

**Bulbar urethral sling placement in males by the transobturator
approach using the American Medical Systems AdVance™ system**

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The transobturator sling suspension is a treatment option for males with stress urinary incontinence (SUI) due to intrinsic urinary sphincter deficiency post-prostatectomy. It can be offered to men who remain unsatisfied following conservative management. The latter includes pelvic floor muscle exercises, biofeedback and electrical stimulation. Recently pharmacotherapy with Duloxetine, a dual serotonin-noradrenaline reuptake inhibitor has been used off-licence in men with variable success rates. Surgical treatment options include injection of periurethral bulking agents, insertion of extraurethral (non-circumferential) retropubic adjustable compression devices (ProAct™) and insertion of artificial urinary sphincters (AUS) or bulbourethral slings. Whereas periurethral bulking agents have low success rates, artificial urinary sphincters were nominated the reference standard treatment for post-prostatectomy incontinence by the third *International Consultation on Incontinence* in 2002. They have demonstrated good efficacy in severe SUI with high social continence and patient satisfaction rates. However, the disadvantages of AUS are the need for manual dexterity and mental capacity to operate the sphincter. AUS is expensive and carries risk of cuff erosion, infection and mechanical failure.

Male slings are indicated in mild to moderate SUI. Male sling procedures include bone anchoring and suprapubic suspension techniques. The former raises concerns about possible bone related complications, the latter risks bladder perforation or bleeding by using the retropubic pathway for sling implantation. The AMS AdVance™ system is self-anchoring and relatively easy to implant. It uses a transobturator pathway for implantation and fixation, which is already established in women, minimizing the risk of harming any sensitive structures in the male pelvis and omitting the need for bone-anchoring screws. The theoretical principle behind the AdVance™ Sling is relocation of the bulb, rather than compression.

The National Institute for Health and Clinical Excellence (NICE) issued its guidelines on 'Suburethral synthetic sling insertion for stress urinary incontinence in men' in March 2008 [1]. They state that current efficacy and safety evidence appears adequate provided normal arrangements for clinical governance and audit are in place. Efficacy rates described range from 39-96% [2-7] depending on the varying definitions of success and follow-up periods in between studies. Rates for urethral erosion requiring sling removal range from 0-6% [2-6] and for infection from 4-6% [3,5,6]. Postoperative pain or dysuria is common, with pain persisting longer than 3 months requiring analgesia described in 12% of one case series [6]. Urinary retention rates in one study was 3% requiring repeat surgery [3] and 12% in another resolving with catheterisation for up to 3 days [6]. No osseous complications were reported. The re-intervention rate for re-adjustment of sling tension was 8% in one study [5].

NICE recommends that patient consent should include the risk of treatment failure (especially in severe SUI and post-radiotherapy) and decrease of treatment benefits over time. They should only be performed at specialized post-prostatectomy incontinence Units which offer alternative treatment options including artificial urinary sphincters. Surgeons should submit all patient data to the registry of the British Association of Urological Surgeons (BAUS). Key outcomes considered should include incontinence reduction, patient satisfaction and quality of life, effect duration and residual volume.

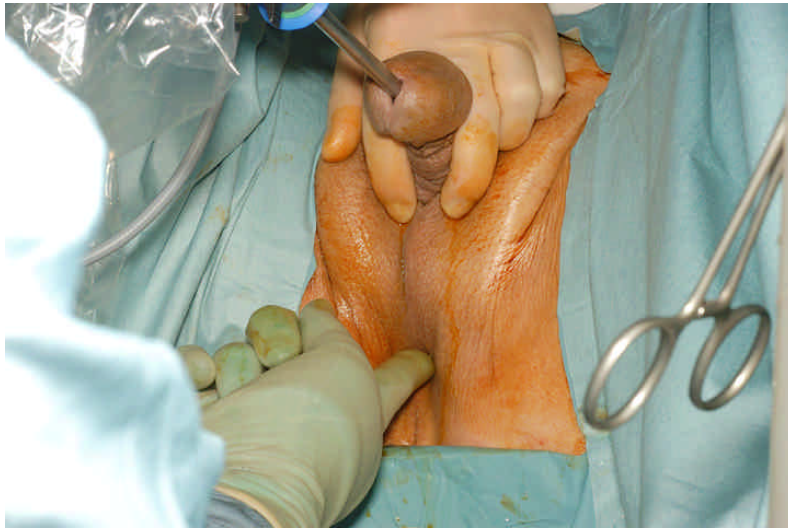
Method

Before surgery active infection is excluded. Antibiotic prophylaxis against gram positives, gram negatives and anaerobes is given on induction in theatre. The patient is placed in a dorsal lithotomy position with legs bent at 90 degrees and slightly abducted. Sterile preparation of the perineal, genital and groin areas and draping of the operative field leaves the latter exposed with the anus excluded.

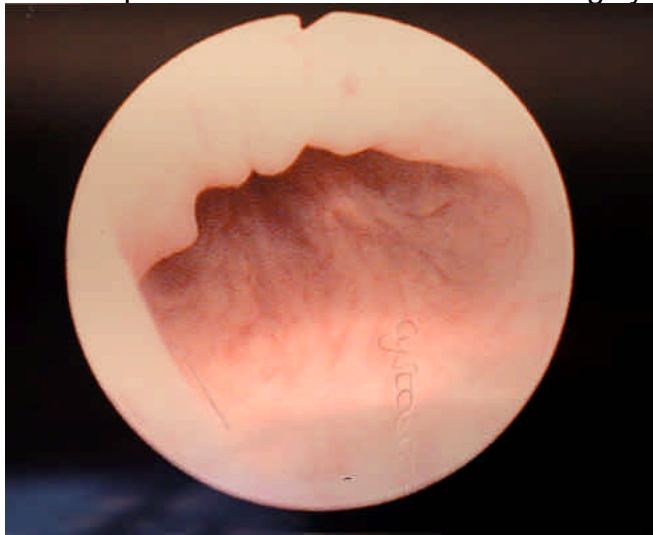


AMS 1

Cystourethroscopy is used to confirm normal anatomy of the bladder and urethra. It also allows assessment of urethral bulb mobility, with the index finger gently pushing the urethral bulb forward. This simple finger test simulates the anterior relocation of the urethral bulb as will be achieved by implantation of the AdVance™ Sling.



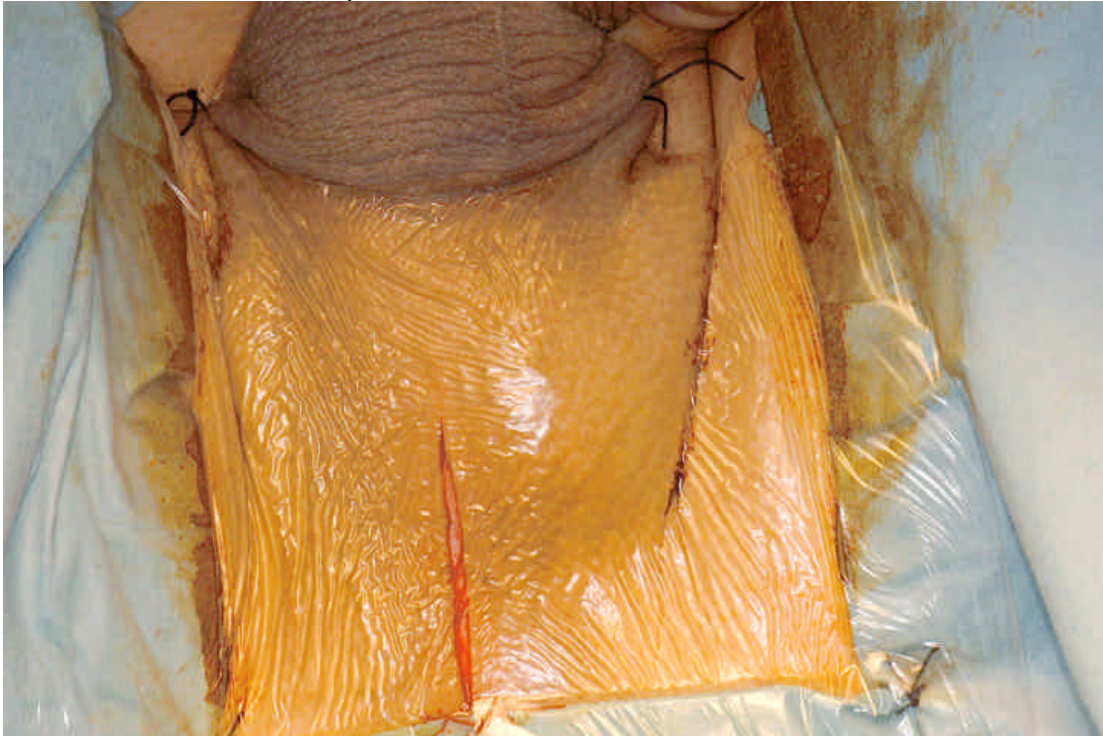
Below Open bulbar urethra as seen during cystourethroscopy.



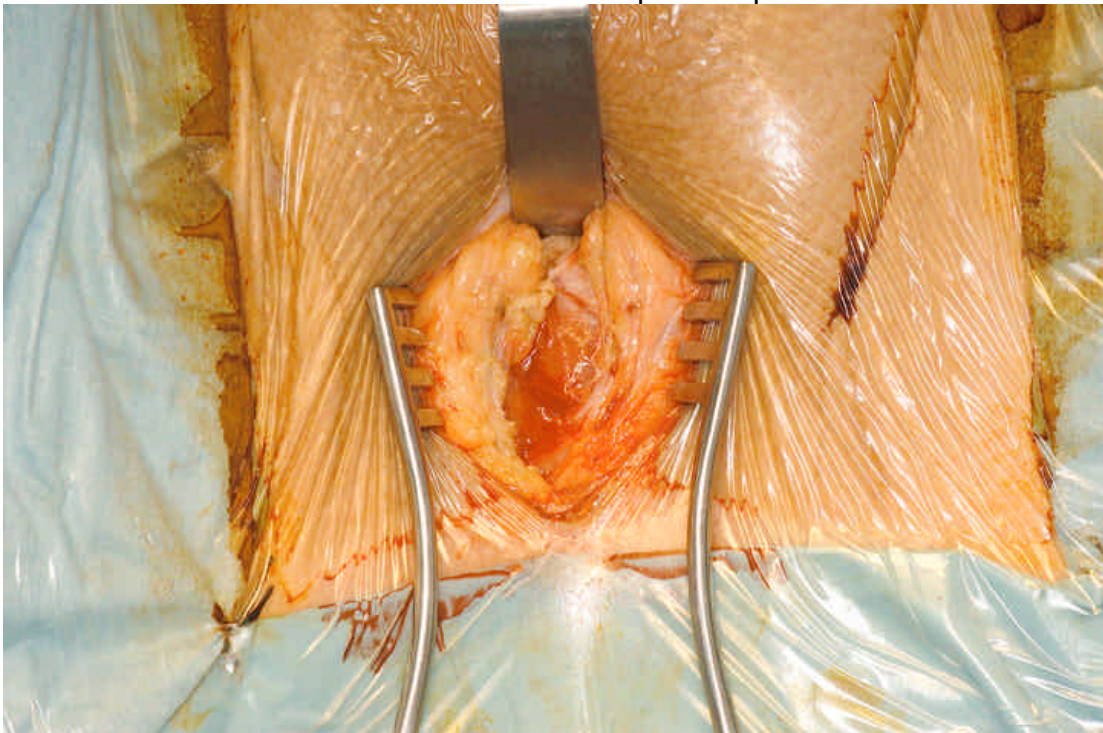
Below Good coaptation during the finger test, pushing the bulbar urethra anteriorly.



The bladder is emptied at the end of cystourethroscopy. A urethral Foley catheter is inserted. A 5-7cm lower perineal midline incision close to the anus is made.

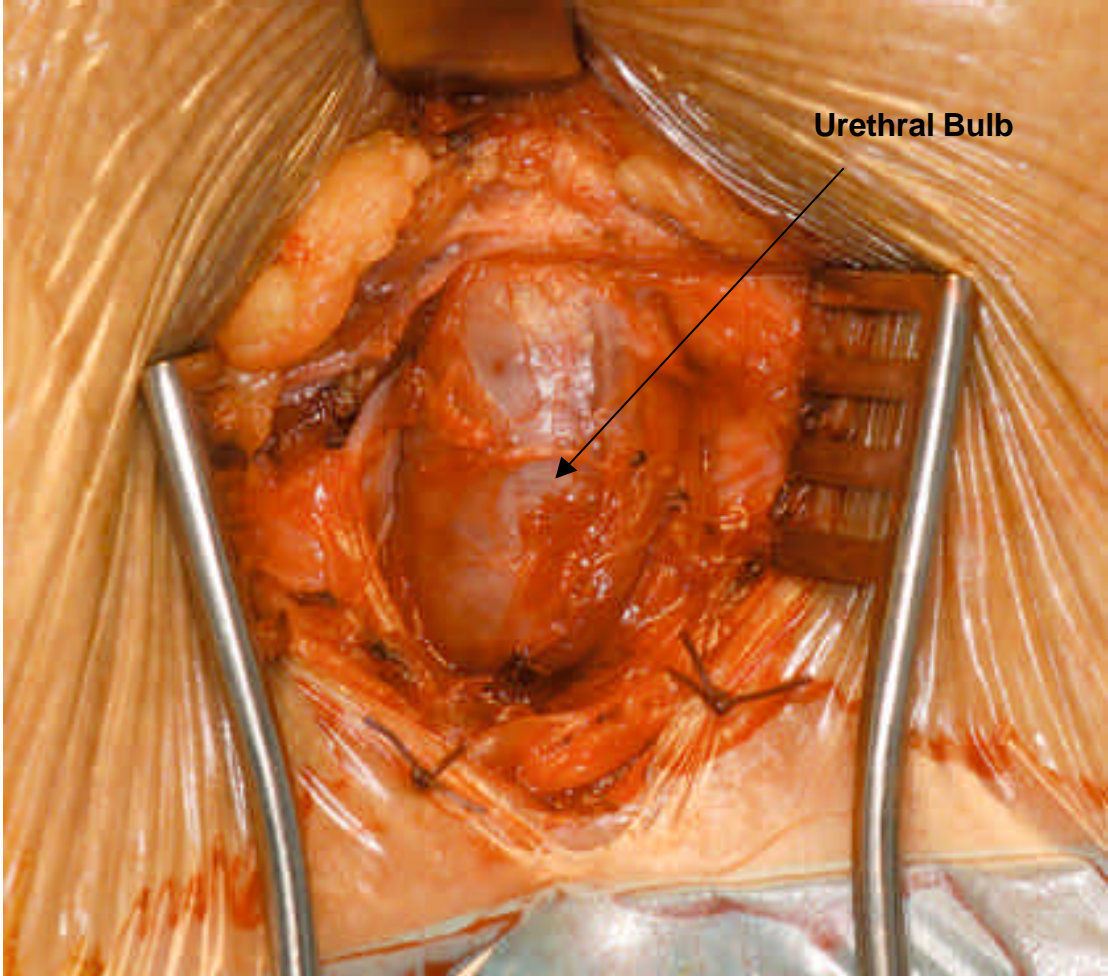


The subcutaneous tissue is divided down onto the bulbospongiosus muscle. The latter is then divided in the midline and opened up like a book.



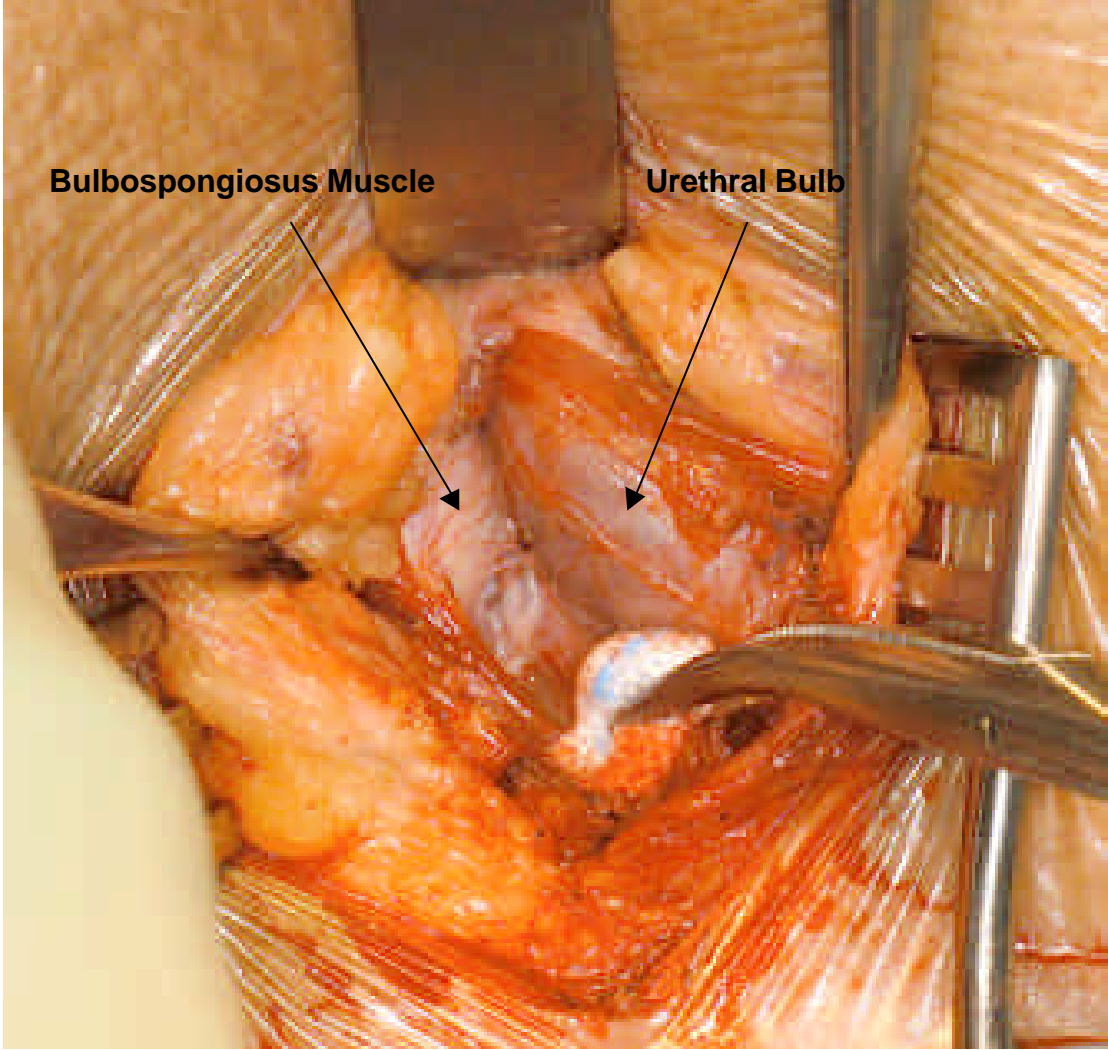
AMS 6

This exposes the corpora cavernosa and proximal urethral bulb. With a Foley catheter in situ the urethra is easily identifiable.



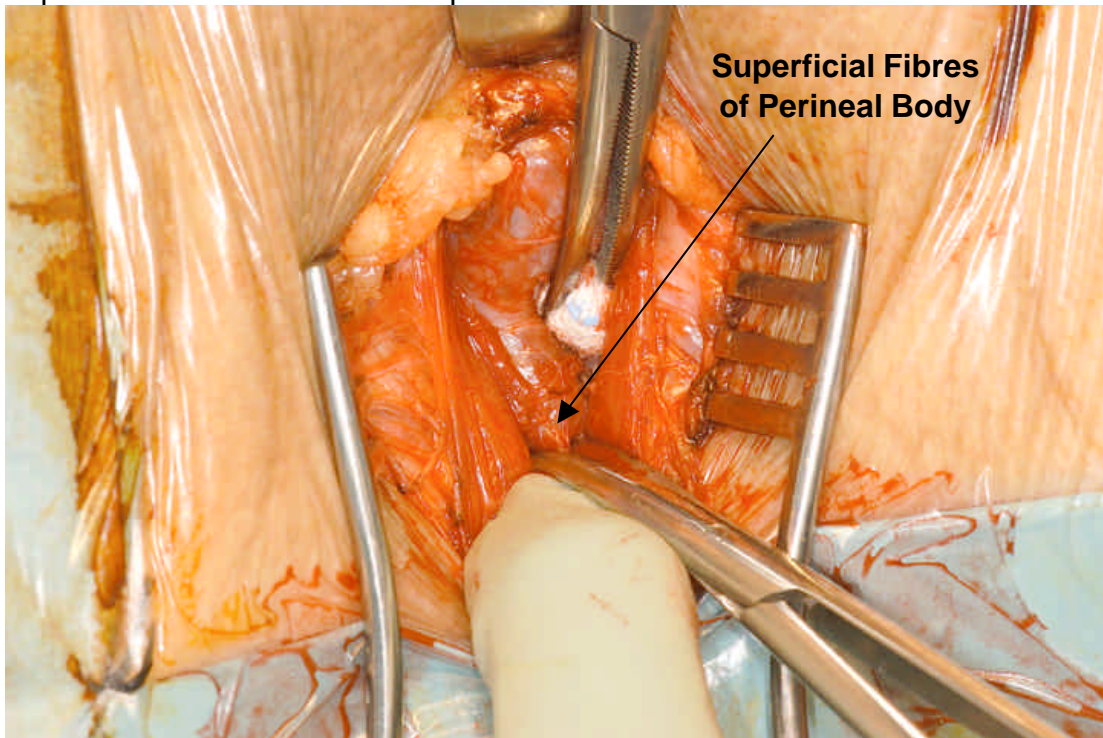
AMS 7

Using blunt dissection the bulbocavernosus muscles and urethral bulb can be easily divided from the bulbospongiosus muscle.



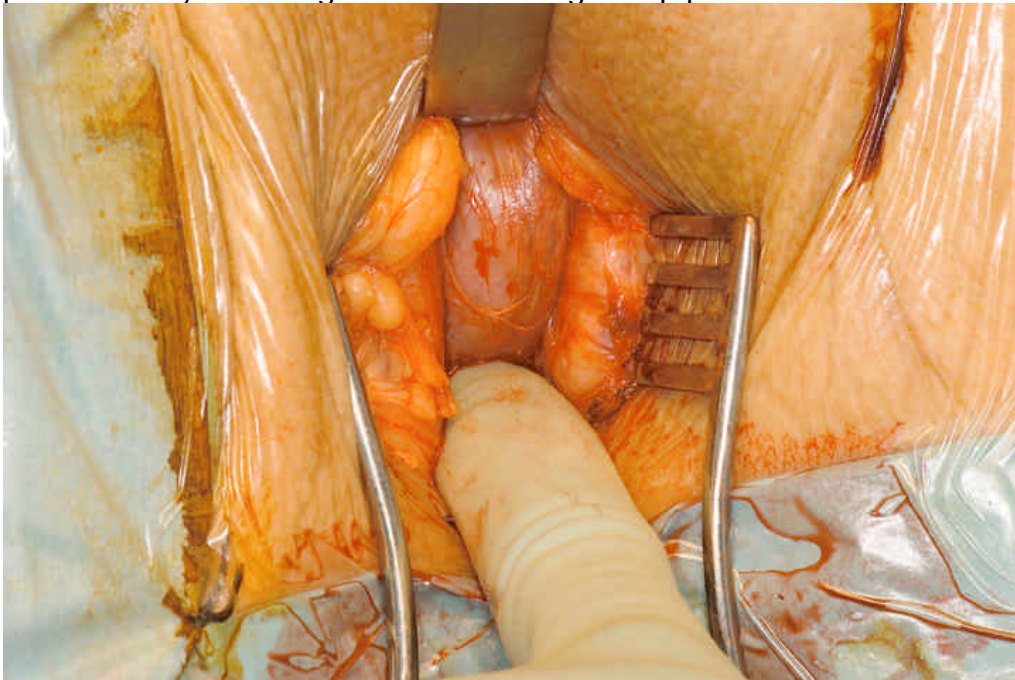
AMS 8

The first fibers of the perineal body are extensions of the superficial anal sphincter. They can be cut without compromising the anal sphincter integrity as its competence depends on the intact internal sphincter.



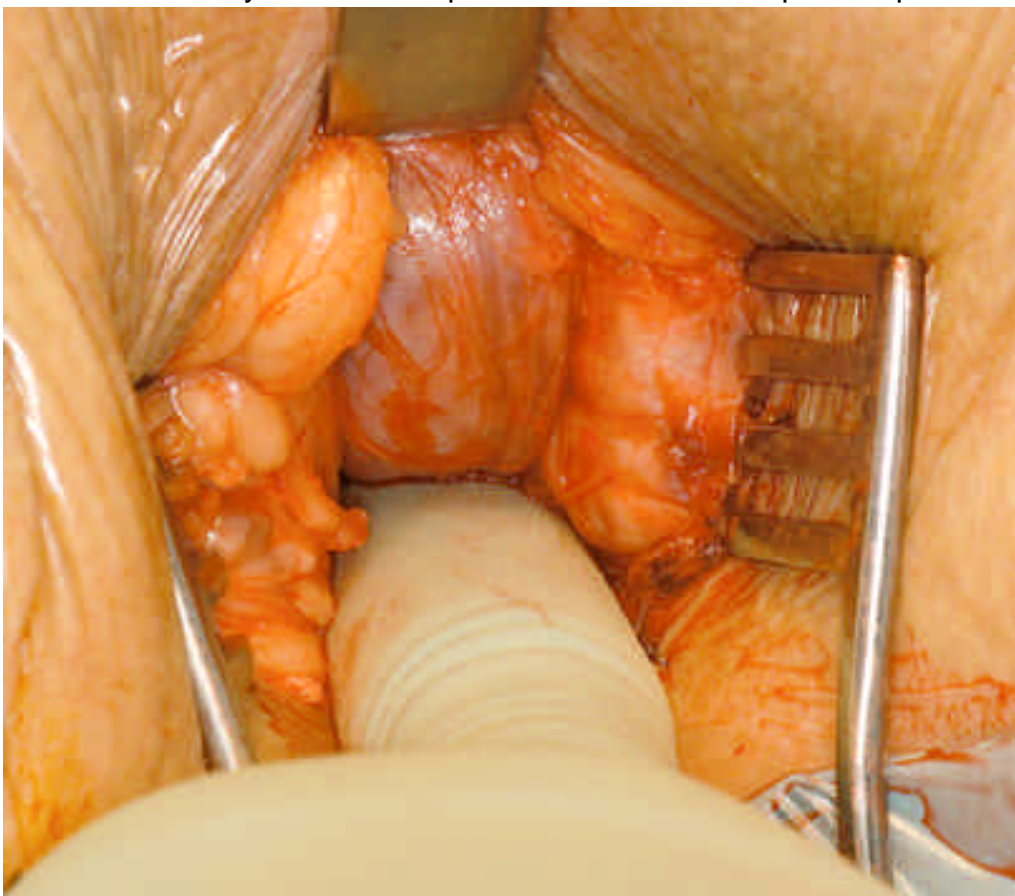
AMS 9

After having cut the superficial fibres the central tendon of the perineal body is cut which is a clear dense nodule easy to palpate. Do not extend the incision past the perineal body. This might cause the sling to slip past the urethral bulb.



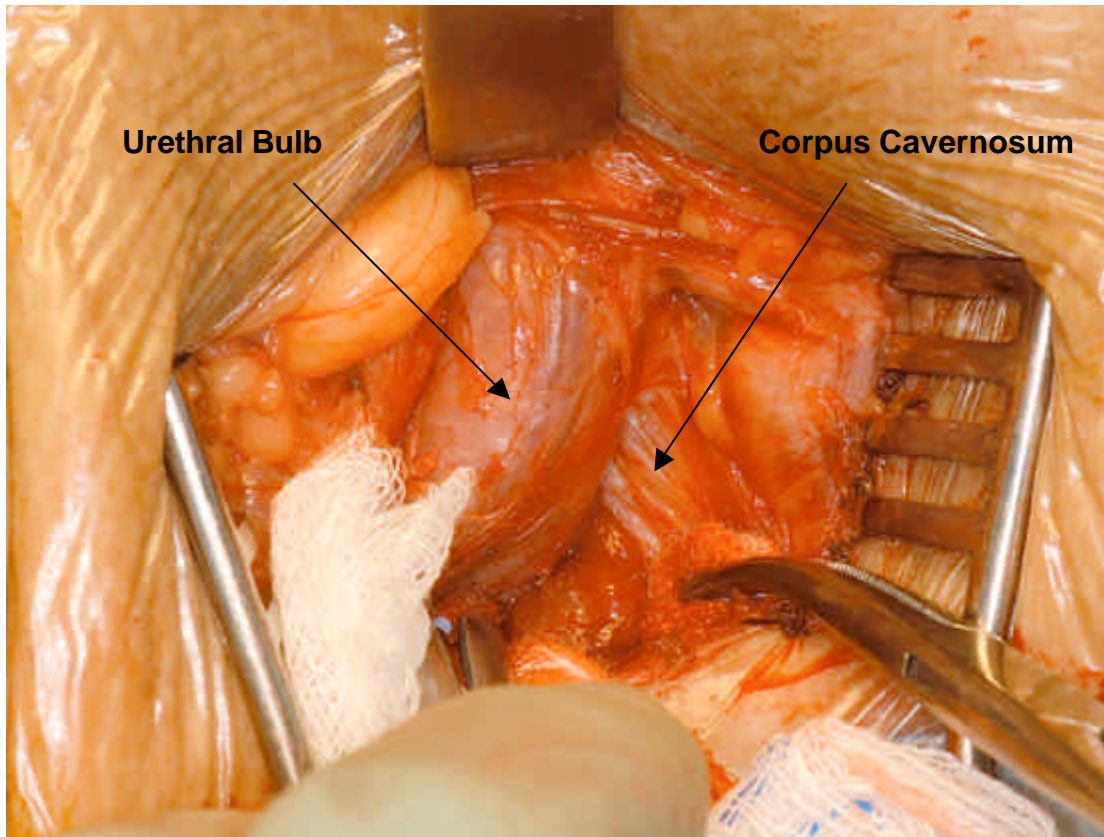
AMS 10

Sufficient mobility can be demonstrated using a finger to push the bulb proximally. The idea is to fully mobilize the proximal urethral bulb up to the perineal body.



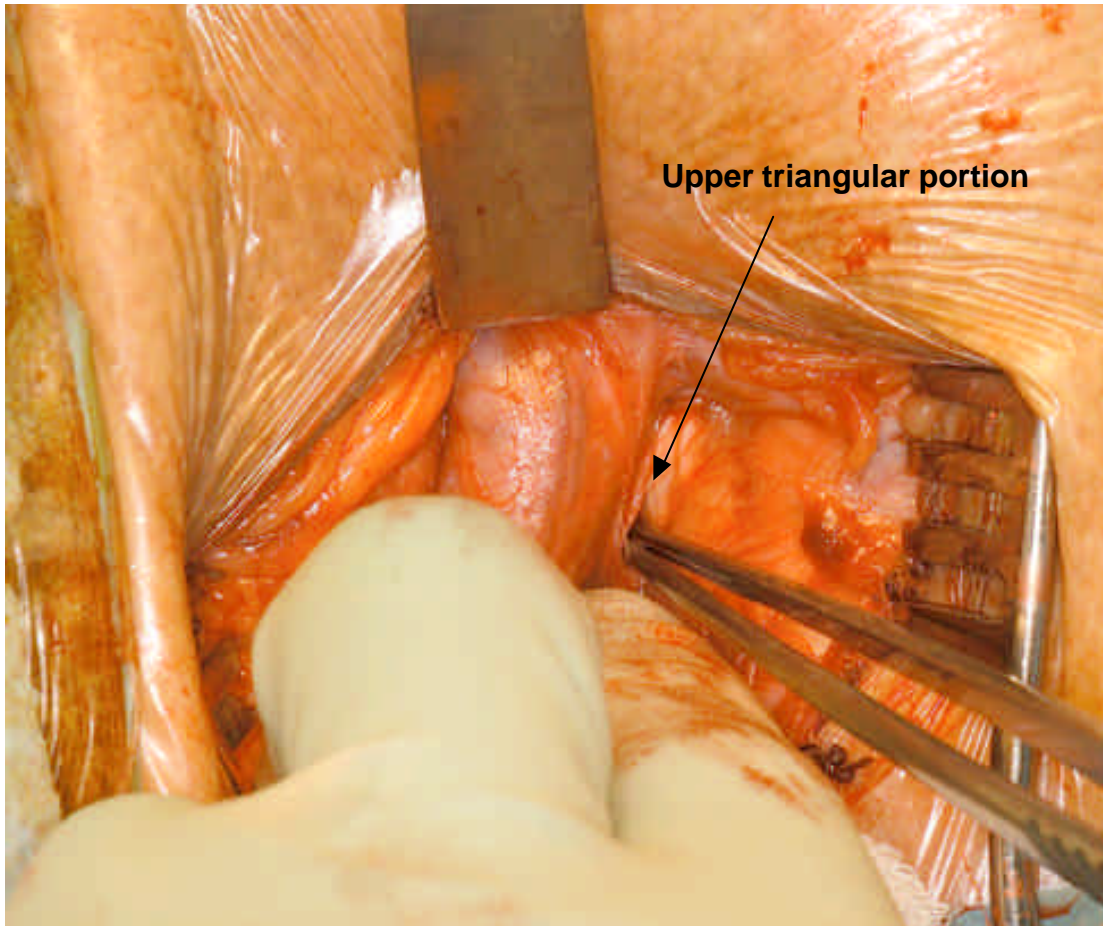
AMS 11

The dissection is advanced laterally in between the medial bulb and lateral corpora cavernosa and up to the central tendons on both sides using a mainly blunt technique with scissors.



AMS 12

This allows to put a finger into the upper triangular portion created by the lateral corpus cavernous and medial corpus spongiosum. This is where the introducer needle is later received. In the apex of the triangle the under surface of the inferior pubic ramus can be felt (the extension of the pudendal nerve onto the dorsal nerve of the penis runs just behind the corpora cavernosa).



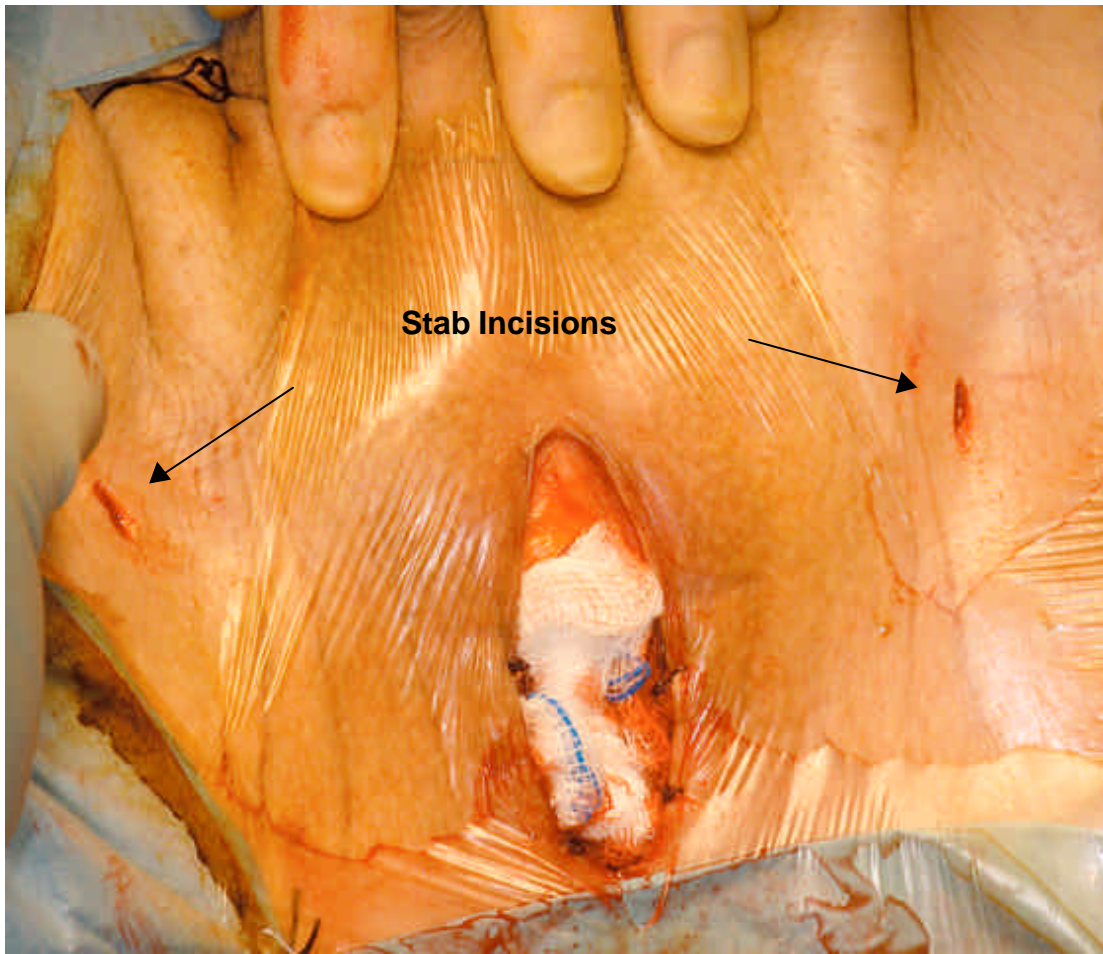
AMS 13

The insertion of the adductor longus tendon is identified. It is well palpable with the patient in lithotomy position. The medial border of the obturator foramen lies 1cm beneath and lateral. The ideal position to perforate is at the medial border in between the upper and lower thirds of the obturator foramen.



AMS 14

Small stab incisions are made 1cm below and lateral to the insertion of the adductor longus tendon at the medial border of the obturator foramen.



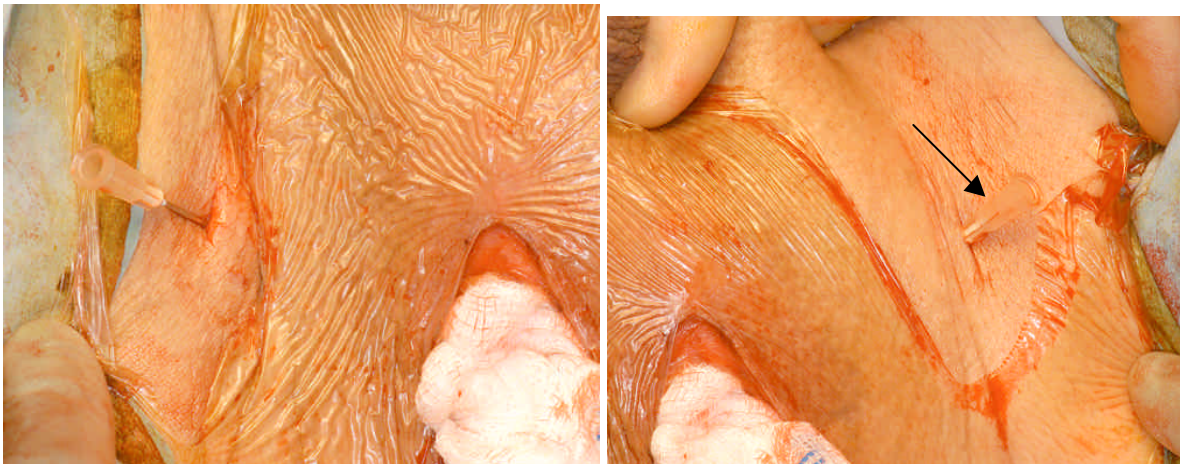
AMS 15

A needle is used to probe the bone and help identify the point of entrance in the medial obturator fossa.

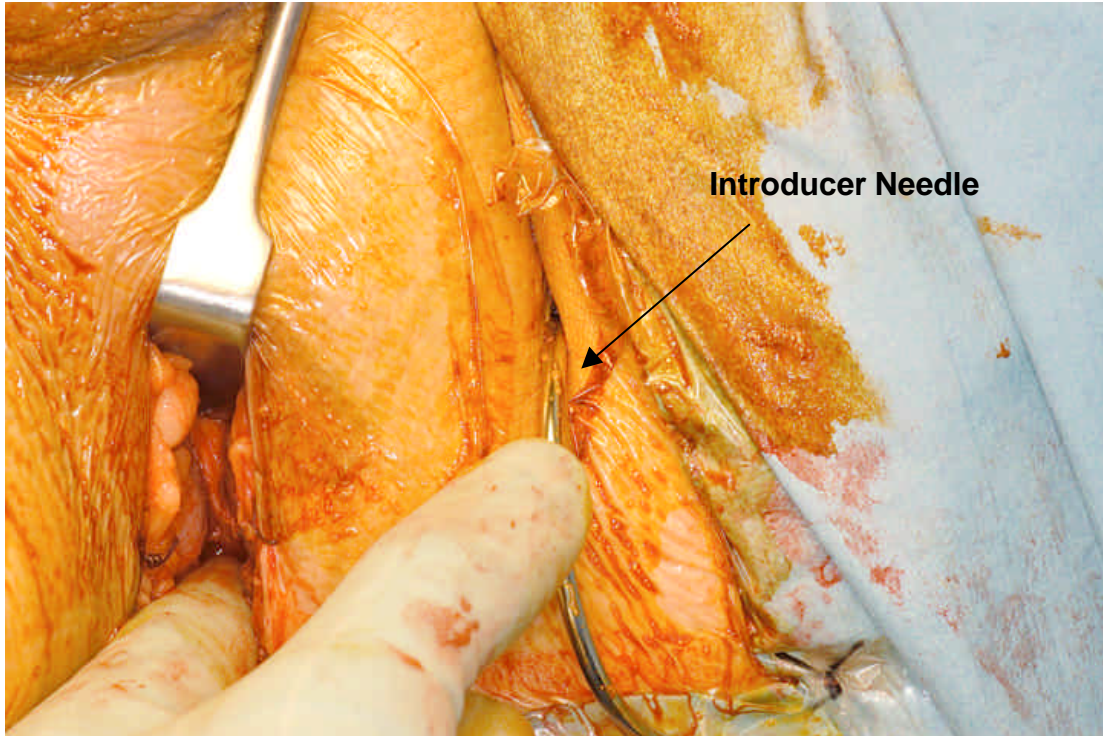


AMS 16

The needles can be left in situ as direction guides before the introducer needles are inserted.

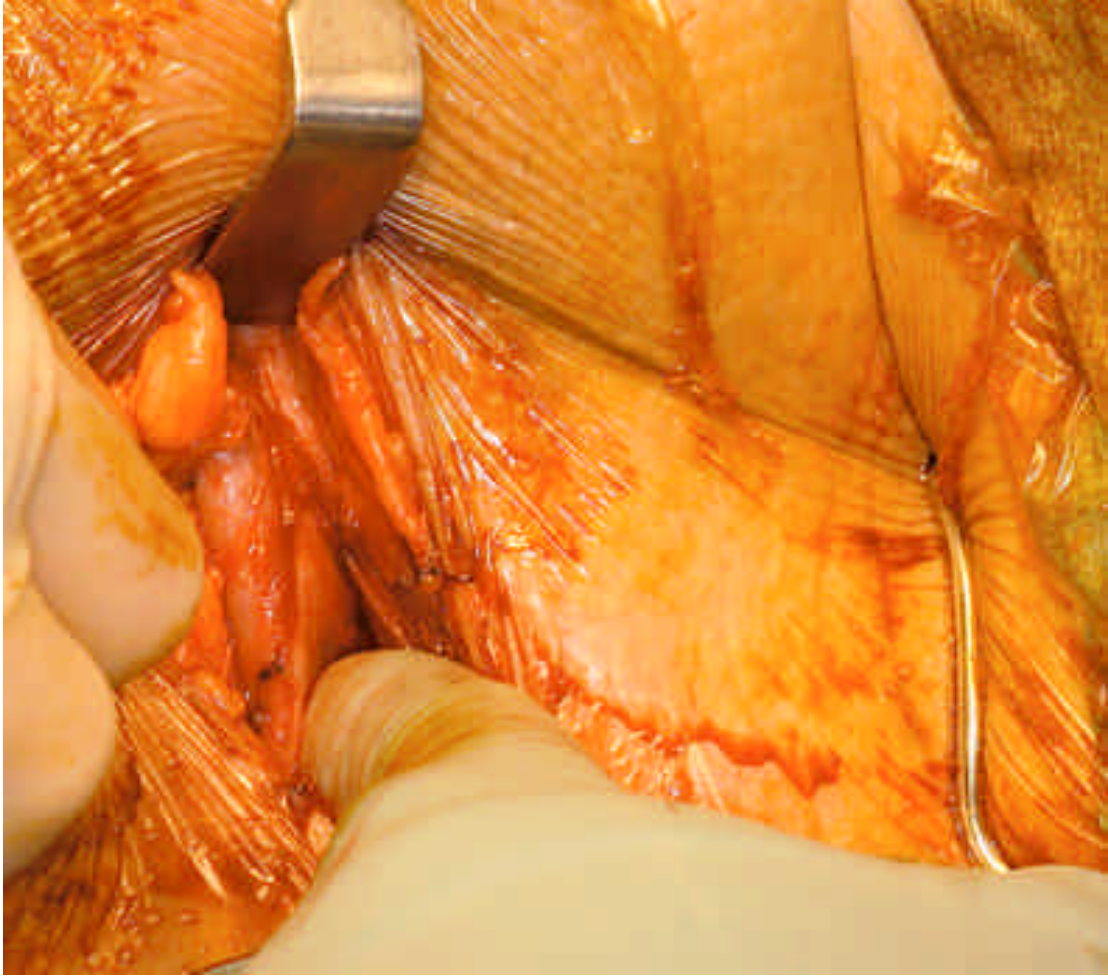


The rotation of each introducer needle is practiced in space above the patient to visualize the path and to maintain a constant axis of rotation at about 45 degrees. Then the introducer needle is passed through the stab incision. Resistance is felt when the needle tip reaches the external obturator muscle and obturator membrane. A pop can be felt when the needle tip passes through. Some gentle finger pressure on the introducer needle is usually necessary to achieve this.



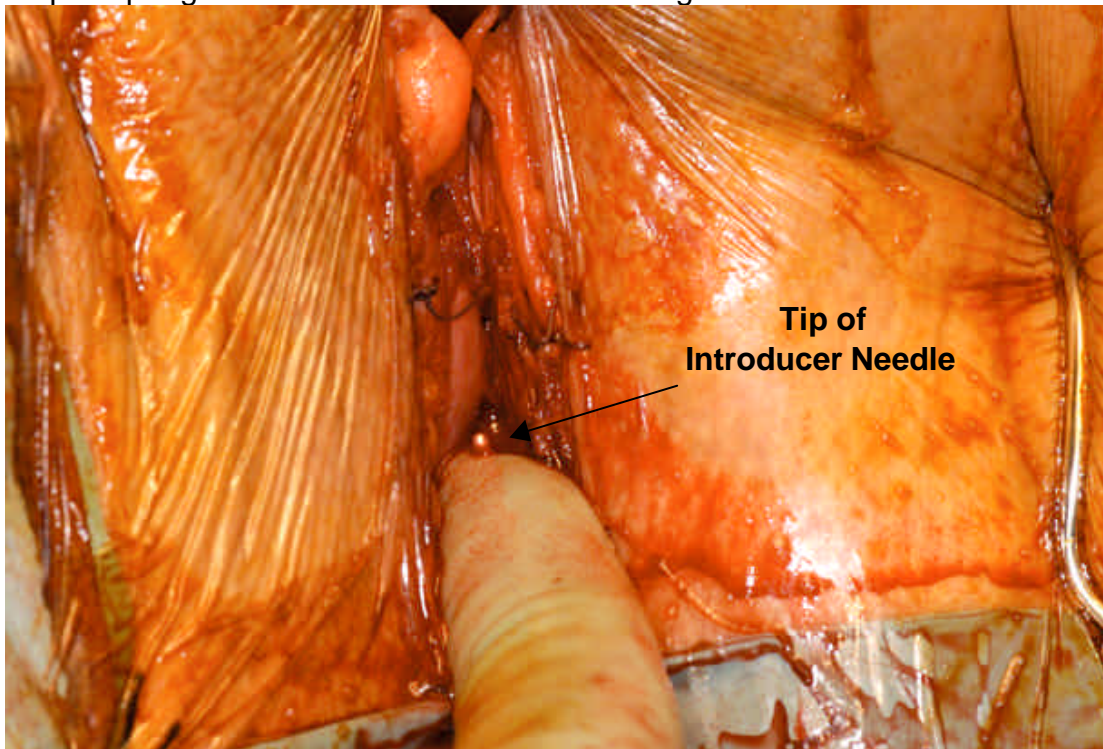
AMS 19

The needle tip can be felt under the inferior pubic ramus with the finger.

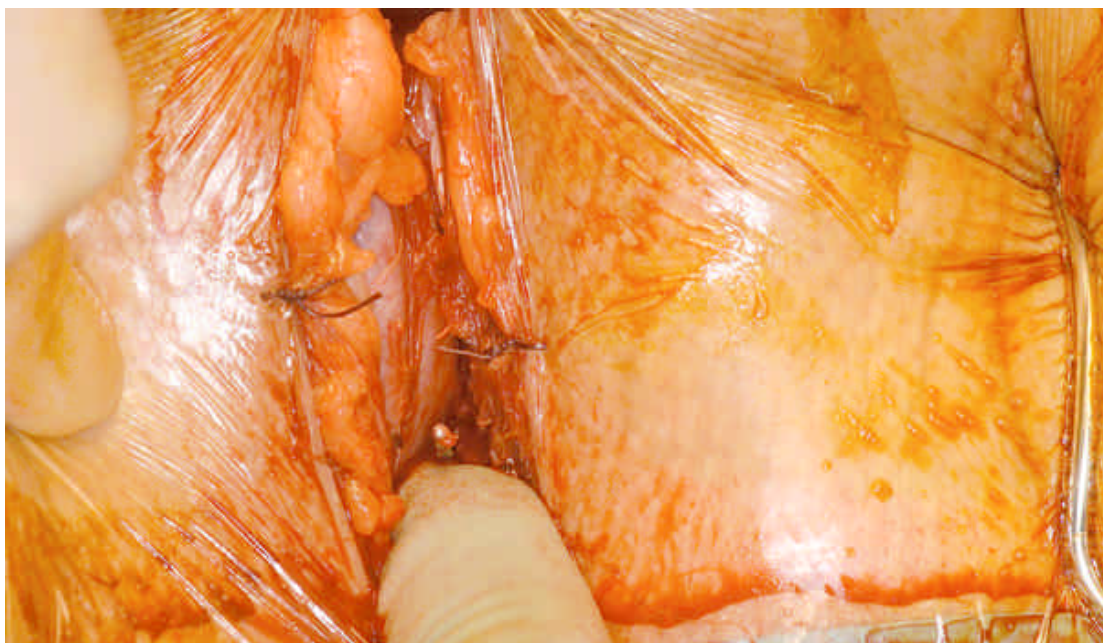


AMS 20

Using a rotational movement of the introducer needle the needle tip is guided by the index finger into apex of the triangular area formed by the corpus cavernosum and corpus spongiosum. There it can be seen exiting into the wound.

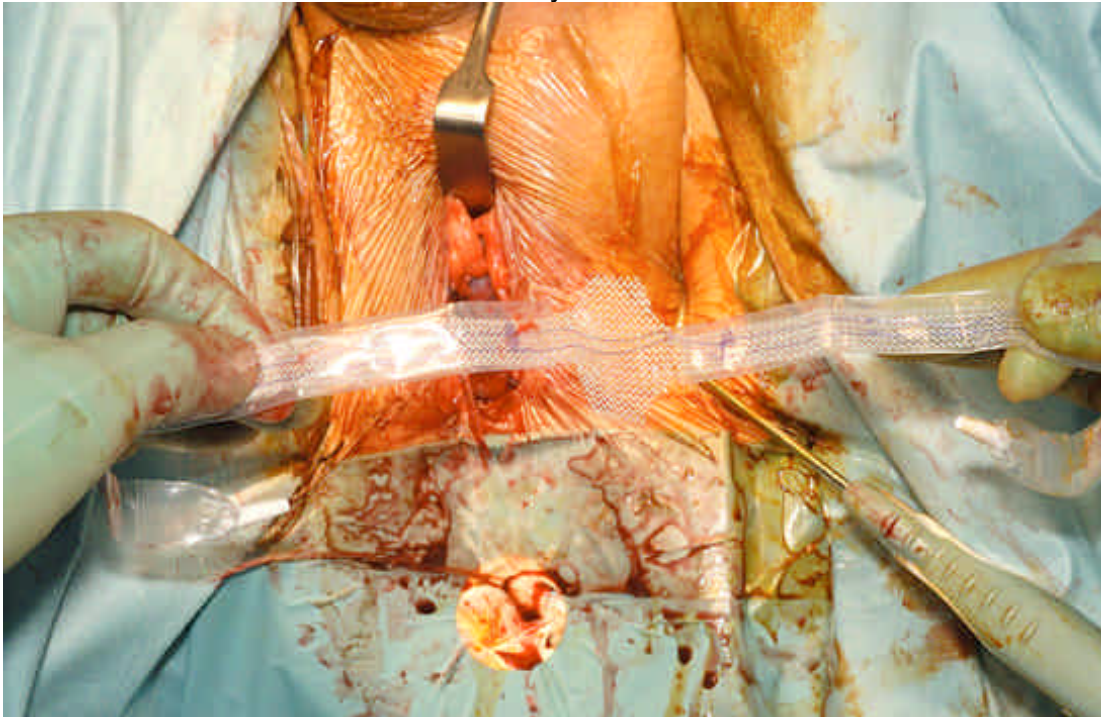


AMS 21



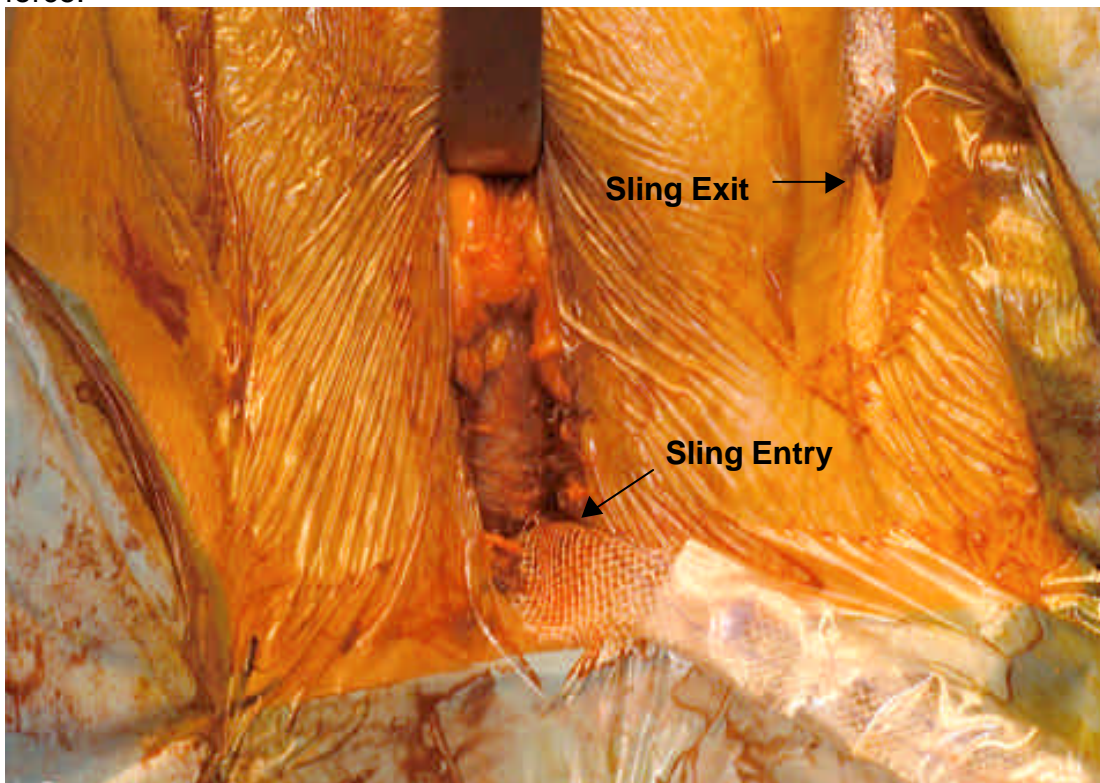
AMS 22

One sling end is clipped onto the tip of the guidance needle. The sling tensioning sutures and blue dots should face away from the urethra.



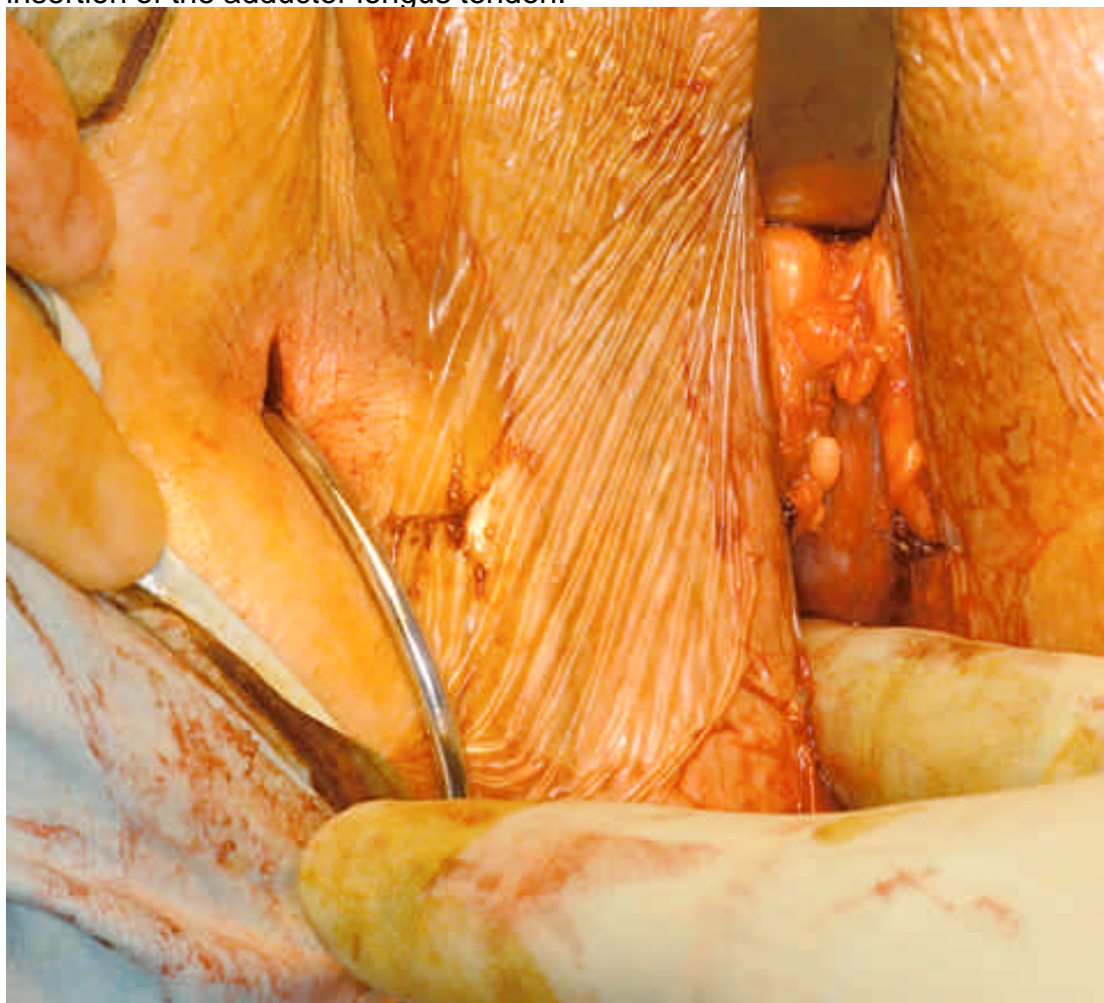
AMS 23

By back rotation, the sling is pulled into position. This may sometimes take some force.

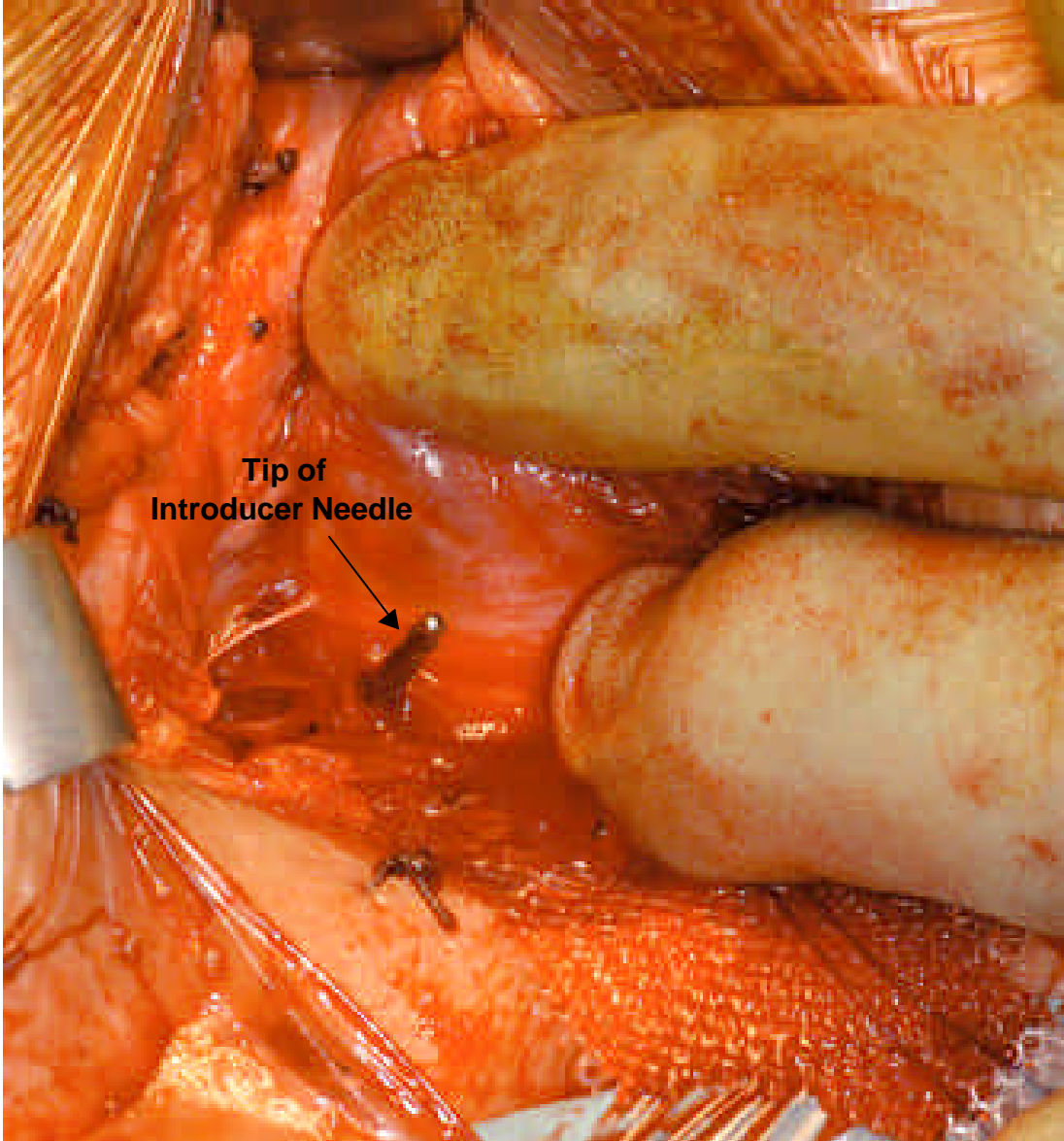


AMS 24

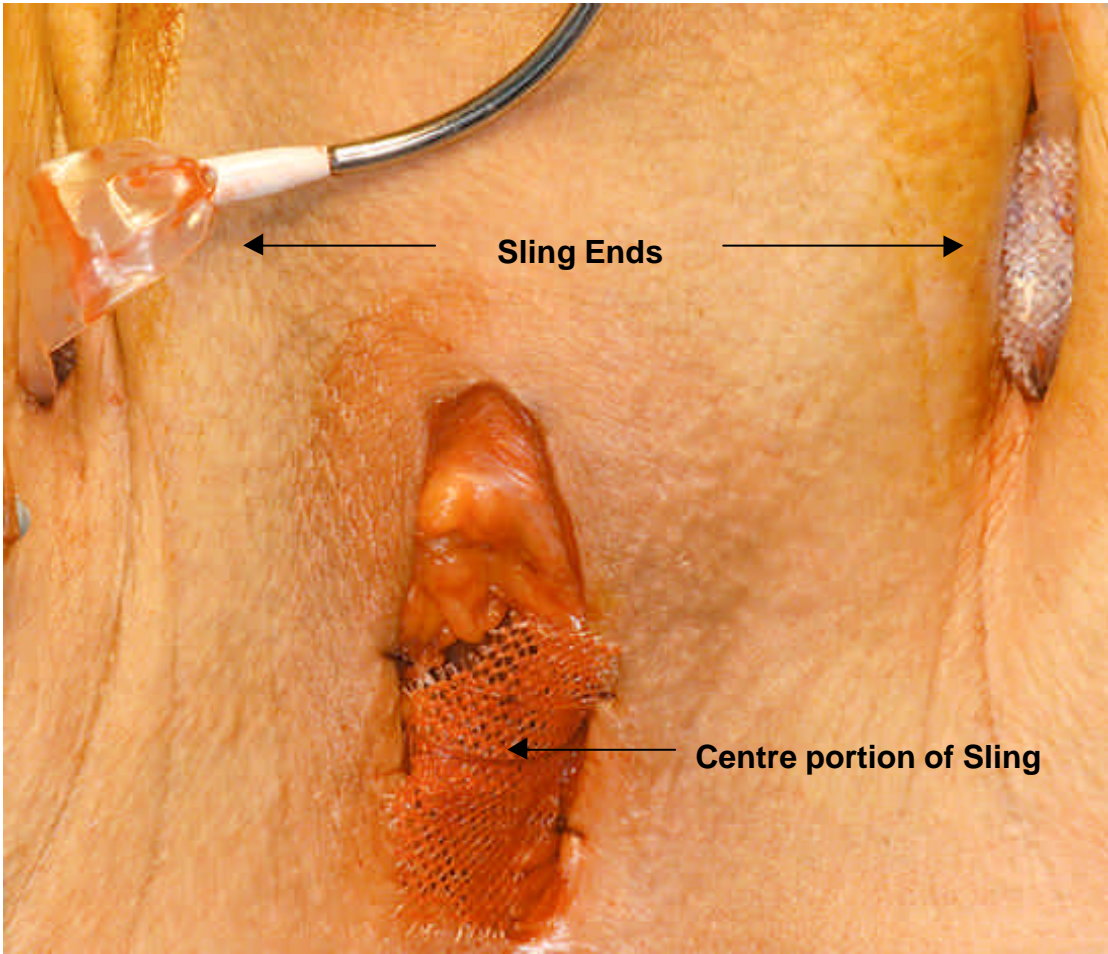
The same procedure is performed on the contralateral side after having identified the insertion of the adductor longus tendon.



AMS 25



AMS 26



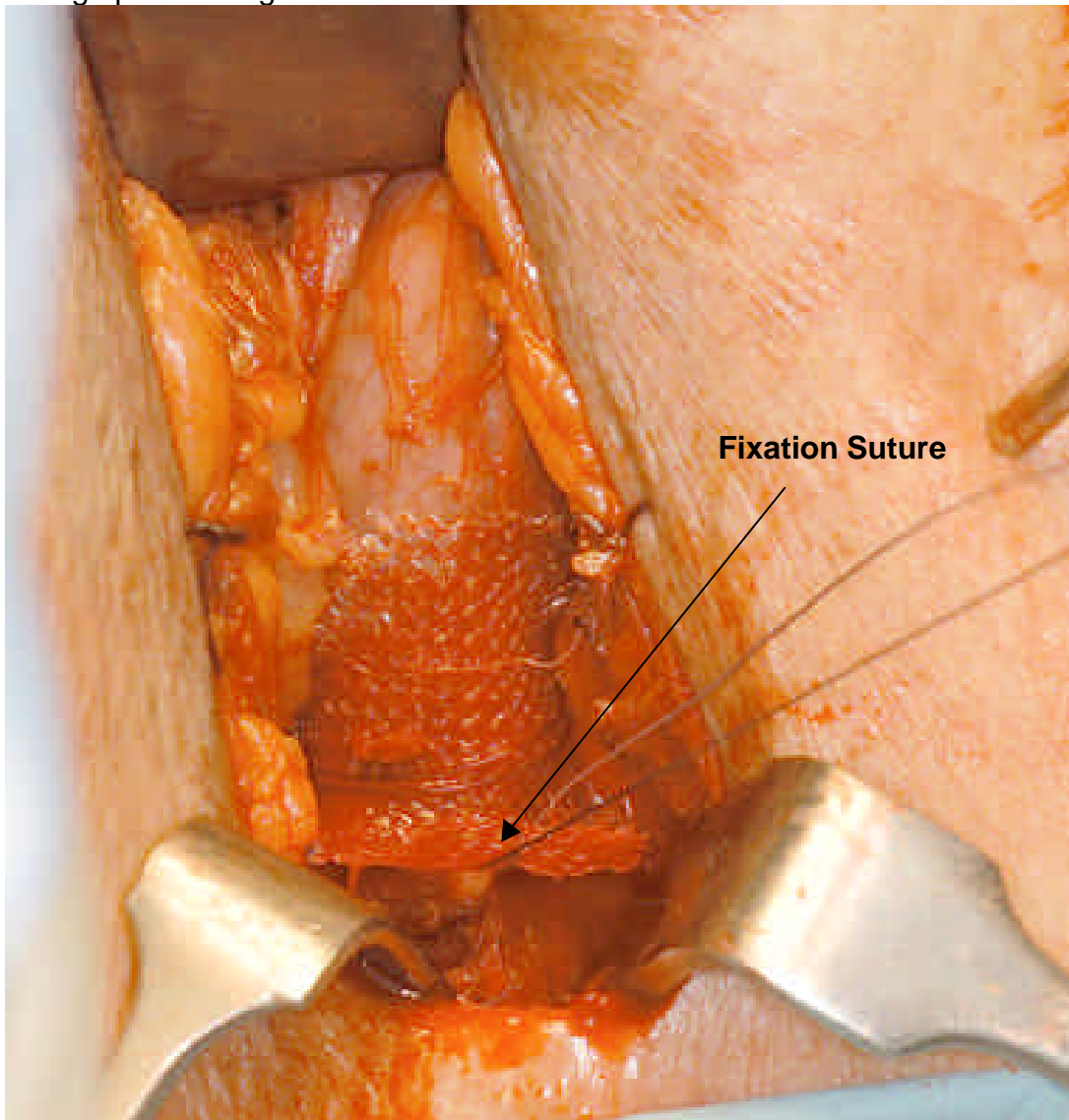
AMS 27

The center portion of the sling is positioned over the proximal urethral bulb.

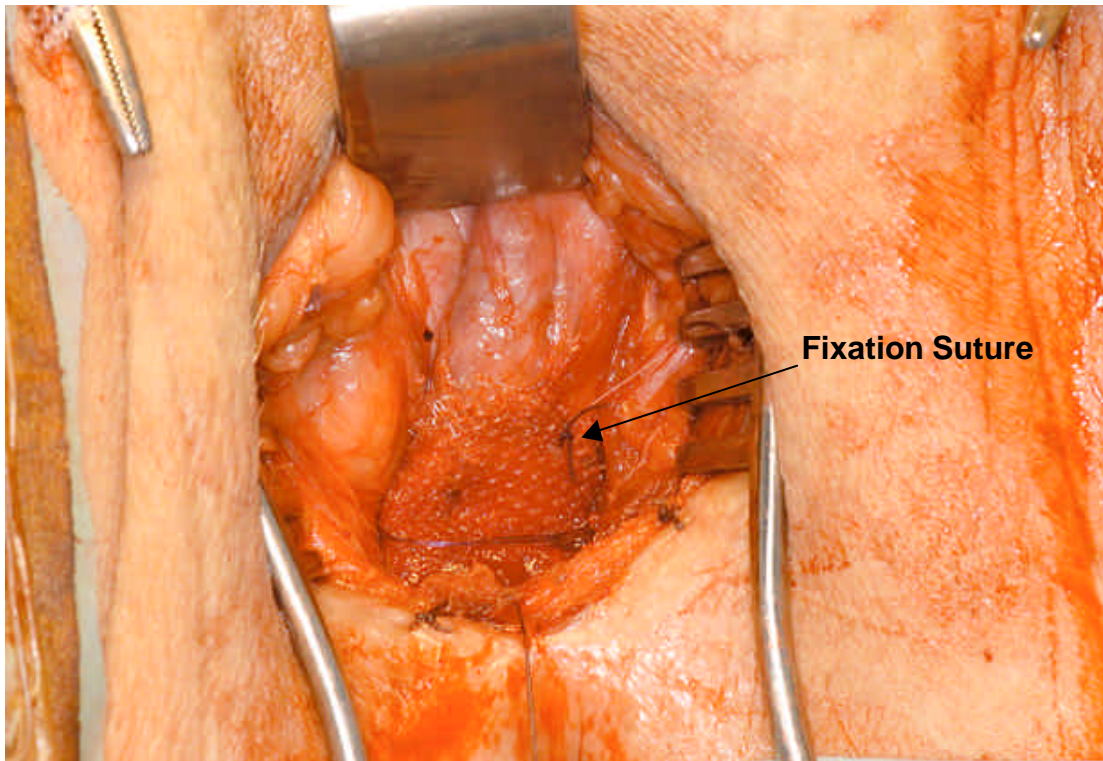


AMS 28

There it is sutured in place with four tacking sutures, two sutures proximally and two distally. The idea is to spread out the centre portion of the sling to prevent it from rolling up or kinking.

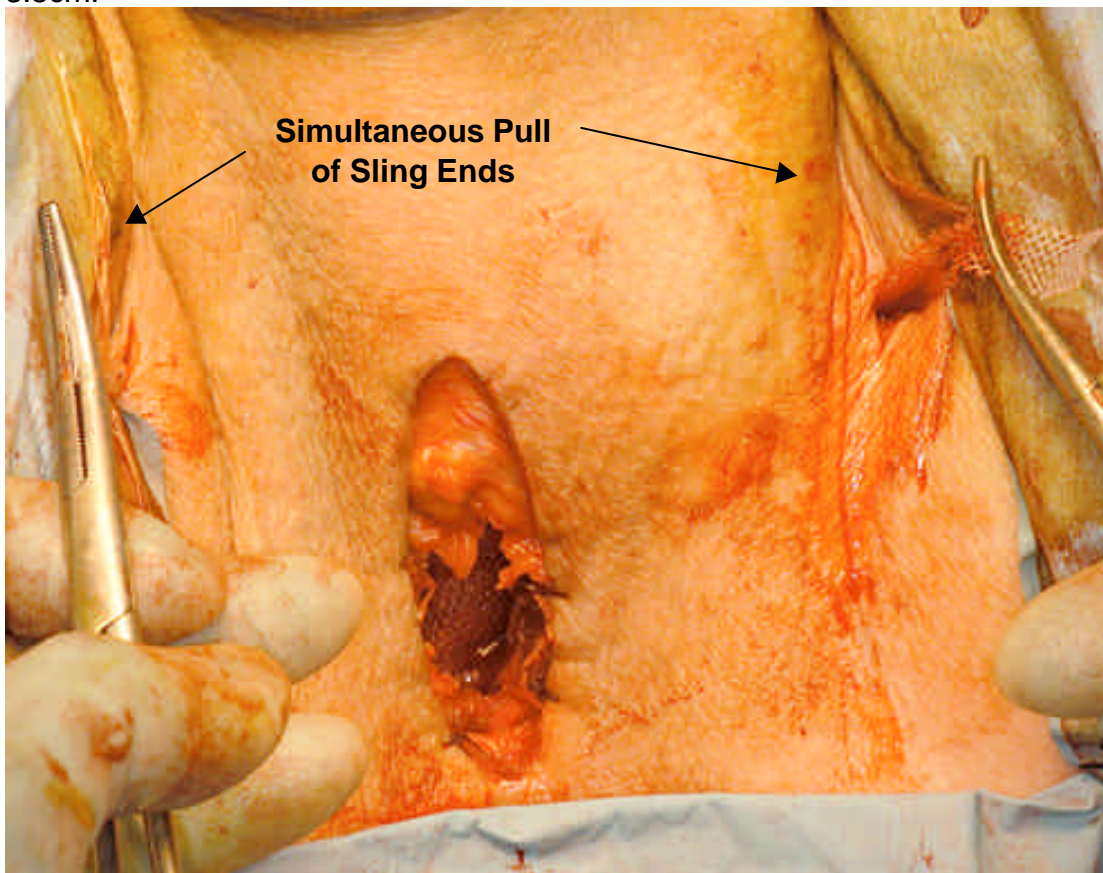


AMS 29



AMS 30

Both sling ends are pulled simultaneously to tension the sling. This aims at causing proximal relocation of the posterior surface of the proximal urethral bulb of about 2.5-3.5cm.

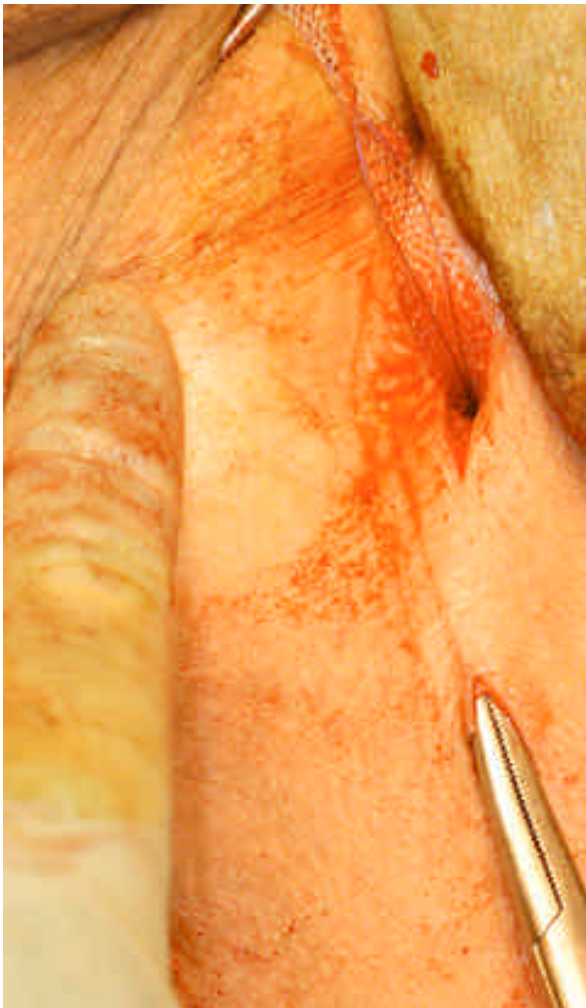


AMS 31



AMS 32

For further sling fixation can be achieved by creating a subcutaneous tunnel. The sling ends are cut level with the skin making sure they are properly buried under the skin.



AMS 33

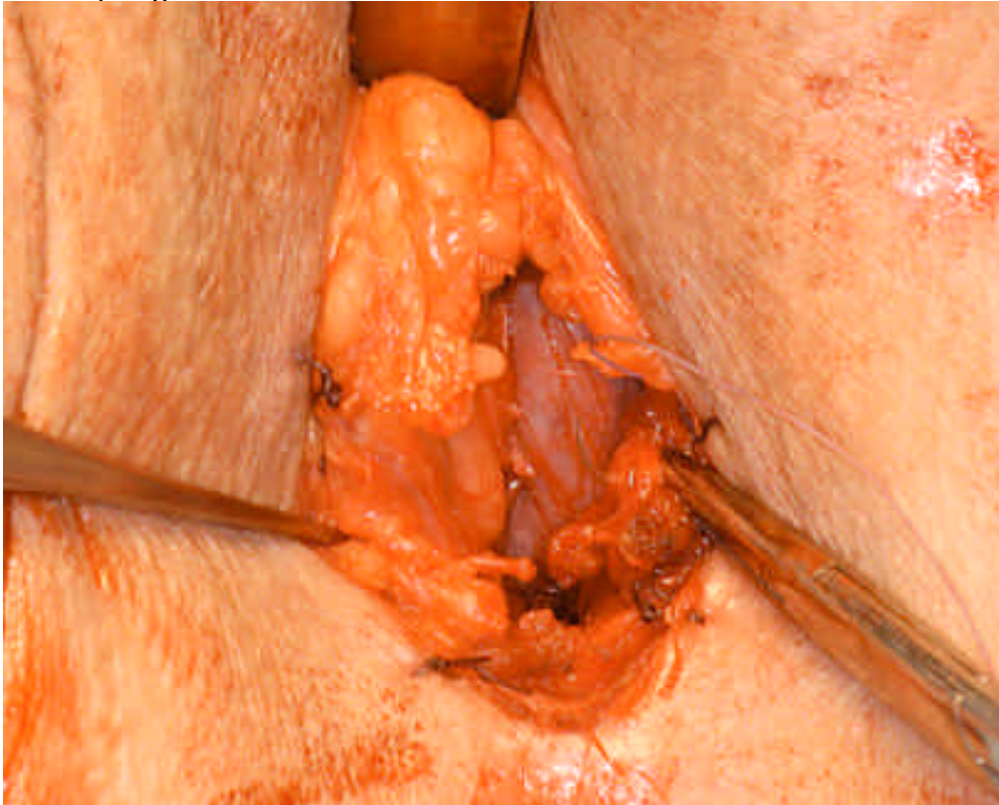


AMS 34



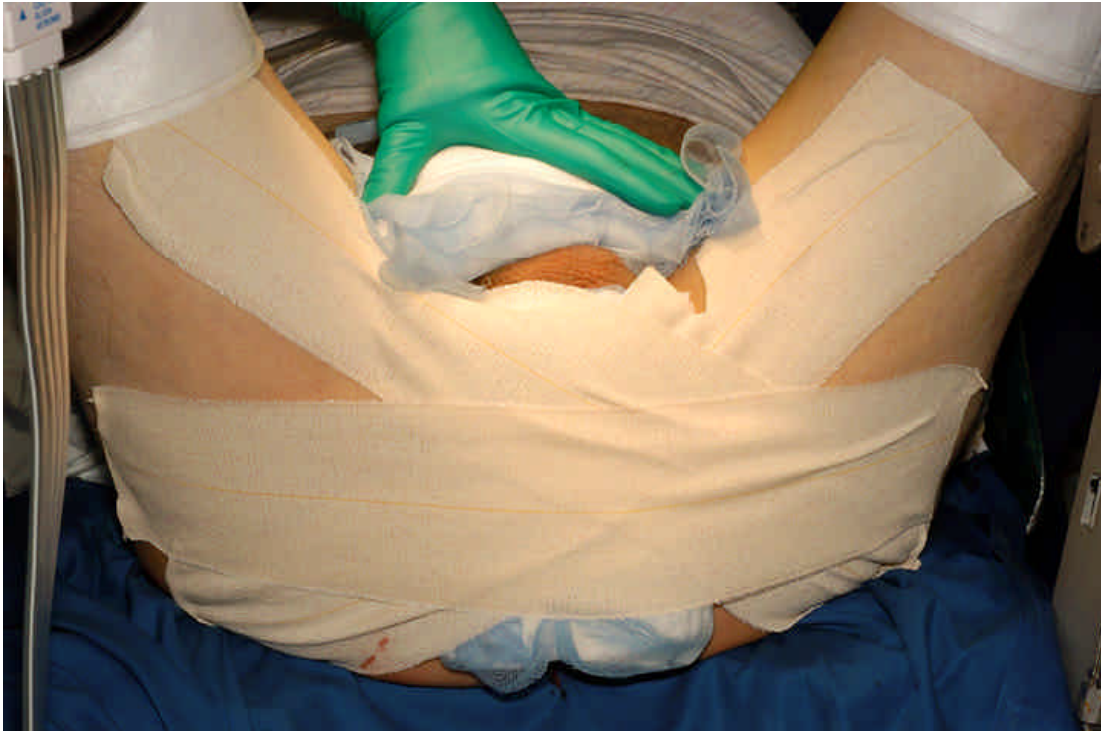
AMS 35

The dead space created by proximal relocation of the urethral bulb should be obliterated as much as possible before wound closure. In order to achieve this the bulbospongiosus muscle is sutured in the midline.



The wound is closed in layers





AMS 38

Trial without catheter 24-48 hours after surgery.

He should restrain from strenuous exercise for 4-6 weeks, along with squatting, extreme leg spreads, climbing and sexual activity.

Insertion of the AdVance™ Sling system does not prevent future surgery in the form of artificial urinary sphincter, InVance™ Sling or penile prosthesis implantation.

References

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- 2 Comiter CV. (2005) The male perineal sling: intermediate-term results. *Neurourol. Urodyn.* 24: 648-653.
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