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Original Article

Erectile dysfunction in anterior urethral strictures after urethroplasty with reference to vascular parameters



Soumya Mondal^a, Anindya Bandyopadhyay^b, Murari Mohan Mandal^c,
Dilip Kumar Pal^{d,*}

^a Post Doctoral Trainee, Department of Urology, Institute of Postgraduate Medical Education & Research, Kolkata 700020, India

^b Assistant Professor, Department of Radiology, Institute of Postgraduate Medical Education & Research, Kolkata 700020, India

^c Demonstrator, Department of Community Medicine, Institute of Postgraduate Medical Education & Research, Kolkata 700020, India

^d Professor and Head, Department of Urology, Institute of Postgraduate Medical Education & Research, Kolkata 700020, India

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ABSTRACT

Background: Relation of erectile dysfunction (ED) with urethroplasty has long been a subject of debate. Very few studies on subcontinent population are available in this regard and still rarer are studies assessing vascular parameters of ED following urethroplasty. The objective of the study was to assess the incidence and prevalence of ED in patients of urethral stricture disease, and to find out effect of urethroplasty on ED after six months of operation including vasculogenic aetiology after operation.

Methods: From January 2014 to December 2015, 35 subjects underwent urethroplasty. They were assessed pre- and postoperatively by International Index of Erectile Function (IIEF-5) and Pharmacological Colour Doppler Ultrasonography (PCDU) for a period of 6 months.

Results: Preoperative prevalence of ED assessed by IIEF was found to be 82.8%. Postoperative incidence of ED was 28.5% and new onset ED is 50%. There was no significant change in IIEF values and values of peak systolic velocity and resistive index of cavernosal artery over time.

Conclusion: There is significant prevalence of ED with urethral stricture. Despite significant postoperative incidence of ED after urethroplasty, the surgical procedure per se does not result in ED.

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* Corresponding author.

E-mail addresses: drdkpal@yahoo.co.in, urologyipgmer@gmail.com (D.K. Pal).

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Introduction

Erectile dysfunction (ED) is estimated to have a prevalence rate of 10–20% worldwide in males more than 20 years of age,¹ with the majority of studies reporting a rate closer to 20%.² About 2.3% prevalence of ED has been reported in patients with urethral stricture after urethroplasty. For management of anterior urethral strictures, buccal mucosa graft (BMG) urethroplasty (as first described by Humby et al.³ in 1941) and anastomotic urethroplasty (as described by Jordan et al.⁴ in 1914) are being widely used. ED post-urethroplasty has been a matter of debate for long. ED adversely affects quality of life. It can be psychogenic or organic. Normally, it is assessed by various questionnaires, of which International Index of Erectile Function (IIEF) is a tried and tested type.^{5,6} For assessment of vascular causes of ED, peak systolic velocity (PSV) and resistive index (RI) of penile blood flow are measured by Colour Doppler Ultrasonography, with cut-off values being 35 cm/sec and 0.9 for PSV and RI, respectively.⁷ Our study aims at detecting the incidence and prevalence of ED in patients of urethral stricture disease, and to find out effect of urethroplasty on ED after six months of operation including vasculogenic aetiology after operation.

Materials and methods

Our study was a prospective study conducted in the Department of Urology and Radiodiagnosis. The study population included patients attending urology outpatient department (OPD) and diagnosed with urethral stricture between January 2014 and December 2015.

Sample size and sampling design: considering 2.3% prevalence rate of presence of ED among the patients of urethral stricture⁸ and considering 95% confidence limit, absolute precision of 5, the initial sample size of 35 was calculated as per the formula $n_i = Z^2pq/e^2$ (where $Z = 1.96$, $p = 2.3$, $q = 97.7$, $e = 5$, and $n_i =$ calculated initial sample size). As the initial estimated sample size is less than 10% of the total target population (about 15,000 urology OPD attendance/year of last three year average), the fpc (finite population correction) was not adopted.

Urology OPD was chosen purposively. After obtaining approval from the Institutional Ethical Committee, patients of urethral stricture were identified. The identified patients were assessed by various diagnostic modalities like retrograde urethrogram (RGU), micturating cystourethrogram (MCU), uroflowmetry and cystoscopy, and patients fit for operation (urethroplasty) were selected. Then the selected patients were counselled and consent for participation in the study was sought. The willing patients, who fulfilled the inclusion and exclusion criteria, were then admitted in the Department of Urology and recruited as study subjects in the cohort. Initial assessment included socio-demographic information along with preoperative assessment of ED. This was done by the International Index of Erectile Dysfunction (IIEF-5) score and Pharmacological Colour Doppler Ultrasonography (PCDU). The operations were performed by different surgeons using similar

infrastructure. After the operation, two more assessments of ED were performed, eight weeks and six months after the operation, respectively. One by one recruitment of study subjects was done during the first one year of study period till the cohort of 35 subjects was completed. The whole cohort was closed after final assessment of the 35th subject. Thus, 35 male patients of urethral stricture constituted the study subject cohort.

Inclusion criteria: Sexually active males with anterior stricture urethra requiring urethroplasty, who are willing to undergo intervention and follow-up.

Exclusion criteria: Mentally distressed patients as assessed by Kessler Psychological Distress Scale (K10) scale^{9,10} and patients having recurrent urethral stricture.

Study variables

Socio-demographic variables studied were age, education, occupation, and socio-economic status (modified and updated BG Prasad Scale). Morbidity related variables were site and length of the stricture, presence of any other comorbidity, operative procedure undertaken, development of ED following urethroplasty, and vascular flow to the penis before and after urethroplasty.

Parameters measured: Preoperative prevalence rate of ED in stricture urethra patients and incidence rate of ED after urethroplasty.

Study techniques: After proper evaluation by history and examination, patients who conformed to inclusion and exclusion criteria underwent the mentioned procedures.

1 Technique of Pharmacological Colour Doppler Ultrasonographic study (PCDU):

After proper counselling regarding the procedure and the complications, the patients were subjected to Colour Doppler flow study of flaccid penis done in supine position with the penis on the anterior abdominal wall. With the (7.5–14 MHz) linear array transducers, the study was done from glans to base. PSV and RI of cavernosal artery were consistently measured at the junction of the proximal one-third and distal two-third of the penile shaft. After that, 30–60 mg of Papaverin was injected in the corpora cavernosa avoiding the 11 and 1 'o' clock positions. Patients were left alone for 2–3 min with a visually stimulative media if required. PSV and RI were again measured serially till maximum PSV was reached. PSV 35 cm/s and RI of 0.9 were taken as cut-off values.

2 Technique of urethroplasty:

Buccal/lingual mucosal graft (BMG/LMG) urethroplasty was done in strictures, which were more than 2 cm and in pan urethral strictures. With the patient in dorsal lithotomy position, a midline perineal incision was given. After separation of Colles' fascia and bulbo-spongiosus muscle, urethra was mobilized in one side of the diseased segment. BMG was harvested from the inner surface of either cheek (distal extent being about 1 cm from the vermilion border and proximal extent as required), taking care to avoid the Stensen's duct orifice (parotid duct) that lies opposite to the crown of upper second molar tooth. Dissection was done in the submucosal plane. LMG was harvested from ventral

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