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COMPARATIVE STUDY BETWEEN DORSAL INLAY BUCCAL MUCOSAL GRAFT(BMG) URETHROPLASTY TO DORSOLATERAL BMG IN THE MANAGEMENT OF LONG ANTERIOR URETHRAL STRICTURE

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ABSTRACT **OBJECTIVES:** Urethroplasty can be done by placing buccal mucosal graft (BMG) ventrally, dorsally or dorsolaterally. The objectives of our study were to compare the success rate between dosal bmg and dorsolateral BMG in the management of urethral stricture.

MATERIALS AND METHODS: This is a prospective study of total 88 patients with stricture of anterior urethra over a 2 year period. Out of 88 patients 30 were treated with dorsolateral onlay BMG urethroplasty and 58 patients were treated with dorsal BMG urethroplasty.

RESULTS: The etiology of stricture was lichen sclerosus in 39.8%. Panurethral strictures were more common. The mean length of stricture was 9.31 ± 2.46 cm. 20% had minor complications at surgical site. During the followup of months success rate was 93.94% in bulbar strictures, 97.83% in penile strictures, and 84.21% in panurethral strictures.

CONCLUSION: When compared to dosral onlay BMG urethroplasty, Dorsolateral onlay BMG urethroplasty avoids the extensive circumferential mobilization of the urethra and preserves vascular, muscular and neurogenic support. The morbidity and complications are low and outcomes are excellent. Dorsal inlay (Asopa Technique) is easy to carry out, provide shorter operative time and less blood loss. Urethal dissection and rotation is not required, so blood supply is not affected.

KEYWORDS :

INTRODUCTION:

Urethral stricture is a relatively common disease in men with different etiologies[1]. The management of urethral stricture in males is one of the oldest problems known to urology. Various modalities of treatment ranging from simple dilatation, internal urethrotomy, resection and end to end anastomosis and various urethroplasties have been advocated over the years but, even today there is not much agreement as to the best mode of tackling this problem. The two-stage urethroplasties with or without use of free graft are the conventional techniques used for the treatment of long anterior urethral strictures. Although augmented anastomotic techniques are currently suggested for these kinds of strictures, the material for reconstruction (flap or graft) and location of the graft on the urethral surface (ventral or dorsal) has become a contentious issue. Buccal mucosa graft for urethroplasty is highly beneficial because of its excellent short and long-term results. It has become an ideal urethral substitute because of ease of harvest and its early in-growth and graft survival[2]. In many series authors reported repair of urethral stricture by single stage buccal mucosal graft urethroplasty (BMGU) by placing buccal mucosa ventrally, dorsally or dorsolaterally[3]. In our present study we have proposed to compare the dorsal inlay BMG with dorsolateral BMG urethroplasty. The objectives of our study were to evaluate the clinical outcome and complications and compare between dorsal and dorsolateral BMGU.

MATERIALS AND METHODS:

This is a prospective study of 88 patients with stricture of anterior urethra (bulbar and penile urethra) treated in Department Of Urology, Patna Medical College And Hospital, patna during the period of November 2017 to September 2019. 30 patients were treated with the modified technique of BMGU (Dorsolateral onlay BMGU) by a unilateral urethral mobilization approach while 58 patients were treated with dorsal onlay BMGU. Patients having short segment(<1CM) stricture, etiologies other than inflammatory like iatrogenic, traumatic and idiopathic were excluded from the study. Preoperative studies included retrograde urethrography, voiding cystography, and urethroscopy.

BMG was harvested from inner aspect of lip. The harvested graft fat and submucosal layers were removed using scissors for thinning, before it was applied as a patch. Graft was tailored to the shape of incision. Mouthwash with povidone iodine and oral solution was started 2 days before graft and continued post-operative for 3 days. Complications at the surgical site and donor site complications were also assessed. The data were analyzed using SPSS software (version 16.0) with chi-square test. values less than 0.05 were considered statistically significant. We analyzed the results including success and complication rates and age, history of previous surgery, and etiology of strictures.

RESULTS:

This prospective study was done in 88 male patients with anterior urethral stricture. Mean age of the study group was 49 years (range 30-70 years). The Etiology of inflammatory strictures was lichen sclerosis in 35 patients and Gonococcal urethritis in 11 patients, trauma in 7 , catheterization in 7, transurethral resection (TURP) in 3 and unknown in 25 Patients.

Table 1: showing etiology of stricture

Etiology	No. of patients	Percentage
Lichen sclerosis	35	39.8%
Gonococcal urethritis	11	12.5%
Trauma	7	7.9%
Catheterization	7	7.9%
Turp	3	3.4%
Idiopathic	25	28.4%

The commonest presentation was difficulty in passing urine (LUTS) which occurred in 83 % of the patients. Acute urine retention was seen in 20 % of the patients. Three patients with Gonococcal urethritis had past history of urethral discharge. Two patients came to our department with in situ suprapubic catheter.

In the study group, treated with dorsolateral BMGU, strictures were located at bulbar urethra in 5 patients, at penile urethra in 12 patients and panurethral involvement in 13 patients. In the study group, treated with dorsal BMGU, strictures were located at bulbar urethra in 16 patients, at penile urethra in 23 patients and panurethral involvement in 19 patients.

Table 2: site of strictures

Site of stricture	No. of patients treated by dorsal BMGU	No. of patients treated by dorsolateral BMGU
Bulbar	5	16
Penile	12	23
penobulbar	13	19

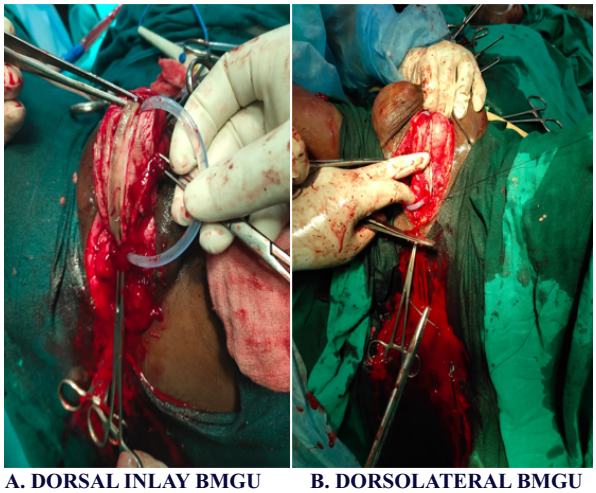
The mean length of the stricture in the study was 9.31 ± 2.46 cm.

At the Buccal mucosal harvest site, since the defect was not sutured and left to heal by granulation tissue formation; most of the patients had minor discomfort in the first two post operative days. Restriction of mouth opening was seen in 6 patients. Oral numbness was noted in 3 patients. One patient had reactionary bleeding and two patients had delayed healing. All these patients were managed with conservative treatment.

Out of the 30 patients treated with dorsolateral BMGU, complications were noted in 7 patients. Infections, haematoma and scrotal swelling were the early complications noted in the study group. These complications were managed with conservative treatment. During follow up of patients at 3 months, one patient presented with meatal stenosis.

Out of 58 patients treated with dorsal BMGU, complications were wound infection in 5 , ring stenosis resulting in urethrotomy in 4, meatal stenosis in 3, and mild chordee in 1 patient.

In our study success noted was 96% in patients treated with dorsolateral BMGU and 97.8% in patients treated with dorsal inlay BMGU.



A. DORSAL INLAY BMGU **B. DORSOLATERAL BMGU**

DISCUSSION:

In non industrialized countries, urethral stricture is more commonly infectious or inflammatory in origin and, thus, typically affects a much younger population and with more frequency than in the West[4]. The average age group in our study was 49 years. Barbagli has proposed a classification scheme for lichen sclerosus atrophicus (LSA) inflammatory strictures and of the disease process when it involves the penis and urethra[5]. His proposal is as follows:
Stage 1: LSA only involves the foreskin.

Stage 2: LSA involves the foreskin, the coronal sulcus and meatus.

Stage 3: The foreskin, glans, and external meatus are effected, as well as an associated stricture of the fossa navicularis and anterior urethra. At times, the infectious process spreads to the glands of Littre and the patient develops a pan urethral stricture.

Stage 4: An associated premalignant or cancerous lesion is also present.

Inflammatory strictures secondary to Gonococcal urethritis, are relatively very uncommon today. At the turn of the century or in contemporary undeveloped countries, more than 90% of strictures are inflammatory, and commonly involve the bulbar and pendulous urethra. In the study group, most of the patients presented with strictures secondary to lichen sclerosis (35 out of the 88 patients).

STANDARD DORSAL INLAY PROCEDURE: In lithotomy position and under general anesthesia, Midline of the perineum was incised and urethra was mobilized. A ventral urethrostomy was carried out with extension of incision beyond the strictured segment proximally and distally into the normal urethral lumen upto 2cm. The dorsal surface of the urethra was incised in the midline. The margin of incised dorsal urethra was dissected from the tunica albuginea. This lead to raw area wide as 1.5-2cm between the bisected edges of urethra. Then the harvested BMG was spread over raw area to cover the defect. After then the graft was fixed and the several quilting suture were added to prevent dead space. The margin of graft was attached to edge of incised urethra. The ventral urethrostomy was closed by continuous suture over a 14F silicone catheter and reinforced with interrupted suture.

DORSOLATERAL ONLAY TECHNIQUE (KULKARNI PROCEDURE):

We adopted the policy of limited urethral mobilization, i.e., from ventral midline to beyond dorsal midline. We kept the grafts of up to 2.2 cm in width with a maximum length from the proximal bulbar up to the meatus (up to 12.5 cm) Depending on length of urethral stricture. In this procedure, the urethra is not completely mobilized off the corpora; hence, graft sizing is more appropriate, preventing the chordee. By using our approach, at least the one-sided bulbospongiosus muscle remains intact along with ipsilateral intact vascularity to the urethra. The penis was replaced in normal anatomy. After placing a drain, the perineum was closed in anatomic layers and the penile skin was placed back in its first position. The patients remained bed rest for 72 hours and were discharged on the 5th to 7th postoperative day.

After 3 weeks, a retrograde pericatheter urethrography was carried out and when no extravasation was found urethral was removed. Patient was followed up with uroflowmetry and urine culture every 3 month. If uroflowmetry was less than 10 ml/s, then urethrography and urethroscopy was considered.

CONCLUSION:

Urethral stricture is a bothersome disease and all patients who underwent successful urethroplasty experienced a great change in their quality of life. Dorsally placed buccal mucosal graft urethroplasty and Dorsolateral Onlay Urethroplasty using Buccal mucosal graft by a unilateral urethral mobilization approach are an effective method of treatment and satisfactory technique for the treatment of long segment anterior urethral strictures. The morbidity and complications are low and outcomes are excellent. Using this approach, our short-term results for anterior urethral strictures are reasonable.

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