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Anterior needle-guided mesh in advanced pelvic organ prolapse: apical fixation on sacrospinous ligaments☆

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ABSTRACT

Objective: To evaluate whether anterior–apical compartment mesh implants for pelvic floor reconstruction might be safely and effectively anchored to the sacro-spinous (SS) ligaments instead of the arcus tendineus fascia pelvis (ATFP). The SS ligaments as anchoring structures for centro-apical support mesh fixation are thought to be stronger than the ATFP and we presumed that anterior mesh fixation to the SS ligament might be feasible, safe and effective.

Study design: Patients with advanced anterior–apical pelvic floor prolapse, referred for mesh reconstruction and having poor ATFP were enrolled to this study. For these patients the posterior arms of the anterior mesh were fixed to the SS ligaments. Data regarding cure, complications and patient's satisfaction were collected prospectively: patients were interviewed and examined at the end of the first and third post-operative months, and interviewed again at the study conclusion.

Results: Of 72 patients who were asked to participate in this study, 44 had rather un-palpable ATFP, and SS ligament fixation was performed. The mean follow-up duration was 12 months (range: 10–43). No significant intra- or post-operative complications were recorded. The POP-Q points measurements showed marked improvements: the average delta for the Ba point was 7.4 cm, for the Bp point 4.7 cm, and for the C point 7.9 cm. These differences were all statistically significant. Bladder overactivity symptoms, namely urgency, frequency and nocturia, were all found to be reduced significantly, and so was the sexual discomfort rate. Fecal incontinence, pelvic pain and constipation rates were reduced as well, but these did not reach statistical significance.

Conclusions: This rather small study suggests that anterior pelvic floor meshes might be anchored safely and successfully to the SS ligament, aiming to achieve improved centro-apical support of the vaginal apex and the anterior wall by an anterior pelvic floor approach.

1. Introduction

Pelvic floor relaxation and pelvic organ prolapse are regarded by many as a pelvic floor herniation process caused by obstetrical trauma to the pelvic floor or/and pre-existing fascial weakness. As the classical reconstruction methods showed relatively high recurrence rate, mesh augmentation is advocated for pelvic floor reinforcement and proven to improve reconstruction [1,2]. Mesh implantation, however, is related to specific post-operative complications, such as exposure, pelvic and vaginal pain and dyspareunia, as well as a considerable rate of failure [1–3].

Posterior pelvic floor implants (meshes) are routinely fixed to the sacro-spinous (SS) ligaments, while anterior pelvic floor needle-guided meshes are attached to the arcus tendineus fascia pelvis (ATFP). For pelvic centro-apical support the ATFP is regarded as inferior to the SS ligament, as it is a relatively weak structure and provides a rather low level of support [4]. This makes the ATFP anchoring susceptible to breaking and potential prolapse recurrence. The use of ATFP mesh arms anchoring is also related to post-operative thigh pain, due to the operative needle passage through the obturator area and abductor triangle [5]. Recently, some manufacturers addressed this issue and launched anterior mesh

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kits, designed to be fixed to the SS ligaments rather than to the ATFP, but the efficacy and safety of these are still to be proven.

A cadaveric study designed to evaluate potential operative hazards related to anterior SS apical fixation of mesh implants was carried out recently, demonstrating safe distances to the ureters, uterine arteries or pelvic nerves [6]. Other authors shared the opinion that the deep anterior mesh arms should be fixed to the SS ligaments rather than the ATFP for better anchoring, and reported both feasibility and promising early results [7,8]. This study looks at the operative outcome in physically and sexually active patients suffering from advanced pelvic floor herniation of the anterior compartment of the pelvic floor. The augmented mesh was fixed to the SS ligaments when the ATFP was estimated by an experienced surgeon to be rather fragile and thus inappropriate for apical support.

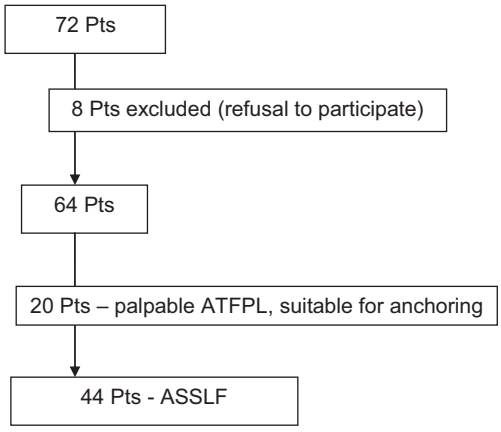
2. Patients and methods

This study, started on January 2009 and closed on October 2011, was designed to be open and prospective. We enrolled patients suffering from advanced prolapse of the anterior–apical pelvic floor compartments, with C points of more than +2 according to the International Continence Society (ICS) Pelvic Organ Prolapse Quantification (POP-Q) system. The mesh used here was Prolift + M® anterior (Gynecare, Summerville, USA). Apical SS ligament fixation was chosen whenever the ATFP was found by an experienced surgeon to be poor to the extent of being difficult to palpate, making it clearly inappropriate for mesh fixation. Informed consent was obtained after thorough information was presented. This was approved by the Institutional Board Committee (Helsinki Committee).

Surgery was carried out according to the previously reported surgical method for anterior mesh implantation, except that the posterior pair of arms was introduced according to the reported method for insertion of the posterior mesh surgical needles. The deep arms needles were thus inserted through skin cuts, 3 cm posterolateral to the anus, passing through the gluteus muscle, via the para-rectal and ischio-rectal area, to penetrate the mid-SS ligament. An additional 3 cm manual medial dissection, starting at the ischial spine, was necessary to prepare the space for the needle SS passage.

All patients were given 1 g Monocef® (Cefonicid, Beecham Healthcare) intravenously one hour prior to surgery. They all underwent an iodine antiseptic vaginal wash before the surgery.

Table 1
Patients' flow-chart.



Pts, patients; ATFPL, arcus-tendineous fascia pelvis ligament; ASSLF, anterior sacro-spineous ligament fixation.

Table 2
Patients' personal details.

	ASSLF patient's group ($N=44$)
Centro-apical pelvic floor prolapse > Gr 2	44 Pts (100%)
Age (mean and standard deviation, years)	62.4 ± 7.75 SD (range 45–78)
Vaginal deliveries (mean and standard deviation)	2.89 ± 1.37 SD
Body mass index (mean and standard deviation)	25.67 ± 2.98 SD
Urgency	34 Pts (77%)
Frequency	37 Pts (84%)
Nocturia	34 Pts (78%)
Cystocele, Gr > 2	44 Pts (100%)
Rectocele, Gr > 1	40 Pts (91%)
Previous POP corrective surgery	12 Pts (27%)
Background chronic illness	23 Pts (52%)
Follow-up duration (mean and standard deviation, Mnts)	12 ± 6.52 SD (range 10–45)
Concomitant posterior wall mesh augmentation	22 Pts (50%)
Non-mesh posterior wall repair	18 Pts (41%)
Concomitant anti USI operation	26 Pts (59%)

POP, pelvic organ prolapse; USI, urinary stress incontinence; Pts, patients; Mnts, months; ASSLF, anterior sacro-spineous ligament fixation.

The mode of anesthesia, general or regional, depended on the patient's request. Urinary bladder catheterization or diagnostic cystoscopy was not carried out routinely. Patients presenting with additional posterior vaginal wall relaxation had either posterior colporrhaphy or posterior pelvic floor mesh augmentation reconstructive surgery (by Prosima® or Prolift + M®, Gynecare, Somerville, USA), depending on the severity of the herniation process. Mild degrees of prolapse were treated with native tissue colporrhaphy, moderate degrees with single incision small mesh, and advanced prolapse was treated with needle guided large mesh. Anti-incontinence surgery was added when indicated, using TVT-Obturator®, TVT-SECUR® or TVT-Abbrevo® (Gynecare, Somerville, USA), according with surgeon's preference. Patients were followed up at 1 and 3 months after the surgery and at study conclusion, with the last patient having 10 months of post-operative follow-up as well. All operations were carried out by a single surgeon at private and university hospitals.

The outcome measures were the anatomical and functional cure rates and the levels of post-operative pain and dyspareunia.

Table 3
Patients' operative details and outcome.

		ASSLF patient's group ($N=44$)
Operative bleeding > 100 ml		4 Pts (9%)
Bladder, bowel and/or urethral injury		0 Pts (0.0%)
Postoperative bladder outlet obstruction		0 Pts (0.0%)
Early postoperative pelvic pain		4 Pts (9%)
Early postoperative thigh pain		0 Pts (0.0%)
Operative field Infection		0 Pts (0.0%)
Post-operative UTI		1 Pt (2.2%)
Anatomical outcome		
POP cure ($C<-5$)		42 Pts (95.5%)
Operative failure ($C>0$)		2 Pts (4.5%)
Vaginal mesh protrusion		0 Pts (0.0%)
Functional outcome	Mild	Moderate
USI	0 Pts (0.0%)	4 Pts (9%)
Frequency	12 Pts (27%)	0 Pts (0.0%)
Urgency	12 Pts (27%)	0 Pts (0.0%)
Nocturia	12 Pts (27%)	0 Pts (0.0%)
Sexual discomfort	3 Pts (7%)	3 Pts (7%)
Constipation	0 Pts (0.0%)	1 Pt (2%)
Fecal incontinence	0 Pts (0.0%)	1 Pt (2%)

Pts, patients; POP, pelvic organ prolapse; ASSLF, anterior sacro-spineous ligament fixation; UTI, urinary tract infection; USI, urinary stress incontinence.