Original Research Paper

Volume - 11 | Issue - 04 | April - 2021 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Urology

QUANTIFICATION OF EJACULATION AFTER URETHROPLASTY - A PILOT STUDY

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ABSTRACT **Objectives-**.To evaluate alterations in ejaculation after anastomotic repair(AR) and augmentation urethroplasty in urethral stricture.

KEYWORDS :

INTRODUCTION

Urethral stricture is the scar formation involving the spongiformis erectile tissue of the corpus spongiosum, resulting in a concomitant narrowing of the urethral lumen. In stricture primarily sub epithelial inflammation and hemorrhage occur and later stages are characterized with sclerosis and fibrosis. The etiology of urethral stricture disease is mainly iatrogenic, such after traumatic urethral catheterization or transurethral resection, and idiopathic (Fenton et al, 2005(1)In urethroplasty end to end urethroplasty and augmentation urethroplasty included. After reconstructive surgery many Sexual morbidity like erectile dysfunction, ejaculatory disorder can be associated with psychogenic factors. The bulbospongiosus muscle is involved with expulsion of seminal fluid and urine from bulbar urethra and thus,we hypothesized that performing urethroplasty using a technique that split muscle may effect in post operative patient reported ejaculatory function and post voiding dribbling.(3)

Normal ejaculation requires 3 steps including ejaculate emission into the urethra by alfa adrenergic contractions of the prostate, seminal vesicles and vas deferens, bladder neck contraction to prevent retrograde ejaculation and finally semen expulsion from the urethra by bulbo cavernous and ischio cavernous muscle contraction. Disruption in one of those steps alter normal ejaculation. Urethral strictures most frequently occur at the bulbar urethra (Andrich and Mundy et al 2008(4).The Studies have shown that disrupting nerve input to the bulbospongiosus muscle results in the inhibition of ejaculation. Muscle and nerve sparing techniques might eliminate these side effects of urethral surgery, although only occasional reports have been published to date (Barbagli et al., 2008a).(5)The effect of urethroplasty on ejaculation has not yet been proved but there are some hypotheses. On the one hand obstruction relief may allow semen to travel with less impedance through the urethra, on the other hand splitting through the bulbocavernous muscle and dissecting around the urethra might harm neurovascular integrity**.**

Erickson et al(6) presented a prospective analysis of ejaculatory function after anterior urethral reconstruction using the MSHQ.A total of 43 men were included, the overall ejaculatory score did not change postoperatively at a mean follow-up of 8,12 months but men with a poor pre operative function had a significant improvement. Post operative function was stable in 70%,improved in 19% and worsened in 11%.Vander Eeckt and Joniau,(7)reported that Postoperatively patients after anastomotic urethroplasty had more ejaculatory dysfunction (45%) when compared to buccal mucosa urethroplasty (30,7%)(P=0.033).Ejaculatory function was assessed using the validated 4-item ejaculatory function assessment modified from the original MSHQ(8).Thus, relief of obstruction will improve the force and volume of ejaculation. However, persistent and de novo ejaculatory dysfunction have been described postoperatively in 17% to 23%of patients.(9).Ejaculation dysfunction is due to sacculation of the bulbar urethra after urethroplasty causes sequestration of semen or urine, leading to dribbling after ejaculation or voiding. Also by alteration or damage to the nerves, muscles, vessels of the perineum and corpus spongiosum with urethroplasty causes decreased force of ejaculation, resulting remaining residual fluid after urination or ejaculation.

MATERIALS AND METHODS

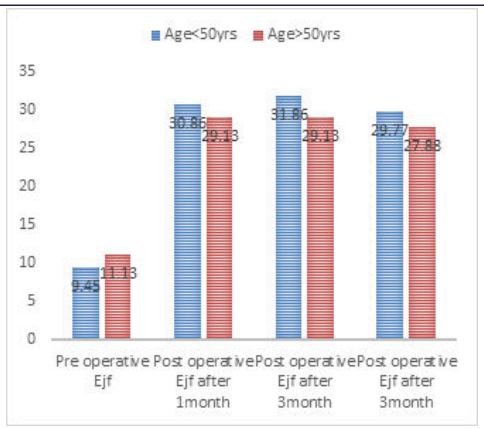
In this prospective study 30 eligible patients of urethral stricture included, which are operated in urology department of S.M.S. Hospital Jaipur between July 2018 to December 2018.patients are above 18 yrs, patients with a history of coronary artery bypass graft surgery, un regulated hypertension and diabetes were excluded. Patients were categorized according to age, stricture localization and length. All patients were evaluated with history, physical examination, urine analysis and culture, uroflowmetry, retrograde urethrography. They evaluated with pre and postoperative questionnaire (at 1 month, 3 months and 6 month).Ejaculatory function was assessed using the 7 ejaculatory questions of the MSHQ. They including ejaculatory frequency, latency, volume, force, pain and pleasure, and dry ejaculation. Each question was scored from1—lowest/poor function to 5—highest/best function for a maximum score of 35—no dysfunction. Using the overall MSHQ score we defined preoperative EjF as good—28 points or greater, average—22 to 28 andpoor—21 or less. Statistical analysis has been carried out in the present study using computer software (SPSS Trial version 23 and primer). The qualitative data were expressed in proportion and percentages, and the quantitative data expressed as mean and standard deviations. The difference in proportion was analysed by using chi square test. Significance level for tests were determined as 95% ($P < 0.05$).

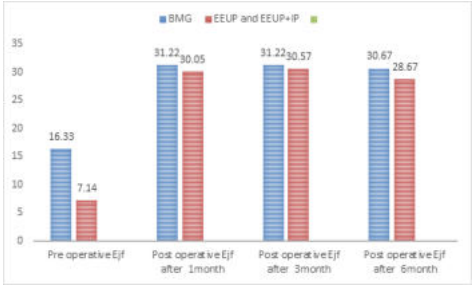
Surgical Approach Urethroplasty was applied for bulbar and penile urethral strictures. This series includes excision with end to end anastomoses and buccal mucosal graft techniques.AR was preferred whenever a tension-free anastomosis could be made (stricture length 3cm on urethrography and per operative findings)For longer strictures, augmentation urethroplasty was performed. For both techniques, a midline perineal incision is made; the bulbospongiosus muscle is separated at the mid line and dissected away from the corpus spongiosum.In case of AR, the corpus spongiosum is circumferentially freed at the level of the stricture. The corpus spongiosum and urethra are transected at this site. The fibrotic urethra and spongiosus edges are resected until healthy urethra is present at both distal and proximal ends. The urethra is then speculated in order to obtain abroad oblique anastomosis, which is finalized by 6-8 interruptedresorbable 4.0sutures.

In case of augmentation urethroplasty, the stricture is opened ventrally on the tip of the catheter. The stricture length is measured and a graft is taken accordingly.The graft is sutured in to the urethra in a dorsal or ventral onlay fashion. The corpus spongiosum is closed over the graft for vascular supply and mechanical support (spongioplasty).The urethral catheter is maintained for 14 days.

RESULTS -

The mean age of cases is 36±16.27.The stenosis segment length ranged from 2 to9 c.m, with mean of4.0±2.24.While 80% stenos located at bulbar area,20%were at penile urethra, 50% had undergone EEUP operation,30%had gone buccal mucosal graft operation20%had EEUP with IP operation. However ,preoperative Ejf score of patients with a stenosis segment length up to 3 c.m was found to be significant ($p<0.001$) lower than that of patients with a stenosis segment length>3c.m. There was statistically no signifacnt change found post operative Ejf score in both group after one ,three month follow up but after 6 month significantly transient deterioration of Ejf score ($p=0.013$) found in AR. According to age group, improvement in Ejf score of those aged 50 and below were statistically significantly those of aged 50 and older after 6month follow up($p=0.025$).





DISCUSSION

After urethroplasty Sexual dysfunction includes disorders of erectile dysfunction, ejaculatory disorders, penile curvature or chordee and genital sensitivity disorders(10). Current literature shows that sexual dysfunction after urethroplasty is uncommon, approximately 1% (0% - 38%) after anterior urethroplasty and approximately 3% (0% - 34%) after pelvic fracture related urethral injury repair (11).In AR, the age group is mainly younger because short bulbar strictures are predominantly idiopathic/congenital in origin and thus occurring at a younger age[12]our this observation is correlated with this study.

The influence of age on Ejf is well known, kaluzny et al(13) suggest that patients age correlates with the extent of EjD in men with urethral stricture, both before and after urethroplasty. According to Erickson et al, Pre operatively EjD was strongly expressed in men over 60years,and in this group it did not improve post operatively, improvement occurred only in younger men aged 40-49 years(6).According to Study of sharma et al(14) improvement in Ejf only occur in AR and augmentation urethroplasty in <40 yr of age. In our study improvement in Ejf score of those aged 50 and below were statistically significantly those of aged 50 and older after 6month follow up(p=0.025) .

The result of many paper reported that higher incidence of sexual dysfunction present after AR compared to augmentation urethroplasty(15,4,14) Palminteri et al. found that in augmentation urethroplasty35% and 65% of improvement reported in erectile and ejaculatory function[16].Erickson et al. found an improvement of ejaculatory function after urethroplasty [17], but a later prospective study failed to show any significant changes in ejaculatory function after urethroplasty [6]. Improvement of ejaculatory function after urethroplasty might be related to relieving obstruction of the urethra [6].Barbagli et al. also reported postoperative ejaculatory dysfunction in 23.3% of patients treated with AR [18].

We hypothesize that the higher rate of ejaculatory dysfunction associated with AR is because of the more extensive detachment of the bulbospongiosus muscle in AR needed for a full mobilization of the bulbar urethra. Recovery of postoperative ejaculatory dysfunction can be expected once the bulbospongiosus muscle has recovered from the surgical trauma. This cannot be expected after 6 weeks but can be expected after 6months.Another explanation is that ejaculatory and orgasmic dysfunction is related to ED, which was also more frequent after AR. Beysens et al, revealed that in early assessment, 6 week after the AR, a transient deterioration in ejf occurred, unlike after augmentation, but re assessment after six month, this difference was no longer significant but in our study significant transient deterioration found in Ejf score(p=0.025) of AR after 6 month follow up. Many studies suggested, there is no difference in severity of post operative EjD in AR and augmentation urethroplasty at longer follow up(19,20),so timing of evaluation is important.

Beysens et al(21) compared bulbar stricture depending on stricture length, AR(stricture length<3cm)and augmentation urethroplasty (stricture length>3cm).In both type of urethroplasty he did not found a significant difference in post operative EjD, although such difference was reported in early assesment,6 weeks after surgery. Similarly singh et al(23)and Erickson et al did not found the influence of stricture length on post operative EjF.

Anger et al(22) evaluated effect of urethroplasty in pfudd patient, they reported that ante grade ejaculation was present in 100%patient after urethroplasty, which are correlated to our study but delayed ejaculation present in 3.1%and ejaculatory volume decreased in15.6%patients in their study.

All presented studies have limitations, Our study have a limited follow-up, small sample size, missing data in the post operative questionnaires and prospective design. In addition lack of pre operative hormonal and andrological evaluation also a limitation of our study.

CONCLUSIONS

AR is associated with a transient decline in ejaculatory function. This was not observed with augmentation urethroplasty. Further prospective studies with validated and internationally accepted patient reported outcome measures (PROMs) are needed for further confirmation. Absolute conclusion for quantification of ejaculation after urethroplasty should not be made until large prospective multi center studies have been performed.

Table 1 Evaluation of general characteristics of study population

	Min-Max	Mean±SD
Age(years)	18-70	36±16.27
Length of stenosis segment(cm)	2-9	4.0±2.24
	n	%
	Number of Cases	**Percentage**
Age(years)		
≤30	15	50.00
>30	15	50.00
Stricture site		
Bulbar	19	63.33
Bulbo membrenous	5	16.66
Penile	6	20.00
Operation		
BMG	9	30.00
EEUP and EEUP+IP	21	70.00
Stricture length		
≤3 cm	21	70.00
>3	9	30.00

Table 2 Assessing pre operative and post operative Ejf between age groups

	Age ≤50		Age >50		P value
	Mean	SD	Mean	SD	
Pre operative Ejf	9.45	5.70	11.13	6.08	0.490 (NS)
Post operative Ejf after 1month	30.86	1.49	29.13	1.73	0.011 (S)
Post operative Ejf after 3month	31.36	1.18	29.13	1.13	P<0.001(S)
Post operative Ejf after 6month	29.77	2.07	27.88	1.55	0.025(S)

Table 3 Assessing preoperative and post operative Ejf between and within surgery types

	BMG (N=9)			EEUP and EEUP+IP (N=21)			P value
	Mean	SD	P value	Mean	SD	P value	
Pre operative Ejf	16.33	3.04	-	7.14	4.19	-	p<0.001 (S)
Post operative Ejf after 1month	31.22	1.30	P<0.001	30.05	1.77	P<0.001	0.085 (NS)
Post operative Ejf after 3month	31.22	1.30	P<0.001	30.57	1.60	P<0.001	0.291 (NS)
Post operative Ejf after 6month	30.67	0.71	P<0.001	28.67	2.22	P<0.001	0.013 (S)

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