinical symptoms for 24 hours
- CRP: increases after 6-12 hours
Late bowel Perforation : less than 24h

- Surgery 3 pm
- 6 am acute pain
- ........
- 10 am : info

Immediate lap.
Late bowel Perforation : less than 24h

- Surgery 3 pm
- 6 am acute pain
  - ........
- 10 am : info
  Immediate lap
Late bowel Perforation: less than 24h

- Surgery 3 pm
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- ........
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Immediate lap
Late bowel Perforation : less than 24h

- Surgery 3 pm
- 6 am acute pain
  - ........
- 10 am : info
Immediate lap
Late bowel Perforation < 24 h

• If diagnosed within 24 hours
  • Suture in 2 layers
  • Extensive rinsing with 8 liters also above the liver
  • Antibiotics
  • 1 drain in the douglas, 1 drain in right colic gutter
• All of them were further uneventful and were discharged 5-7 days later (some 50 in 1500 deep endometriosis patients)
  • Except 1

!!! full bowel preparation !!!
Late bowel Perforation > 48 h

4 quadrant peritonitis, full bowel preparation

• Laparoscopic treatment is feasible
  • Laparoscopic 2 layer suture and first rinsing is rather easy.
  • First lavage: +++ difficult since severe adhesions between bowel loops and +++ fibrin
  • Second lavage: as demonstrated, still ++ fibrin
  • Third lavage becomes easier

• At least 1 lavage after normalisation of CRP
Late bowel Perforation: more than 48h

**Lavage**
- Second lavage 2 days after suturing
- Careful over and under liver
- Between all bowel loops to prevent abcedation
- Takes 1 hour

The first solution to pollution is dilution + fibrin removal
Postoperative follow-up

- Clinical: patient should always improve
  - an experienced team

- daily CRP: my rules of thumb
  - Day 1: 50-150
  - Day 2: 50-150
  - Day 3: should have decreased
  - If going up: !!!!

- When in doubt: early repeat laparoscopy
Complications within 7 days After surgery

- Vascular: bleeding
- Ureter and bladder:
  - Ureter leakage
  - Ureter/bladder vaginal fistula
- Infection
- Small bowel perforation
- Late rectum-sigmoid perforations
- Nerve Urinary retention / lesion of somatic nerves

**MESSAGE**: Early repeat laparoscopy if a patient does not improve progressively
Late nineties

- +++ bowel resections
- Radicality?
- Safe surgery
- Reproducibility
Why a Complete excision

- Derived from oncology surgery: ie abnormal cell with permanent abnormal behaviour
- Does not apply to endometriosis. Moreover it is theoretically impossible to be complete.
Completeness of surgery

• Fibrosis around deep endometriosis
• Cut the head and the rest dies

• Microscopical and subtle lesions are not disease

  • Progression of subtle lesions
  • 10-15% microscopic lesions in normal peritoneum
  • 15% microscopic endometriosis in lymph nodes
  • Microscopical lesions in the bowel > 5cm
> 2000 History of deep endo surgery

- Less bowel resections
- Smaller bowel resections
- Conservative surgery became less aggressive over time without increasing recurrences with similar results
- But late bowel perforations remained around 1%
Extensive peritoneal lavage decreases postoperative C-reactive protein concentrations: a RCT

Carlo De Cicco¹,² · Ron Schonman¹,³ · Anastasia Ussia⁴ · Philippe R. Koninckx¹,⁴,⁵

- After 2006
- Late perforations disappeared
- But still saline which is toxic for peritoneum

Fig. 1 Mean and standard error of CRP concentrations following full thickness resection of deep endometriosis of the rectum in case of extensive lavage with 8 or 0.5 L. Overall significance, $P=0.01$ (repeated measurement ANOVA)
Updated microsurgical principles
(Fertil Steril Oct, 2016)

Introduction:
Quality of pelvic surgery and postoperative adhesions

Microsurgical principles and postoperative adhesions: lessons from the past

Role of the peritoneal cavity in the prevention of postoperative adhesions, pain, and fatigue
1. Prevent acute inflammation of the peritoneal cavity
   - gentle tissue handling
   - gaz with 10% N2O and <5% O2
   - cooling to 30 °C
   - no desiccation
   - Ringers lactate for irrigation

2. Prevent inflammation at trauma site & peritoneal cavity
   - no blood
   - no debris
   - avoid resorbable sutures = extensive lavage + dexamethasone

3. Keep denudated surfaces separated - barrier

Prevention of adhesion formation based on pathophysiology. Steps 1 and 2 result in 85% adhesion prevention. Together with step 3, adhesion prevention becomes close to 100%.

deep endometriosis surgery today

• Bowel preparation
• Knowledge of anatomy
  • Arteries of the rectosigmoid are terminal arteries with thus an increased risk of ischemic necrosis after coagulation
• Do not open the bowel concept?
• Sutures <-> circular stapler <-> linear stapler
  • leak free
  • Hand sewn = automatic stapler
  • Leaks = Difficult diagnosis since up to 20% of resection anastomosis have some leak at Cat Scan
• Protective colostomy or ileostomy
  • Is always more prudent but inherent complications
  • unclear when necessary.
Deep Endometriosis surgery

- Most lesions are non progressive and not recurrent, surrounded by fibrosis as a remnant of the inflammatory reaction. Remove the lesion not the fibrosis.

- Sigmoid: small resection
- Rectum: bowel resection is almost always avoidable

- Lavage and conditioning but no more saline
- Late bowel perforation
  - Know the symptoms = experienced team
  - Early repeat laparoscopy
  - Probably very rare provided right technique + lavage + conditioning