

URETHROPLASTY IN PATIENTS OLDER THAN 65 YEARS: INDICATIONS, RESULTS, OUTCOMES AND SUGGESTED TREATMENT MODIFICATIONS

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ABSTRACT

Purpose: Despite an aging population, the results of urethroplasty in elderly patients have not been extensively reported. We performed a multi-institutional review of urethroplasty results in 70 elderly males to determine outcomes.

Materials and Methods: We reviewed all urethroplasties performed on males older than 64 years with at least 6 months of followup at 4 medical centers. Stricture type varied and included anastomotic urethroplasty (44%), penile fasciocutaneous onlay flap (31%), Johanson urethroplasty (stage 1, 6%, stages 1 and 2, 4%), buccal mucosa grafts (7%), foreskin grafts (6%) and meatoplasty (1%).

Results: Stricture recurred in 11 (16%) patients, but was managed with a single direct visual internal urethrotomy or dilation in 5 of 11 patients, yielding a final success rate of 91%. Recurrent strictures were more common after fasciocutaneous flaps (7 of 22 cases, 32%) than end-to-end urethroplasty (2 of 31 cases, 6%, $p < 0.05$). Compared to patients younger than 65 years there were more treatment failures, but this was not statistically significant. Perioperative complications were uncommon. Moderate bladder outlet obstructive symptoms developed in 3 patients due to benign prostatic hyperplasia. Notably 6 patients treated previously for post-radiation strictures did well without complications.

Conclusions: Older men tolerate urethroplasty and these data indicate that therapy should not be withheld solely on the basis of age. The potential for impaired flap blood supply in this population is suggested but has not been proven. Benign prostatic hyperplasia must be considered in those patients who have decreased stream after stricture repair.

KEY WORDS: urethral stricture, geriatrics, treatment outcome

Urethroplasty has proven efficacy and a low complication rate.¹ Although more technically demanding than direct visual internal urethrotomy (DVIU) or dilation, it is considered by many to be superior because DVIU and dilation have an unacceptably high failure rate (50% failure after the first procedure, 100% failure after the second).^{2,3} Many recommendations have been published which advocate certain procedures for certain strictures (such as anastomotic urethroplasty for short bulbar strictures,⁴ buccal mucosa onlay graft urethroplasty for long bulbar strictures without spongiofibrosis³ and penile fasciocutaneous onlay flaps in complex or long strictures⁵) but less has been written about which patients should and should not undergo open urethroplasty. Specifically, despite an aging population, the indications and results of open urethroplasty performed on elderly patients have to our knowledge never been independently reported. We performed a multi-institutional review of urethroplasty results in 70 elderly males to determine if outcomes were compara-

ble to those of a population of younger controls. Specifically we determined if complications or increased failure rates could be attributed to advanced patient age.

METHODS AND PATIENTS

We conducted a retrospective chart review of 70 consecutive patients operated on between April 1979 and April 2001 from 4 hospital centers using a standard summary form to collect data. Of the 70 procedures 65 (92%) were performed after 1994. Preoperative variables included American Urological Association symptom score, flow rate, post-void residual, stricture length, stricture location, stricture etiology and type of urethroplasty. Postoperative variables included early complications, late complications, American Urological Association symptom score, flow rate, post-void residual and results of postoperative urinary imaging studies.

Patients received perioperative prophylactic antibiotics and were free of urinary infection at the time of surgery. Standard principles of urethroplasty including careful tissue handling, watertight closure, loupe magnification and careful lithotomy positioning were followed. In general the patients were treated in a similar fashion since all attending surgeons were trained similarly in the same Reconstructive Urology Fellowship (with JWM). In general stricture length determined the choice of operation with those less than 2.5 cm

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undergoing anastomotic urethroplasty, 2.5 to 5 cm, buccal mucosal onlay grafting and greater than 5 to 7 cm fasciocutaneous flap. Surgical failure was defined by the need for any postoperative manipulation including cystoscopy (with gentle dilation of filmy recurrent stricture), dilation, DVIU or repeat urethroplasty. Statistical analysis was performed using Excel 2002 (Microsoft, Redmond, Washington).

RESULTS

There were 70 patients with a mean age of 71 years (range 65 to 82). Of the 30 patients 18 (60%) were the so-called "old elderly," that is older than 74 years. Mean followup was 74 months (range 7 to 245). Most patients (80%) had 1 stricture, although 20% had multiple strictures. Strictures were long, averaging 4.4 cm (range 1 to 17). Stricture etiology was varied (table 1) as was the type of urethroplasty performed (table 2).

Among patients with short strictures, less than 3 cm, the majority (12 of 15 or 80%) underwent anastomotic urethroplasty, with the majority of patients with longer strictures undergoing penile fasciocutaneous onlay flaps or buccal grafts. Perioperative complications were uncommon (table 3). Notably, symptoms of bladder outlet obstruction developed in 3 of 70 patients (4%) with prostatic hypertrophy in followup without cystoscopic or radiological evidence for stricture recurrence.

Stricture recurred in 11 of 70 (16%) patients. Of these patients 5 were treated with a single DVIU and another 5 of the 11 were treated with urethral dilation. Only 1 patient required repeat urethroplasty, yielding a final success rate of 91%. Recurrent strictures were more common after fasciocutaneous onlay flap (7 of 22, 32%) than end-to-end urethroplasty (table 4, $p < 0.05$). Six patients who received previous prostate radiotherapy for prostate cancer did well and did not have recurrence after urethroplasty. The incidence of restri-cture was compared to that of a group of similar patients younger than 65 years in whom urethroplasty was performed at the University of California, San Francisco (table 4), and success rates were not statistically different.

DISCUSSION

The results of anterior urethroplasty in the elderly have not been widely reported, and little similar data have been reported. Thomalla suggested that hypospadias repair in the elderly is feasible and presented 2 successful patients.⁶ Mundy reported that in small numbers of patients requiring posterior anastomotic urethroplasty, age older than 55 was associated with increased rate of failure, from 7% to 57%.⁷ However, age made no difference in that series when posterior "patch" urethroplasty was used. The author suggests that the poor results after posterior urethroplasty in the elderly may be due to decreased retrograde spongiosal blood supply and subsequent ischemia, especially in those patients whose posterior urethral distraction injury has already interrupted the anterograde urethral blood supply.

There are theoretical concerns with performing urethroplasty on the elderly because intercurrent illness in this population could result in higher complication rates or lower success rates, especially when flaps and grafts are used.

TABLE 1. Etiology of urethral stricture

	No./Total No. (%)
Unknown	30/70 (43)
Trauma	10/70 (14)
Prolonged catheter drainage	10/70 (14)
External beam radiation	6/70 (9)
Infection	5/70 (7)
Previous urethral surgery	5/70 (7)
Radical prostatectomy	2/70 (3)

TABLE 2. Method of stricture repair

	No./Total No. (%)
Anastomotic	30/70 (44)
Fasciocutaneous flap	22/70 (31)
Buccal mucosa graft	5/70 (7)
Foreskin graft	4/70 (6)
Johanson stage 1 (perineal urethrostomy)	4/70 (6)
Stages 1 and 2 Johanson	3/70 (4)
Meatoplasty	1/70 (1)

TABLE 3. Perioperative complications

	No. (%)
Scrotal hematoma requiring drainage	1 (1)
Death from unknown cause postop day 7	1 (1)
Urethrocuteaneous fistula	1 (1)
Minor wound dehiscence	1 (1)
Catheter dislodgement + anastomotic disruption	1 (1)
Pulmonary edema	2 (3)
Self-limited lower extremity neuropathy	3 (4)
Postop bladder outlet obstruction secondary to BPH	3 (4)

TABLE 4. Comparison of restri-cture rates

	% Anastomotic Urethroplasty	% Fasciocutaneous Urethroplasty
Pts older than 65 yrs	16	32
Pts younger than 65 yrs	6	22
p Value (t test)	0.95	0.96

Microvascular insufficiency either alone or in conjunction with diabetes could potentially limit flap and graft viability. Peripheral vascular disease could increase the potential for ischemic extremity injury while in high lithotomy position. Finally, cardiac and renal insufficiency increases the risk of postoperative pulmonary edema even when intravenous fluids are judiciously provided. However, high complication rates were not seen in our series, nor in other published series analyzing the results of other types of surgery in the elderly such as major abdominal operations.⁸ Specifically, we did not see any injuries relatable to the high lithotomy position, although it has been reported elsewhere that those older than 70 years are at significantly increased risk for neuropraxia after surgery requiring high lithotomy position.⁹ Even the oldest 42 patients in our series, the "old-elderly" who were older than 74 years of age, did well in this series.

While a trend toward higher failure were seen when fasciocutaneous urethroplasty was used in this population, strictures also tended to be longer in this group. Therefore, we conclude that urethroplasty is an acceptably efficacious option when required in these patients because overall results were acceptably good. Only 1 patient required repeat open urethroplasty. In general greatly increased age specific complications were not seen, although we did encounter postoperative bladder outlet obstruction attributable to benign prostatic hyperplasia (BPH), which highlights the importance of considering this entity when patients have poor urinary flow or high post-void residual after urethroplasty. Early medical treatment of BPH in these patients is suggested, and the presence of severe BPH has prompted us to pretreat some of our patients with finasteride, which can be expected to shrink the prostate by an average of 25% after 8 months of treatment.¹⁰

A modification of our usual treatment scheme that was applied to this elderly cohort was the use of perineal urethrostomy in selected patients who were unable or unwilling to undergo more complex urethroplasty. Although we used this relatively rarely, in only 4 of 70 patients (table 2), it was a particularly useful option in those with long strictures who would require major 1 or 2-stage reconstruction, especially in those unconcerned about the body image changes that a

permanent perineal urethrostomy may entail. It has a high success rate and has the potential to provide lifelong palliation for even the most severe strictures.

In this series we successfully treated 6 bulbar strictures with anastomotic urethroplasty in patients who had undergone prostatic radiation therapy for prostate cancer. Published data on the best approach to urethroplasty in an irradiated field are lacking. However, previous radiation therapy was relatively common in this elderly population, and they were treated successfully despite the theoretical potential for poor healing in an irradiated field.

CONCLUSIONS

Urethroplasty in an older cohort of males is associated with low complication rates, and although rates of re-stricture generally appear higher in this population, they remain acceptable when considering the lifelong benefits of repair. Large numbers of age specific complications were not seen, although postoperative urinary obstruction from BPH requiring treatment was seen in a significant minority of patients. Urethroplasty in older men may require surgery to be completed in previously irradiated tissue fields, and selected willing patients may benefit from the application of a perineal urethrostomy technique to bypass severe distal stricture.

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