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# Cystocele repair with single-incision, trocarless mesh system

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## Abstract

**Introduction and hypothesis** The use of mesh at the time of anterior vaginal wall repair reduced the risk of recurrent anterior vaginal wall prolapse. The aim of our video is to demonstrate our dissection technique focusing on the main anatomical landmarks in the pelvis and present an overall safer system to correct pelvic floor prolapse.

**Methods** The video demonstrates correction of cystocele with the EndoFast Reliant™ system (IBI Israel Biomedical Innovations, Caesarea Industrial Park South, Israel). The surgical technique is described.

**Results** Twenty-nine patients were treated with the system. Mean follow-up was 10 (range, 6–30) months. At latest follow-up, favorable anatomical results were obtained for 26 of 29 patients (89.6 %); three patients presented stage I nonsymptomatic prolapse. Three cases (13 %) of de novo stress urinary incontinence (SUI) and two cases of de novo urgency (6.9 %) were diagnosed and treated. Postoperative voiding difficulties, dyspareunia, or pain were not observed.

**Conclusion** The operation with the trocarless system was found to be safe, easy to learn and implement, and have the potential for reducing intra- and postoperative complications, with very satisfactory functional and anatomical results.

**Keywords** Cystocele · Pelvic organ prolapse · Vaginal mesh · Trocarless system · Single incision · EndoFast Reliant™ system

## Aim of the video

In pelvic reconstructive surgery, recurrence of pelvic organ prolapse (POP), especially of cystocele, is one of the main concerns and can reach up to 40 % [1]. The Cochrane Review, based on new randomized controlled trials, showed that the use of mesh at the time of anterior vaginal wall repair reduced the risk of recurrent anterior vaginal wall prolapse [2]. The trocars, which pass blindly through the pelvic walls, can cause intra- and postoperative complications, including hematomas, injury to surrounding organs such as the bladder, urethra, and rectum, and pain in case of nerve capture or injury [3–5]. The advantages of the trocarless systems are gained mainly by bypassing the need of blind trocar insertion. Whereas reducing the probability for complications, the trocarless system also provides a quicker and less invasive operation with potentially reduced morbidity. The aim of our video is to demonstrate our dissection technique, focusing on the main anatomical landmarks in the pelvis, and present an overall safer system to correct POP.

**Electronic supplementary material** The online version of this article (doi:10.1007/s00192-013-2159-y) contains supplementary material, which is available to authorized users.

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## Method

The EndoFast Reliant™ system (IBI Israel Biomedical Innovations, Caesarea Industrial Park South, Israel) consists of a polypropylene monofilament mesh and soft-tissue fasteners (spider fasteners). The anterior mesh is designed to treat cystocele and has four arms. The posterior mesh (not shown in this video) is designed to treat central defect with or without accompanied rectocele or to treat isolated rectocele;

it, too, has four arms. The spider fastener attaches the mesh to the soft tissue under direct view and/or palpation. The system includes an extraction device that allows simple intraoperative fastener retrievability without causing damage to the tissue or mesh. Written informed consent was obtained from the patient for publication of this video article.

#### Anterior repair

**Dissection:** A midline, full-thickness incision is performed on the anterior vagina extending up to 3 cm from the urethral meatus. The bladder is dissected away from the vaginal wall, leaving Halban's fascia on the epithelium. The paravesical fossas are opened until the ischial spine and the arcus tendineus of the levator ani are reached posteriorly and the ischiopubic rami anteriorly.

**Mesh insertion:** The posterior central part of the mesh is sutured to the uterine cervix or to the vaginal vault with an absorbable suture. The two posterior arms are attached to the soft tissue that covers the ischial spine 1 cm laterally on both sides by the spider fasteners. The latter landmark can be reached with the aid of a special retractor (VT retractor, shown here on the left side) or with direct implantation on the finger (shown here on the right side). The two anterior arms are attached to the fascia of the internal obturator muscle using the fasteners. An additional one suture under the bladder neck can be added in order to prevent the mesh from slipping. Attachment of the four arms in these anatomical landmarks creates a tension-free, subvesical hammock to treat the cystocele.

#### Posterior repair (not shown in the video)

**Dissection:** A midline, full-thickness incision is performed on the posterior vagina extending up to 1 cm from the uterus cervix or vaginal vault. The para rectal fossas are opened until the ischial spine and the sacrospinous ligaments are reached.

**Mesh insertion:** The posterior central part of the mesh is sutured to the uterine cervix, the uterosacral ligaments, or the vaginal vault with one or two sutures. The posterior arms of the mesh are fixed to the sacrospinous ligaments 2 cm medial to the ischial spine by using the spider fasteners. In case of rectocele, the anterior arms are fixed to the puborectalis muscle on both sides after dissection of the rectum.

When both anterior and posterior repair are required, it is important, in our opinion, to keep a complete separation between the incisions without connection between the anterior and the posterior meshes in order to maintain vaginal length and avoid dyspareunia. Dissection of the

paravesical and pararectal fossas is made before mesh insertion. The posterior mesh is inserted first, immediately correcting the central or posterior defect and facilitating the anterior correction.

#### Results

Between March 2007 and January 2010, 29 patients were treated with this system in the gynecological department of CHU Caen, France. Mean follow-up was 10 (range, 6–30) months. All patients were treated for symptomatic prolapse stages 2 and 3. Seven patients underwent anterior repair, three had posterior repair, and 19 had both anterior and posterior repair. Five patients had in addition suburethral sling for stress urinary incontinence (SUI). There were neither intraoperative nor immediate postoperative complications. Mean postoperative visual analog scale (VAS) for the first day was 1.1 (range, 0–4), for the second day 1.5 (range, 0–6), and for the third day 1.2 (range, 0–3). Favorable anatomical results were obtained for 26 of 29 patients (89.6 %); three patients presented stage 1 nonsymptomatic prolapse. Three cases (13 %) of de novo SUI and two of de novo urgency (6.9 %) were diagnosed and treated. Postoperative voiding difficulties, dyspareunia, or pain were not observed. One episode of postoperative shrinkage of one of the mesh's arms was diagnosed 6 months postoperatively and was released under spinal anesthesia. One patient required removal of one fastener, which was found to be placed too superficially.

#### Conclusion

EndoFast Reliant™ is a minimally invasive system for treating POP using a single vaginal incision, trocarless technique. The operation is safe, easy to learn and implement, and has the potential for reducing intra- and postoperative complications, with very satisfactory functional and anatomical results. Further, larger comparative studies and long-term results are required.

**Consent** Written informed consent was obtained from the patient for publication of this video article and any accompanying images.

**Conflicts of interest** None.

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