Revisiting Vesico-urethral anastomosis during open radical retropubic prostatectomy, simple and reproducible technique, a single center experience with 200 cases

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ABSTRACT

Introduction: Vesico-urethral anastomosis (VUA) represents a challenging step of Open Radical Prostatectomy (ORP) because of limitation of space in the depth of men’s pelvis, lack of control on knots during tightening and subsequent inadequate coupling of VUA or breakdown of knots and extremely difficult reapplication of sutures. To facilitate this step of RP we have developed a simple and reproducible technique and report our 8 years' experience.

Technique: We used two extra-long DeBakey tissue forceps to approximate the bladder neck to the urethral stump. We found it more beneficial than Babcock clamp especially in obese patients with excess fatty tissue in pelvic area. Using this technique surgeon's assistant can sweep the fatty tissue away from anastomotic area and make more space for surgeon’s hand and push the reconstructed bladder neck down while the sutures are being tied.

Results: We analyzed data from 200 patients with prostatic cancer who underwent Open Radical Prostatectomy performed from 2009 to 2017. There were only 2 sutures disrupted during knot tying. In two cases (1%) drain output was more than 30 mL/day on postoperative day 2 and drainage was left in place longer. The goal of urinary full continence (0–1 pad/day) has been achieved in 85%, 94% and 98% of patients immediately after catheter removal, 3 months and 6 months after surgery, respectively by adding medications, time voiding and dedicated pelvic floor exercise if needed. Eight patients (4%) developed urethral stricture.

Conclusion: The surgical technique has been shown as independent predictors of urinary continence. We introduce a new simple modification of Vesico-urethral anastomosis during RP. Using this technique; in addition to decrease in anastomotic disruption rate and increasing knot tying control, may affect postoperative urinary continence after ORP.

VUA (Vesico-urethral anastomosis), ORP (Open Radical Prostatectomy), RP (Radical Prostatectomy)
**Introduction**

Radical prostatectomy (RP) is the gold standard treatment for prostate cancer. Perioperative complication rates have been reported between 7.8% and 17.9%, which includes prolonged vesico-urethral anastomotic leak in up to 3.5% of cases and anastomotic stricture in up to 4.9% of patients during follow-up. (1,2)

A key step during the procedure is the formation of a watertight vesico-urethral anastomosis (VUA). This maneuver, however, remains one of the most challenging parts of the surgery, requiring significant training and experience and is commonly a time consuming task even in the hands of an experienced surgeon.

The impact that urethral stricture and urinary incontinency on patient’s quality of life can be devastating even in case of an oncologically perfect surgery. For these reasons, this step must be mastered by any urologist who wants to perform impeccable Radical Prostatectomy. (3)

In laparoscopic RP, running anastomosis is usually used that it is quicker and technically less challenging than interrupted anastomosis. For open Radical Prostatectomy (ORP), most surgeons perform vesico-urethral anastomosis using interrupted sutures because of the difficulty of continuous suturing. (4)

There are numerous studies comparing suturing techniques (i.e. interrupted versus continuous suturing) for Vesico-urethral anastomosis but it seems that limitation of space in the depth of men’s pelvis specially obese patients and lack of control on knots during tightening are important factors that should be addressed first. To facilitate this step of ORP we have developed a feasible and reproducible technique and report our 8 years’ experience.

**Technique**

Between January 2009 and June 2017, 200 consecutive patients with organ confined prostate cancer without considering patient’s characteristics such as age, BMI and comorbidities underwent open retropubic Radical Prostatectomy for clinically localized prostate cancer and applied to have the new vesico-urethral anastomosis modification, which has been approved by the ethical committee of the institution.

Vesico-urethral anastomosis performed using interrupted suturing technique. We used six 3-0 vicryl sutures starting by tightening of the anterior one then move on to the 10-, 8-, 6-, 4- and 2-o’clock positions.

We used two long DeBakey tissue forceps to approximate the bladder neck to the urethral stump. We found it more beneficial than one Babcock clamp in midline while all sutures are tied especially in obese patients with excess fatty tissue in pelvic area. Using this technique surgeon's assistant can sweep the fatty tissue away from anastomotic area and make more working space for surgeon and push the reconstructed bladder neck down and hold it close to urethra while the sutures are being tied. We found it beneficial to prevent tension on sutures that can lead to suture breakdown. Fig 1 &2

**Results**

We analyzed data from 200 patients with prostatic cancer who underwent RP performed from 2009 to 2017. Only 2 sutures disrupted while tying in initial experience. In two cases (2%) we encountered drain output more than 30 mL/day on postoperative day 2 and drain was left in place longer. The goal of urinary full continence (0-1 pad/day) has been achieved in 85%, 94% and 98% of patients immediately after catheter removal, 3 months and 6 months after surgery, respectively by adding medications, time voiding and dedicated pelvic floor exercise. Eight patients (4%) developed urethral stricture.
Discussion

Vesico-urethral anastomosis (VUA) represents a challenging step of Open Radical Prostatectomy (ORP) because of limitation of space in the depth of men’s pelvis, lack of control on knots during tightening and subsequent inadequate coupling of VUA or breakdown of knots and extremely difficult reapplication of sutures. The vesico-urethral anastomosis should create watertight closure with urethral realignment and mucosal coaptation. Disruption of the vesico-urethral anastomotic sutures while tying is not uncommon and reapplication of sutures is often difficult (5). It seems that suture breakdown during vesico-urethral anastomosis is not a rare experience for surgeons who perform Radical Prostatectomy. Imperfect vesicourethral anastomosis can cause significant postoperative urinary extravasation, which result in a longer catheterization time, increased risk of long-term anastomotic strictures and longer hospital stay. Due to high volume of radical Prostatectomy are performed per year in the world, even small differences in surgical outcomes and complications can possibly affect a great number of patients. The rate of urinary incontinence after RP is significantly affected by surgeon experience, surgical technique and definition of continence. The surgical technique has been shown as independent predictors of urinary continence. Beyond any technique used to improve the result of Vesico-urethral anastomosis in short term and long term continence rate, feasibility, convenience and simplicity are important factors that should be addressed initially. (6) Several technical modifications have been introduced to improve postoperative urinary continence. Most studies that address increasing the quality of vesico-urethral anastomosis focus on comparing suture techniques (continuous and interrupted), bladder neck reconstruction and reducing anastomosis time. (7, 8) In this study we introduced this simple technique to facilitate Vesico-urethral anastomosis. It was not intended primarily to evaluate the continence rate and urethral stricture in this study but results are comparable with those obtained using standard techniques, the 12-mo urinary incontinence rates ranged from 4% to 31% that reported by Ficarra et al and 6.9% stricture-related complication reported by Sujenthiran et al after open Radical Prostatectomy. (9, 10)

Conclusion

Although the quality of the Vesico-urethral anastomosis is unlikely to have an impact on oncological outcome of Radical Prostatectomy, it undoubtedly affects functional outcome and quality of life. (11)

Using this simple modification helps to prepare more space in cramped and confined pelvic space to apply proper knot placement and better tissue apposition. This is a preliminary study and we admit without appropriate randomization, studies are prone to confounding bias and to overestimate or underestimate the effect of interest.

References


Figure 1-Using two extra-long Debakey forcepses to forceps to approximate the bladder neck to the urethral stump.
Figure 2 surgeon's assistant can sweep the fatty tissue posteriorly away from anastomotic area.