

obtryx[®]

Transobturator System Featuring Advantage[®] Mesh

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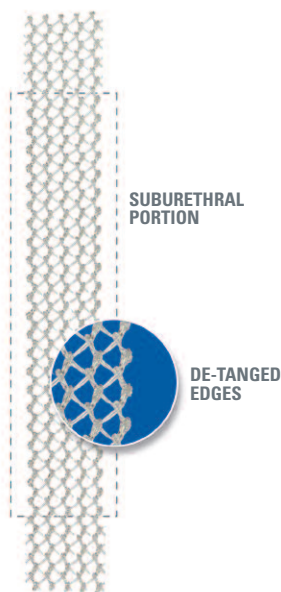
Cincinnati, Ohio

TECHNIQUE

SPOTLIGHT



Figure 1:
View of mesh and detanged portion



The first suburethral sling operation was reported by Von Giordano in 1907 using a gracillas muscle flap in a patient with epispadias. In 1942, Aldridge incorporated the use of rectus fascia and used a separate vaginal incision to facilitate placement of the sling. In 1917, the Goebell-Frankenheim-Stoekel procedure was described. This procedure secured the pyrimedalis muscle and the rectus fascia beneath the urethra. In addition to muscle and rectus fascia, inorganic materials have also been used for sling grafts. Suburethral slings have been modified and altered by changing the sling material itself, the anchoring point of the sling, and the method used to place the sling. Even with modifications, however, slings basically adhere to the principle of supporting the urethra in a hammock-like fashion that provides a backboard against increases in abdominal pressure.

In 1995, Petros and Ulmsten reported an ambulatory surgical procedure for the treatment of genuine stress incontinence. This procedure attempts to recreate urethral support at the level of the pubourethral ligaments by placing a polypropylene sling at the mid urethra, as opposed to the bladder neck. This synthetic sling is not tied or attached to any other structures.² Additional advantages are the placement of the sling using local anesthesia and sedation in an outpatient setting.

In 2001, Delorme described placement of a suburethral sling using the transobturator route, which can also be performed under local anesthesia in an outpatient setting.³ Additionally, this procedure provides notable safety advantages: no blind passage of a needle through the retropubic space, a shorter operative time, and, at the discretion of the physician, the ability to perform the procedure without the use of cystoscopy.

There are several surgical devices currently available utilizing the transobturator approach, with the Obtryx Transobturator System featuring Advantage Mesh combining advances in both needle design and sling technology. The sling material is a knitted macroporous polypropylene mesh. The sub urethral part of the sling has a uniquely designed detanged portion. (Figure 1) This is designed to allow the sling to lie flat while adjusting the tension. Slings without the detanged portion have a tendency to overcorrect or put excess pressure on the urethra when the plastic sleeve is removed, and may fray and become thin and cord-like. The macroporosity of the sling allows for good ingrowth of tissue while reducing the chance of infection¹. The mesh is covered by a free floating protective sleeve with a centering tab positioned at the midline. The free floating protective sleeve and centering tab allow for reproducible tensioning results. The Obtryx Transobturator System allows use of either a curved needle or a halo style needle. (Figure 2) Both needles facilitate engagement and, if necessary, removal of the mesh assembly due to accidental “button holing” of the vaginal mucosa. (Figure 3)



Figure 2: View of both needles and Advantage Mesh assembly

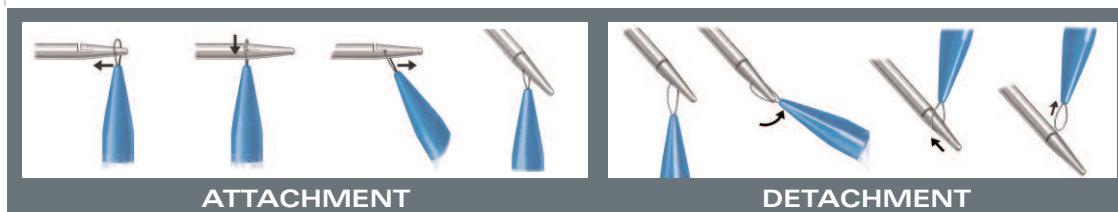


Figure 3: View of easy association and removal

Patient Selection

Patients who present for evaluation of urinary incontinence should have a thorough history and physical examination including evaluation of pelvic organ prolapse, estrogenization of the vaginal epithelium, and special attention should be made to assess the mobility of the bladder neck. In addition, all patients should undergo a cough stress test, while formal urodynamic testing should be undertaken for complicated patients or when the diagnosis is in doubt.

Patients who are found to have primarily anatomic stress incontinence (urinary leakage with bladder neck hypermobility) are excellent candidates for the Obtryx® transobturator sling. Patients with additional symptoms of urgency and frequency need to be counseled that the urgency component of their leakage may not improve with the Obtryx transobturator sling and that they may benefit from physical therapy, bladder retraining, or medication in addition to sling placement. Patients with a predominance of urgency, frequency, or urge incontinence are not candidates for the Obtryx transobturator system. Patients with previous anti-incontinence surgery and minimal bladder neck mobility will be more difficult to treat and need to be counseled appropriately.

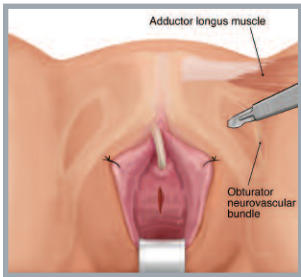


Figure 4: Patient in position and surgeon palpating area

Preoperative Setup

The patient is brought to the operating room where she is placed in the dorsal supine lithotomy position, prepped and draped in the normal, sterile fashion. Preoperative antibiotics with a first generation Cephalosporin are given on call to the operating room. The bladder is drained with a transurethral 16 French Foley catheter. The adductor longus tendon should be easily palpated on the patient's right and left side. (Figure 4) A marking pencil should be used to mark lateral to the inferior ramus of the pubis at the junction where the inferior pubic ramus and the adductor longus muscle meet. The index finger should be placed in vagina and thumb placed over the surgical mark. The surgeon should attempt to bring the index finger and thumb together around the inferior ramus of the pubis. This will be the path the needle will traverse traveling from outside to inside.

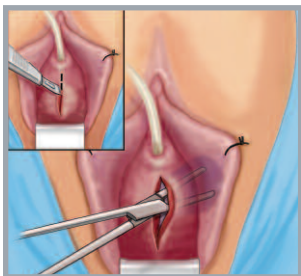


Figure 5: Scissors creating a tunnel to inferior pubic ramus

The surgical marks on the thigh are infiltrated with local anesthesia, generally 1% lidocaine with epinephrine. Approximately 10cc's should be placed on either side. Care should be taken to anesthetize the entire area that will be traversed by the needle. After adequate infiltration with anesthesia a stab incision is made through the surgical marks on the thigh.

The foley catheter is then placed on gentle traction exposing the vaginal epithelium over the mid urethra. The epithelium is injected with 1% lidocaine with epinephrine. It is important to infiltrate the epithelium lateral to the undersurface of the inferior ramus of the pubis. A 1.5 cm midline incision is made through out the mid urethra vaginal epithelium. Allis Clamps are placed at 12, 3, 6, and 9 o'clock to allow appropriate visualization. A curved scissors is used to create a tunnel on either side to the inferior ramus of the pubis. (Figure 5) The plane of dissection is just under the vaginal epithelium and must be done sharply as the urethra and vagina are firmly attached at this point of the vagina. The tunnel should be just large enough to allow a finger access to the inferior ramus of the pubis. It is important not to penetrate the lateral attachment of the vagina or urogenital diaphragm.

Halo Needle Passage

Initially start on the patient's left side. The left index finger of the surgeon is placed in the previously created vaginal tunnel on the patient's left. The needle is held with the right hand and the needle tip is inserted through the left skin incision while the thumb of the left hand is placed on the curve of the needle. (Figure 6) The needle tip should be advanced through the muscles on the anterior side of the thigh until the obturator membrane is traversed while the halo handle is held at a 45 degree angle to the patient's left thigh. The obturator membrane will give a distinctive "pop" when traversed, it may seem as though there are two "pops". Once through the membrane, the needle can then be rotated around the inferior pubic ramus. The tip

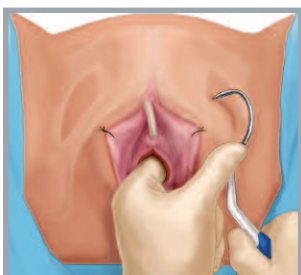


Figure 6: Needle being inserted

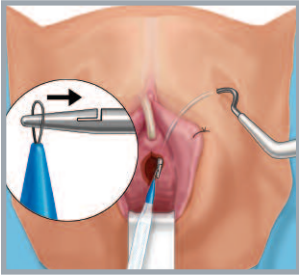


Figure 7: Needle coming out of tunnel

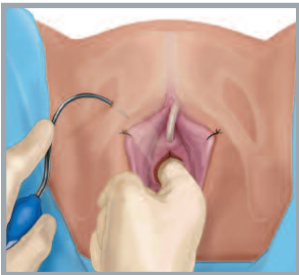


Figure 8: Curved needle being placed

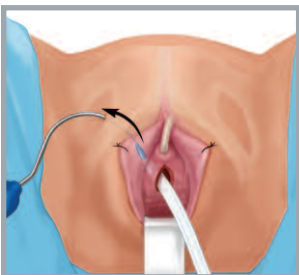


Figure 9: Needles being removed

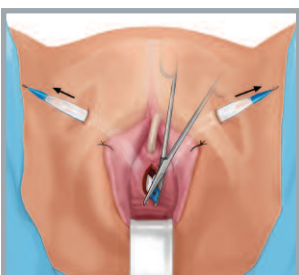


Figure 10: Center tab being cut and right angle behind sling while plastic is removed

of the needle should be palpated with the left index finger and then guided out through the vaginal tunnel. (Figure 7) The exact same procedure is repeated on the opposite side with the surgeon's hands reversed.

Curved Needle Passage

The other needle available is the curved needle. The steps to placing this needle are similar to the steps described above. The dissection in the vagina is identical and the incisions on the medial side of the thigh are the same. Start on the patient's right side by placing the right index finger into the right vaginal tunnel. The needle is held with the left hand and the needle tip is placed in the right thigh incision, while the handle is in a 12 and 6 o'clock position. The right thumb is used to advance the needle through the muscles of the anterior thigh and "pop" through the obturator membrane. The handle should be moved medially and the needle advanced around the inferior ramus of the pubis. (Figure 8) The right index finger should guide the needle out through the vaginal tunnel. The exact same procedure should be repeated on the patients left side.

Sling Tensioning

After the needles are passed, the foley catheter can be removed and cystourethroscopy is done. Generally, 300 ccs of cystoscopic fluid is placed in the bladder and in the absence of any observed abnormalities, the cystoscope is then removed. The needle is associated with the Advantage® Mesh assembly and the needles and mesh assembly are brought out through the thigh incision. (Figure 9) The blue centering tab will be in the midline and oriented towards the floor as the sling is tightened. A Credé Maneuver can be done to elicit urinary leakage. The sling should be adjusted so there is minimal urinary leakage with a Credé Maneuver. After tensioning, the blue centering tab should be cut and both pieces removed. The mesh will be exposed after cutting the centering tab. A right angle retractor should be placed behind the sling and the plastic sleeves removed. (Figure 10) The excess sling material should be cut below the skin incision. The vaginal incision should be closed with a 3-0 absorbable suture and the thigh incision should be closed with a 4-0 absorbable suture.

In the recovery room, a voiding trial is undertaken. If the patient can void greater than two thirds of their total bladder volume they are sent home without a catheter. If the patient voids less than two thirds of the bladder volume, they are sent home with an indwelling Foley catheter. Patients are given pain medicine and asked to follow up in the office in two weeks. Patients are instructed to avoid inserting anything in the vagina for four weeks and to avoid strenuous activity for 4 to 6 weeks. Most patients may return to work within 1 week.

Outcomes

Long term data on the transobturator technique is still limited. Several, small case series with limited follow-up have been published, however, long term randomized prospective data with other anti-incontinence procedures do not exist. Early personal experience would indicate that the transobturator approach has similar efficacy to the retropubic approach.

References

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