Title

Management of Recalcitrant Bladder Neck Contracture After Radical Prostatectomy for Prostate Cancer

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ENDOSCOPIC AND OPEN SURGERY

RADICAL prostatectomy (RP) is the most common modality used to treat localized prostate cancer. Bladder neck contracture (BNC) or vesicourethral stenosis is a known complication of RP occurring in 0% to 17.5% of cases.[1] Technical and patient related factors may contribute to the development of BNC.[1] Most BNC can be successfully treated with a single dilation or direct vision endoscopic lysis of the stenosis. Recurrent and recalcitrant BNC after RP represents a challenging clinical scenario that often requires reconstructive techniques to produce a satisfactory outcome, and the most difficult cases arise in the setting of adjuvant radiation therapy. We present our argument for the use of endoscopic techniques and open surgery to treat recalcitrant BNC.

Open surgical repair should be performed only after endoscopic means have been exhausted and dilation techniques (Van Buren sounds, filiforms and followers, and urethral balloons) to treat recalcitrant BNC have failed. Following failed dilation, it is prudent to attempt 1 to 2 additional nonstenting endoscopic procedures such endoscopic lysis with a cold knife or laser, or transurethral resection with electrocautery. Our preference is to start with cold knife endoscopic lysis, which has reported success rates as high as 25% to 87% in uncomplicated cases of BNC,[2] although the recurrence rate is higher for recalcitrant BNC.

Some have had success with laser endoscopic lysis, while others have combined endoscopic lysis with injection of steroids or mitomycin C into the BNC to inhibit scar regrowth.[3] Vanni et al reported on 16 patients treated with quadrant cold knife incisions of the BNC with injection of 0.3 to 0.6 mg mitomycin C in each incision. At a mean followup of 9.4 months (range 3 to 26) 12 patients (75%) had a patent bladder neck without additional intervention. Eltahawy et al used holmium laser endoscopic lysis combined with steroid injection in 24 patients with BNC, and reported an 83% success rate at 24-month followup (range 6 to 72 months).[4] Transurethral resection of dense scar at the bladder neck may help relieve the obstruction but care must be taken to avoid aggressive resection or risk fistula formation. While endoscopic approaches only provide a modest chance of being successful in treating recalcitrant BNC, they are technically straightforward and, if successful, spare the patient complex open surgery.

After failure of endoscopic techniques, patients who have a reasonable life expectancy, and favorable cancer and health status should be offered open surgical excision of the bladder neck scar tissue and reconstruction. Such a reconstruction would typically leave the patient incontinent and they should be counseled that in addition to the initial surgery, they will require a future procedure to treat incontinence. When determining which surgical approach to use, one must consider the BNC length, radiation history and sources of tissue for possible transfer. After RP the bladder becomes less mobile and may put tension on the anastomosis if not properly mobilized. To anastomose the urethra and reconstructed bladder neck, often the corpora cavernosa must be split and the pubic bone excised. We typically use a perineal approach and at times combine it with a lower abdominal incision. After successful resection of the BNC, continence will be restored by implantation of an artificial urinary sphincter (AUS). In patients without appropriate manual dexterity or who do not want an AUS we offer a transperineal sling procedure to aid in controlling the incontinence.

In our experience open surgical reconstruction is superior to UroLume® stenting in patients with a reasonable life expectancy, and favorable cancer and health status.[5] Although more invasive, long-term results are excellent for open repair. Based on 10 cases of complex recalcitrant vesicourethral stenosis after RP, we successfully rehabilitated 7.[5] We reserve urethral stents for patients with a poor functional or cancer status, or those who do not want open repair. We prefer to avoid UroLume endoprosthesis because 1) if placed near the trigone, urinary urgency, frequency or dysuria may ensue, 2) if placed too distally, the patient may have perineal

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discomfort when sitting, 3) the stent is a foreign body and carries a lifelong infection risk, 4) the stent may re-stenose either due to recurrent scar tissue or calculi requiring endoscopic excision, 5) if stenosis recurs after an AUS has been placed, repeated endoscopic interventions may harm the AUS, and 6) once placed, the endoprosthesis is extremely difficult to remove, requiring an open surgical approach.

Rarely, there may be cases of recalcitrant BNC that cannot be rehabilitated after failure of endoscopic and open surgical approaches. In such cases urethral or suprapubic catheter drainage can serve as a short-term management option but a poor long-term option. Patients amenable to a long-term solution should be offered urinary diversion with an ileal or colon conduit, or a catheterizable pouch.

In conclusion, endoscopic and open surgical reconstruction should be initial therapy for recalcitrant BNC. This approach offers improved long-term outcomes and lower complication rates compared to the use of the UroLume endoprosthesis for BNC.

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UROLUME STENT

We previously reported that even the most severe anastomotic contractures may be managed using such a minimally invasive approach as UroLume stenting of the contracture with acceptable outcomes.[1] For men with a totally obliterated outlet, we always make at least 1 attempt at endoscopic recanalization followed by self-calibration using a 16Fr catheter on an increasing interval schedule of once daily for 1 week, every 2 days for 2 weeks, every 3 days for 3 weeks and so on, until they reach once weekly for 7 weeks at which time they can stop catheterizing if they are asymptomatic.[1] Only if this fails to result in a stable patent anastomosis would we repeat the incision and place a UroLume stent across the anastomosis.

As the placement of a UroLume stent jeopardizes sphincter function, the patient must be counseled about the risk of incontinence and be prepared for an AUS. We have elected to wait only 4 to 6 weeks after stent placement before placing the AUS, performing endoscopy at the end of this period to ensure that the stent has not migrated or that significant inflammatory ingrowth has not occurred. Later stent ingrowth is managed using the holmium laser through a small flexible endoscope (ureteroscope) to minimize jeopardy to the artificial sphincter.

However, since our previous report Borawski and Webster described longer term followup of 40 men treated with a UroLume stent followed by AUS.[2] This recent study painted a much gloomier portrait of long-term outcomes of combined UroLume/AUS management as 50% of those men required an average of 2.25 subsequent endoscopic operations for stent ingrowth. They also were at increased risk for AUS erosion, possibly related to repeat procedures for stent ingrowth.

Wessells et al reported successful establishment of patency in 4 men using primary excision with an end-to-end reanastomosis, open fasciocutaneous flap, free graft urethroplasty with rectus muscle flap or anterior bladder tube with omental pedicle flap procedure.[3] All 4 men had long-term urethral patency but were incontinent. Schlossberg et al reported successful patency and continence in 2 patients after open surgical repair by combining abdominal and perineal dissection, partial pubectomy, omental wrapping and repeat anastomosis.[4] Although urethral reconstruction is feasible via an abdominoperineal approach,[3–5] it is an extensive and potentially morbid operation that does not necessarily restore continence and still requires AUS placement.[2]

The population of men who are candidates for a UroLume stent combined with AUS should represent a different patient population than those who are candidates for formal urethral reconstruction. Men who have undergone radiation therapy, seed implantation and even cryotherapy are, from an anatomic standpoint, not ideal candidates for reconstruc-