A video presentation of robotic-assisted deep infiltrating endometriosis surgery

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Endometriosis

- Peritoneal
  - Anterior
    - Bladder
  - Posterior
  
- Ovarian

- Deep infiltrating
  
- P1-Uterosacral ligament
- P2-Vaginal
- P3-Intestinal
  - P3a-Intestinal location (V+/V-)
  - P3b-Multiple intestinal location
Endometriosis

- Reproductive age women ➔ %5-15
- Patients with infertility ➔ %20-48
- Chronic pelvic pain unresponsive to hormonal treatment and NSAID ➔ % 70
Deep Infiltrating Endometriosis

Deep infiltrating endometriosis is defined as lesions extending more than 5 mm underneath the peritoneum and pelvic organ wall.

<table>
<thead>
<tr>
<th></th>
<th>Depth (cm)</th>
<th>Volume (ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal pelvis</td>
<td>5.5±0.8</td>
<td>65.8±10.9</td>
</tr>
<tr>
<td>Endometriosis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Without deep lesions</td>
<td>5.3±0.8</td>
<td>67.2±18.1</td>
</tr>
<tr>
<td>*With deep lesions</td>
<td>3.6±1.6</td>
<td>41.6±19.3</td>
</tr>
</tbody>
</table>

*Chapron (2004)*
Diagnosis

- History
- Physical examination
- Imaging modalities
  - Transvaginal ultrasonography
  - Transrectal ultrasonography
  - MRI
<table>
<thead>
<tr>
<th>Age</th>
<th>Pelvic pain (n=180)</th>
<th>Infertility (n=20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onset of symptoms (y)</td>
<td>20.5 (14.0-27.5)</td>
<td>23.5 (20.0-25.5)</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>33.0 (20.0-34.0)</td>
<td>30.0 (20.9-32.0)</td>
</tr>
<tr>
<td>Median delay from onset of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>symptoms to diagnosis</td>
<td>7.4*</td>
<td>4.0*</td>
</tr>
</tbody>
</table>

* p<0.01

History

(symptoms related to anatomic localization of lesions)

- **Pelvic plexus**: Dysmenorrhea, dyspareunia, noncyclic chronic pelvic pain
- **Intestinal**: Painful defecation, tenesmus, bleeding
- **Bladder**: Urinary tract symptoms, bleeding
- **Ureter**: Pain, hydrenephrosis

Infertility
# Physical examination and imaging modalities

## TABLE 7

Comparison of the sensitivity, accuracy, $LR^+$, and $LR^-$ of physical examination, TVS, RES, and MRI compared to surgical and pathologic findings.

<table>
<thead>
<tr>
<th>Test</th>
<th>PE</th>
<th>TVS</th>
<th>RES</th>
<th>MRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>USLs</td>
<td>Sensitivity</td>
<td>0.73 (0.63–0.82)</td>
<td>0.78 (0.69–0.87)</td>
<td>0.48 (0.37–0.59)</td>
</tr>
<tr>
<td></td>
<td>Diagnostic accuracy</td>
<td>0.74 (0.64–0.82)</td>
<td>0.77 (0.69–0.86)</td>
<td>0.47 (0.36–0.56)</td>
</tr>
<tr>
<td></td>
<td>$LR^+$</td>
<td>3.3 (0.95–11.1)</td>
<td>2.34 (0.93–5.96)</td>
<td>0.86 (0.45–1.06)</td>
</tr>
<tr>
<td></td>
<td>$LR^-$</td>
<td>0.34 (0.22–0.58)</td>
<td>0.32 (0.18–0.60)</td>
<td>1.16 (0.73–3.91)</td>
</tr>
<tr>
<td>Vagina</td>
<td>Sensitivity</td>
<td>0.50 (0.32–0.68)</td>
<td>0.47 (0.29–0.65)</td>
<td>0.07 (0–0.16)</td>
</tr>
<tr>
<td></td>
<td>Diagnostic accuracy</td>
<td>0.75 (0.66–0.84)</td>
<td>0.79 (0.71–0.88)</td>
<td>0.70 (0.60–0.79)</td>
</tr>
<tr>
<td></td>
<td>$LR^+$</td>
<td>3.88 (1.85–8.11)</td>
<td>9.64 (3.00–31.0)</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>$LR^-$</td>
<td>0.57 (0.40–0.83)</td>
<td>0.56 (0.40–0.70)</td>
<td>0.93</td>
</tr>
<tr>
<td>RV septum</td>
<td>Sensitivity</td>
<td>0.18 (0–0.41)</td>
<td>0.09 (0–0.26)</td>
<td>0.18 (0–0.41)</td>
</tr>
<tr>
<td></td>
<td>Diagnostic accuracy</td>
<td>0.87 (0.80–0.94)</td>
<td>0.88 (0.81–0.95)</td>
<td>0.86 (0.79–0.93)</td>
</tr>
<tr>
<td></td>
<td>$LR^+$</td>
<td>4.91 (0.92–26.2)</td>
<td>7.36 (0.50–109.5)</td>
<td>3.68 (0.76–17.8)</td>
</tr>
<tr>
<td></td>
<td>$LR^-$</td>
<td>0.85 (0.64–1.13)</td>
<td>0.92 (0.76–1.11)</td>
<td>0.86 (0.65–1.14)</td>
</tr>
<tr>
<td>Intestine</td>
<td>Sensitivity</td>
<td>0.46 (0.34–0.58)</td>
<td><strong>0.94 (0.88–1.00)</strong></td>
<td>0.89 (0.83–0.98)</td>
</tr>
<tr>
<td></td>
<td>Diagnostic accuracy</td>
<td>0.54 (0.44–0.65)</td>
<td>0.96 (0.91–1.00)</td>
<td>0.89 (0.86–0.97)</td>
</tr>
<tr>
<td></td>
<td>$LR^+$</td>
<td>1.67 (0.87–3.19)</td>
<td>—</td>
<td>12.89 (3.54–51.8)</td>
</tr>
<tr>
<td></td>
<td>$LR^-$</td>
<td>0.75 (0.54–1.03)</td>
<td>0.06</td>
<td>0.12 (0.05–0.22)</td>
</tr>
</tbody>
</table>

Note: PE = physical examination; TVS = transvaginal sonography; RES = rectal endoscopic sonography; MRI = magnetic resonance imaging; USLs = uterosacral ligaments; RV septum = rectovaginal septum; $LR^+$ = positive likelihood ratio; $LR^-$ = negative likelihood ratio.


n=92
DIE lesions
- Multifocality
- Localization

Patient characteristics
- Age
- Desire for pregnancy
- History of medical treatment
- History of surgical treatment

Surgical Decision

Surgeon’s experience
- Laparoscopy
- Laparotomy
- Robotic surgery

Intestinal DIE characteristics
- Localization, depth, number of lesions, extend of pelvic adhesions
The treatment of the deep infiltrating endometriosis is surgery and the aim of the surgery is the removal of all lesions.

DIE is a disease which may effect uterus, ovaries, rectum, bladder, vaginal wall and neurovascular branches.

- **Vagina, Rectovaginal septum, Sacrouterine ligament**
  - Vaginal - laparoscopic assisted vaginal resection

- **Ureter**
  - Ureterolysis, resection

- **Appendix**
  - Appendectomy

- **Bladder**
  - Cystoscopy- resection

- **Rectum-Rectosigmoid- Small intestine**
  - Mucosa preserving resection”shaving”
  - Disc resection
  - Segmental resection; ≥3cm single lesion
  - ≥50 intestinal wall
  - ≥3 lesion which infiltrates muscularis layer
Robotic Surgery – What it isn’t...