

Tubercular ureteric strictures

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Abstract

Objective: To review the presentation of tubercular ureteric strictures and assesses the role of balloon dilatation and open surgical repair in their management.

Methods: This was a retrospective review of tubercular ureteric strictures managed between January 1993 and December 2002. The records were analyzed to assess clinical presentation and compare the results of balloon dilatation with open surgical repair. Success was defined as adequate drainage on imaging, no worsening of renal function, no recurrence of symptoms and no requirement of intervention on further follow up. The long term success rates were compared using the t-test for proportion.

Results: Of 73 strictures, 88% had lower urinary tract symptoms. Genital abnormalities suggestive of tuberculosis was observed in 40% male patients. Urine examination yielded aseptic pyuria in 85%, positive AFB smears in 36% and positive AFB cultures in 32%. A small capacity bladder and non-functioning renal units were the only consistent findings on intravenous urogram. Nephrectomy was performed in 37% cases due to non salvageable kidneys at presentation. The success rate of stenting fell from 93% on immediate follow up to 59% on a follow-up of 12 months. At 90% success rates on a follow-up of 7 months open surgical repair was superior ($p < 0.03$). Long term success following balloon dilatation in renal units with good function was 78% compared to 25% for poorly functioning units. ($p = 0.01$)

Conclusion: Open surgical repair is superior to balloon dilatation in the management of tubercular ureteric strictures. Renal function may predict the success of balloon dilatation (JPMA 55:414;2005).

Introduction

Tubercular ureteric strictures can pose dilemmas in diagnosis as well as management.^{1,2} A review of the clinical presentation and results of standard clinical tests for the diagnosis of tubercular strictures revealed Balloon dilatation to be a safe and convenient method of management of these strictures.³ Does this convenience justify a minimally invasive approach? How durable are its success rates in comparison to open surgical reconstruction? Is there a subset of patients who may fare better than others with balloon dilatation? All these questions need an answer. This study attempts to analyze the various treatment options for tubercular ureteric strictures.

Patients and methods

This was a retrospective review of tubercular ureteric strictures managed between January 1993 and December 2002. The records were analyzed to assess clinical presentation and compare the results of balloon dilatation and DJ stenting with that of open surgical repair. Confirmation of tuberculosis was based on urinary smears for acid fast bacilli, urinary cultures or positive histopathology. The short and long term results of balloon dilatation and stenting were compared to that of open surgical repair. The standard procedure for balloon dilatation involved inflation with a 5 cm long 15F balloon using a uromax high pressure microvasive balloon at 14 atmospheres with the dilatation being carried out for 2 minutes. After ensuring the disappearance of waisting, the balloon was kept inflated for

another 2 minutes. A 6F polyurethane stent was left in place for 6 weeks. The patients were managed under the guidance of a single consultant, who made the decision to dilate or perform open surgery. Stenting was considered for solitary, partial strictures less than 1cm long. Multiple or complete strictures; and strictures longer than 1cm underwent open repair. All patients had an imaging study (DTPA renogram or IVU) within 7 to 10 days following stent removal. Short term success was defined as adequate drainage noted during imaging. Those who had at least one imaging study a minimum of 3 months after stent removal were included as patients with a long term follow up. Success in this group was defined as adequate drainage on imaging, no worsening of renal function, no recurrence of symptoms and no requirement of intervention on further follow up.

Patients were subdivided on the basis of a DTPA renogram into those with (>30%) and those with poor (<30%) function and the results of balloon dilatation were assessed in these two groups. Patients who were lost to follow up were excluded while calculating long term success rates. The long term success rates were compared using the t-test for proportion.

Results

There were 73 tubercular strictures in 38 males and 35 females. Their ages ranged between 11 and 62 years. At presentation, 88% had lower urinary tract symptoms, 23% flank pain, 36% haematuria, 10% weight loss and 40% of

men had abnormalities suggestive of tuberculosis on genital examination. Urinary examination yielded aseptic pyuria in 85%. Smears for AFB were positive in 36% and AFB cultures in 32%. The intravenous urogram was available for review in 57 patients. The findings are noted in table 1. A small capacity bladder and non functioning renal units were the only consistent findings. There were 6 patients with isolated ureteric strictures, causing a difficulty in diagnosis of tuberculosis. Five of these patients presented with LUTS, 1 had only flank pain but all had aseptic pyuria. Diagnosis was based on ureteroscopic biopsy in 3, open ureteric biopsy in 1, axillary lymph node biopsy in 1 and was empirical in 1.

IVU finding	Number	Percentage
Non Functioning kidneys	27	47%
Thimble bladder	25	44%
Calyceal cut off	4	07%
Infundibular stenosis	3	5%
Cavitation	2	3%
Isolated strictures	6	11%

Table 1. Intravenous urogram findings in tubercular strictures.

Twenty seven patients (37%) had non salvageable kidneys at presentation and underwent nephrectomy. Balloon dilatation and DJ stenting was performed in 31 patients and 19 underwent open repair. The success rate of stenting fell from 93% on immediate follow up to 59% on a median follow up of 12 months (Table 2).

Etiology	Success after DJ stent		Median Follow up (months)
	Short term	Long term	
Tubercular	22/25 (93%)	10/17 (59%)	12 (3 -96)

Table 2. Short and long term success rates after balloon dilatation.

Open repairs encompassed a wide range of procedures including ureteroureterostomy, ureteric reimplants, Boari flaps and ileal replacement. Stenting was done only for solitary, partial strictures less than 1cm. Multiple or complete strictures; and strictures longer than 1cm underwent open repair. At 90% success rates on a median follow up of 7 months the results of open surgery were statistically superior ($p=0.03$) (Table 3). The impact of renal function on the success of balloon dilatation was also assessed. Patients were subdivided on the basis of a DTPA renogram into those with good ($>30\%$) and poor ($<30\%$) function. Long term success following balloon dilatation in renal units with good function was 78% compared to 25% for poorly functioning units. This difference was again statistically significant ($p=0.01$). Nine of the 10 failures in the bal-

Table 3. Long term success rates of open procedures compared to that of balloon dilatation.

Aetiology	Open repair		Balloon dilatation		P value
	Long term success	Follow up (months)	Long term success	Follow up (months)	
Tubercular	17/19 (90%)	7 (2-84)	10/17 (59%)	12 (3-96)	0.03

loon dilatation group underwent nephrectomy, whereas 1 patient was salvaged with uretero-ureterostomy.

Discussion

Tubercular strictures are common entities in the spectrum of genitourinary tuberculosis.

Genitourinary tuberculosis is uncommon in children⁴ and our youngest patient was 11 years old. In Gow's series 20% patients did not have aseptic pyuria.¹ This correlates well with the 85% aseptic pyuria encountered in our study. In 10-15% of patients with genitourinary tuberculosis intravenous urogram findings may be normal.² We had 6 patients (11%) with isolated strictures. The urinary bladder is reportedly involved in upto one third of cases.⁵ In our series 44% patients with tubercular strictures had bladder involvement. At presentation 37% of patients had primarily non-functioning, non-salvageable kidneys and underwent nephrectomy.

Surgeons usually need to make a choice between a short endoscopic procedure and a more complicated open repair in patients who present with salvageable kidneys. In the group which underwent balloon dilatation and DJ stenting success rates fell from 93% on immediate follow up to 59% on long term follow up. Studies with small numbers of patients have reported 100% success rates with endoscopic treatment^{6,7} but larger studies have reported success in the range of 50-64%.^{3,8-10} Open repair had a success rate of 90% in our study. Clearly, although less morbid, balloon dilatation is also less successful when compared to open repair. These results hold true inspite of the fact that strictures selected for open repair were longer and more complex than those undergoing balloon dilatation.

The results of balloon dilatation can be predicted to some extent on the basis of baseline renal function. Poorly functioning units had a 25% success rate as compared to 78% in kidneys with good function. Decreased urine flows as well as lesser amounts of growth factors produced by the poorly functioning kidney have been implicated to explain these differences.¹¹

The study concluded that absence of aseptic pyuria does not exclude tubercular strictures. Balloon dilatation and stenting gives better results in patients with isolated strictures, a good functioning kidney and absence of a contracted bladder. Multiple and long strictures associated with a contracted bladder are best treated by open surgery.

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