

# A Randomised Controlled Study to Compare the Efficacy and Safety of Intracorporospongiosal Anesthesia alone Versus Transperineal Urethrosphincteric Block and Intracorporospongiosal Anesthesia Combined in Direct Vision Internal Urethrotomy in Urethral Strictures

Arshad Jamal<sup>1</sup>, Rana Pratap Singh<sup>2</sup>

## ABSTRACT

**Introduction:** DVIU is a common urological procedure for short segment urethral stricture  $\leq 2$ cm and is generally done under spinal anesthesia. The study was performed to assess the feasibility to perform DVIU under local anesthesia to reduce the cost, hospital stay and the morbidity of anaesthesia.

**Material and Methods:** A prospective randomized study was conducted in 168 patients who were divided in two groups. Group 'a' received only ICS block (intra corporospongiosal block) and group 'b' received both ICS with US block (urethrosphincteric block). VAS pain score was obtained at the end and one hour after the procedure.

**Results:** The visual analogue score (VAS) at the time of procedure were significantly lower for Group 'b' (Group a =3.46, Group b=2.55 p value=0.0053), and was also lower at the end of one hour (Group a=3.1, Group b=2.01 p value=0.0001). The change in blood pressure and pulse rate as a measure of hemodynamic variability were recorded in both groups and significant differences were noted at the time of procedure Group 'a' 6.43 $\pm$ 1.08, Group 'b' 3.95 $\pm$ 1.46, p < 0.0001 value.

**Conclusion:** DVIU is a common urological procedure which can be safely performed under local anaesthetic blocks instead of spinal anaesthesia. A combination of ICS with US block increases the safety and tolerability of the procedure.

**Keywords:** DVIU, Local Block Anesthesia, Urethrosphincteric (US) Block, Intracorporospongiosal (ICS) Block

in urethral reconstruction. Direct vision internal urethrotomy is an attractive option both for the patients and the urologist because of the ease of performance, minimum resource requirement, short hospital stay and good success rates in short segment urethral strictures. DVIU was popularized after the initial reports of success by Sachtel et al in 1972. The classical DVIU involves an incision of the urethra at the site of narrowing at 12 o'clock position using an endoscopic cold sache knife and deepened till normal mucosa or corporal bodies. concerns have been raised about the position and number of the incision, however there is no reported difference in the outcome of single versus multiple incision. The concept of self intermittent catheterisation was introduced in 1980's in order to reduce the recurrence of the strictures. Most studies have reported catheter time of 1-4 days but there is no consensus. Intermittent self dilatation (ISD) either weekly or biweekly has been reported to reduce recurrence rates and scar contraction. The commonest treatment of short segment < 2cm stricture is direct vision internal urethrotomy (DVIU). Generally the reported success rates of single DVIU for primary treatment ranges from 20-60% (Breyer et al 2010). while most DVIU today are performed under spinal anesthesia or general anaesthesia with involved cost and morbidities. By using local anaesthesia as the primary anaesthesia we intend to reduce the economic burden and decrease the hospital stay.

We used local anesthesia as intracorporospongiosal (ICS) block alone and urethrosphincteric (US) block combined with ICS block (as Total Urethral Block) to study the effectiveness in pain relief of these modalities while performing DVIU.

## INTRODUCTION

The urethral strictures are a common health problem and economic burden to the society. Urethral stricture is a disease wherein there is a narrowing of urethral lumen due to fibrosis of the urothelium and the underlying spongiosum. Urologist commonly encounter such patients who present with symptoms of thin stream of urine, urinary retention, urinary tract infections and obstructive uropathy. The treatment options depend upon the length of stricture, degree of spongiofibrosis and the etiology of the disease. various treatment are direct vision internal urethrotomy, urethral dilatation and various types of open reconstructive urethroplasty. Urethral dilatation is a simple urological procedure but has high rates of recurrence. Reconstructive urethroplasty is claimed to have high success rates but has high cost burden, longer recovery time and requires expertise

<sup>1</sup>Associate Professor and HOD, Department of Urology, <sup>2</sup>Assistant Professor, Department of Urology, Rajendra Institute of Medical Sciences, Ranchi, India

**Corresponding author:** Dr. Rana Pratap Singh, Assistant Professor, Department of Urology, RIMS, Ranchi-834009, India

**How to cite this article:** Arshad Jamal, Rana Pratap Singh. A randomised controlled study to compare the efficacy and safety of intracorporospongiosal anesthesia alone versus transperineal urethrosphincteric block and intracorporospongiosal anesthesia combined in direct vision internal urethrotomy in urethral strictures. International Journal of Contemporary Medical Research 2019;6(4):D1-D4.

**DOI:** <http://dx.doi.org/10.21276/ijcmr.2019.6.4.34>

This study also showed how combining the blocks affect performing the procedure and also access the safety and efficacy of local blocks in the management of urethral strictures.

## MATERIAL AND METHODS

A prospective randomised study was conducted in the department of urology RIMS,Ranchi, after obtaining ethical committee clearance. All volunteers were evaluated by history, general clinical examination ,Retrograde urethrogram. Patients who meet the inclusion criteria were enrolled. we analyzed a total of 168 male patients. Informed consent were taken from all volunteers prior to enrolment. The stricture length, location (proximal bulbar, midbulbar, and distal bulbar) was determined by retrograde urethrography (RGU).The etiology of the strictures were determined to be inflammatory, iatrogenic, traumatic and idiopathic. All the procedures were done by either the first or second author who were blinded about the anesthesia used. The urethrotome with its knife was placed up the urethra upto stricture, which was incised at 12 o' clock. position until the full thickness of the fibrous scar was divided. A 16F silicone Foley catheter was left in place for 3days.

Treatment allocation was according to the study number. Numbers were issued in a predetermined random sequence, in blocks of 10 generated by a random number table. Participants were instructed not to open the envelope until the staffs had left. If the pt was of group 'A' he had ICS only

if to group 'B'then ICS and US blocks both were utilised. Pain was recorded immediately as the pain happened and one hour postoperatively.

## Technique

For corporospongios (ICS) block the technique described by GANG YE<sup>1</sup> was used in lithotomy position after draping , the penis is held around the corona and 3 mL of 1% lidocaine was slowly injected into the dorsal glans in 1 min with a 27 Gauge needle. Then 1–3 min were allowed to elapse and the glans was squeezed with the swab to stop bleeding. After that, dviu was performed.

To perform US block a transperineal approach as described by Adel Al-Hunayan<sup>2</sup> et al was used, the patient was placed in the dorsolithotomy position, and the pulse, blood pressure, and electrocardiogram were monitored continuously. The perineum was thoroughly cleaned with 10% povidone-iodine solution. Lidocaine solution (1%) was used as a local analgesic. Both sides were infiltrated through a single skin puncture 1.5 cm above the anal verge. With a 24-gauge spinal needle, the perineal skin and the tract leading toward the apex of the prostate was infiltrated. Then, with a gloved index finger in the rectum spinal needle was inserted transperineally into a zone that included the membranous urethra and the anesthetic agent was infiltrated about 3-4 ml on each side.

While the patients were still in operating room, they were asked to rate the level of the discomfort or pain experienced

	ICSB		
No. of Patients	83		
Age (mean)	30.2	31.5	P Value= 0.3987
Stricture length (Mm)	13.3333	13.2651	0.9083
Type (n)			
Primary	63	69	
Recurrent	20	16	
Etiology (n)			
Traumatic	15	17	
Inflammatory	28	31	
Iatrogenic	4	2	
Idiopathic	36	35	
Stricture location (n)			
Penobulbar	18	16	
Mid-Bulbar	36	29	
Proximal Bulbar	20	28	
Penile	9	12	
Preoperative pulse (rate/min)	77.6/MIN		75.2/MIN
Preoperative SBP (mmHg)	126/80	124/79	
Mean procedure time (min)	21.7	28.6	
VAS Score			
No pain(VAS 0)	10	12	
Mild pain (VAS 1-3)	34	51	
Moderate pain (VAS 4-7)	39	22	
Intraoperative VAS	3.46	2.55	0.0053
1 hr Postoperative VAS	3.1	2.01	p< 0.0001
Conversion to general anaesthesia	NIL	NIL	

Table-1: ICSB

Complications (n)	Group a	Group b
Intraoperative Bleeding	0	0
Penoscrotal Edema	0	0
Recurrent Bleeding	0	0
UTI	7	6

**Table-2: Complications**

during infiltration of the lidocaine and performance of the visual internal urethrotomy as well as in the immediate postoperative period. The discomfort will be rated from 0 to 10, with 0 meaning no discomfort, 1 to 3 meaning mild discomfort, 4 to 6 meaning moderate discomfort, and 7 to 10 meaning severe discomfort. All adverse effects that developed during the first 24 hours post-surgery were also noted. The pain scores were collected in a database, analyzed, and are presented as means.

## RESULTS

Both the groups were well matched with regards to age (group A 30.2, group B 31.5 p value=0.4) and stricture length (group A 13.33, group B 13.26 p value=0.9) (table-1). The most common etiology of stricture in our series in both groups was idiopathic (Group a =36, Group b=35, p value= 0.81) followed by infection (group a=28, group b=31, p=0.81) and trauma (Group a=15, Group b =17 p =0.81). The location of stricture in both the groups was Penile (Group a =9, Group b=12, p value=0.45) Penobulbar (Group A =18 ,Group B=16, p=0.45), Mid-bulbar (Group a=36, Group b=29, p value=0.45), Proximal Bulbar (Group a=20, Group b=28, p value=0.45). The visual analogue score (VAS) at the time of procedure were significantly lower for Group 'b' (Group a =3.46, Group b=2.55 p value=0.0053), also at the end of one hour (Group a=3.1, Group b=2.01 p value=0.0001). The change in blood pressure and pulse rate as a measure of hemodynamic variability were recorded in both groups and significant differences were noted at the time of procedure Group 'a' 6.43±1.08, Group 'b' 3.95±1.46, p < 0.0001 value. At 3 month follow up available for 81 patients no significant difference in success rate were noted (group a =74%, group b=70.1% p value=0.6) (table-2). No significant differences in complication rate amongst groups were noted with UTI being the most common complication Group a=6 and Group b=7.

## DISCUSSION

Internal urethrotomy is the most commonly performed procedure for urethral stricture today.

Mostly it is done under general or regional anaesthesia. We intended to perform this procedure under Local Anaesthesia, thereby making it truly a day care procedure and avoiding the complication and morbidity associated with general or regional anaesthesia.

The first description of optical urethrotomy was given by, Sache in 1972.<sup>3</sup> Since then attempts were made to perform the procedure under various local anaesthesia with intraurethral lidocaine, corpo-spongiosum block (ICS) by Ye G<sup>1</sup>, In 2002, transperineal urethrosphincteric (US) blocks () Al Hunayan

et.al<sup>2</sup> in 2008, have been tried but the results were mostly conflicting.

Use of intraurethral lidocaine as local anaesthesia in cystoscopy was first attempted by Lester Persky in 1953.<sup>4</sup>

Since then many authors have challenged the effectiveness of lidocaine versus plain lubricant in rigid cystoscopy.

Goldfischer et al<sup>5</sup> were able to find a pain score of 1.4 point lower in lidocaine group, while Stein<sup>6</sup> and Brekker<sup>7</sup> did not observe any decrease in pain perception even on using intraurethral lidocaine.

In a metaanalysis by Patel et al<sup>8</sup> which included 817 patients from seven randomized studies found that intraurethral lidocaine gel had no statistical effect on pain perception. Attempts were made by several authors to perform DVIU in ICS block alone or in combination with intra urethral lidocaine.

The feasibility of urethrotomy under sedatives and analgesics was evaluated by Hakki Uzun.<sup>9</sup>, who found that it is inadvisable for patients to change from alternative of spinal anaesthesia because of moderate pain scores VAS > 3 in 86% of patients.

Kreder et al<sup>10</sup> attempted DVIU under intra urethral lidocaine and were completely successful in 15 of 18 (85%) patients. In these patients 12 of 15 (80%) reported either minimal or no discomfort.

In 1991 Greenland et al<sup>11</sup> published a series of 46 patients undergoing 76 optical

urethrotomies with success rate of 70% with 40% experiencing moderate to severe VAS.

In another series by Altinova S<sup>12</sup> of 28 patients with urethral strictures less than 2 cm length underwent 32 visual optical internal urethrotomy under local urethral anesthesia with lidocaine. The procedure was completed successfully in 26 of 28 (92.9%) patients. Among these 25 of 26 (96%) patients reported mild pain.

Intra urethral lidocaine for optical DVIU in a multicentre study was evaluated by N. Yuceturk<sup>13</sup> in internal urethrotomy under vision was successfully completed in 151 of 157 patients. The overall success rate 96.1%. A total of 125 patients experienced mild, 26 patients moderate and 6 patients severe pain. The procedure was not completed in six patients because of severe pain. These studies show the feasibility of performing the procedure under local anaesthesia.

In our experience while during our initial attempts at dviu under topical lignocaine (2%) we noticed a sharp stabbing pain experienced by the patient of such magnitude that doing the procedure under only topical anesthesia seemed unjustifiable.

In a randomized trial comparing ICS block versus intra urethral lignocaine by Deepak Biswal et al<sup>14</sup> observed a intraoperative VAS score was 2.8 ± 1.1 in Group 1 (CS block), which was significantly less (P < 0.05) than the 5.6 ± 1.7 score in Group 2 (intraurethral lidocaine). The mean 1 h postoperative VAS score was also significantly lower in Group 1 patients (1.0 ± 1.0) than in Group 2 patients (3.2 ± 1.5). and were able to perform DVIU in 29 out of 30 patients.

Kumar et al.<sup>15</sup> observed a mean visual analogue score for

pain in group 1 (spongiosum block along with intraurethral lignocaine) ( $1.5 \pm 1.4$ ) which was significantly lower than the score in group 2 (intraurethral lignocaine) ( $2.7 \pm 1.8$ ) ( $P = 0.006$ ).

Ghosh et al<sup>16</sup> while comparing Group 1 patients receiving topical 2% lignocaine jelly and group 2 patients receiving 1% lignocaine ICSB for undergoing VIU. observed a VAS scores intraoperatively ( $2.85 \pm 1.34$ ) and at 1-hour postoperatively ( $1.17 \pm 0.96$ ) which were significantly lower ( $P < 0.01$ ) in group 2 patients than the corresponding scores in group 1 ( $4.9 \pm 1.9$  and  $2.35 \pm 1.34$  respectively).

In our study the visual analogue score (VAS) at the time of procedure were significantly lower for group b (group a = 3.46, group b = 2.55 p value = 0.0053), also at the end of one hour (group a = 3.1, group b = 2.01 p value = 0.0001). The change in blood pressure and pulse rate as a measure of hemodynamic variability were recorded in both groups and significant differences were noted at the time of procedure procedure group a  $6.43 \pm 1.08$ , group b  $3.95 \pm 1.46$ ,  $p < 0.0001$  value.

Most of the authors experienced discomfort while cutting the dense scar or negotiating the posterior urethra. ICS depends on spread of the local anaesthetic agent along the spongiosa. As the spongiosa is involved in the disease process not allowing the spread of the local anaesthesia in the scar or beyond it. The sensation of the external urethral sphincter is carried by pudendal nerve which can't be blocked by intra urethral lidocaine or ICS anaesthesia. To overcome this problem we tried using a combination of ICS and urethrosphincteric block thereby obtaining a complete urethral block and making the procedure almost pain free to the patient.

In our study we were able to perform all the procedure under local anaesthesia alone. No cases needed conversion to general or regional anaesthesia. All the patients were discharged in the evening same day. We observed a significant difference of VAS score in the combination group as compared to ICS alone. We propose this to be the new standard of care for patients undergoing DVIU based on our experience.

This is the largest study till date establishing the safety efficacy in pain relief of these modalities and ease of performing dviu under these blocks. The fact that we have never been forced to use any other form of anesthesia while using these blocks or abort any procedure due to pain or blood pressure fluctuations attest to the safety of procedure.

## CONCLUSION

DVIU an extremely common and popular surgical option for the management of urethral stricture can be done safely in local blocks and the combination of an urethrosphincteric block with corporospongiosal block increases the tolerability of the procedure.

## REFERENCES

1. Ye G, Shan-Hong Y, Xiang-Wei W, Hua-Qi Y, Rong-Gui Z. Use of a new local anesthesia--intracorporal spongiosum anesthesia--in procedures on anterior

urethra. *Int J Urol.* 2005;12:365-8

2. Al-Hunayan A, Al-Awadi K, Al-Khayyat A, Abdulhalim H. A pilot study of transperineal urethrosphincteric block for visual internal urethrotomy in patients with anterior urethral strictures. *J Endourol.* 2008;22:1017-20.
3. Sachse H. Treatment of urethral stricture: Transurethral slit in view using sharp section. *Fortschr Med.* 1974;92:12-5.
4. Randomized, Prospective, Double-Blind Study of the Effects on Pain Perception of Lidocaine Jelly Versus Plain Lubricant During Outpatient Rigid Cystoscopy. Goldfischer, Evan R. et al. *The Journal of Urology*, Volume 157, Issue 1, 90 - 94.
5. Stein, M., Lubetkin, D., Taub, H.C., Skinner, W.K., Haberman, J., Kreutzer, E.R. The effects of intraurethral lidocaine anesthetic and patient anxiety on pain perception during cystoscopy. *J. Urol.* 1994;151:1518.
6. Brekkan, E., Ehrnebo, M., Malmstrom, P., Norlen, B.J., Wirbrant, A. A controlled study of low and high volume anesthetic jelly as a lubricant and pain reliever during cystoscopy. *J. Urol.* 1991;146:24.
7. Patel AR, Jones JS, Babineau D. Lidocaine 2% gel versus plain lubricating gel for pain reduction during flexible cystoscopy: a meta-analysis of prospective, randomized, controlled trials. *The journal of Urology.* 2008;179:986-9.
8. Kreder KJ, Stack R, Thrasher JB, Donatucci CF. Direct vision internal urethrotomy using topical anesthesia. *Urology.* 1993;42:548-50.
9. Greenland JE, Lynch TH, Wallace DM. Optical urethrotomy under local urethral anaesthesia. *Br J Urol.* 1991;67:385-8.
10. Altinova S, Turkan S. Optical urethrotomy using topical anesthesia. *Int Urol Nephrol.* 2007;39:511-2.
11. Ghosh B, Dorairajan LN, Kumar S, Manikandan R, Muruganandham K, Kumar A. Randomized clinical trial comparing effectiveness of intracorporal spongiosum block versus topical anesthesia for performing visual internal urethrotomy for urethral stricture disease. *Urology.* 2013;81:204-7.
12. Biswal DK, Ghosh B, Bera MK, Pal DK. A randomized clinical trial comparing intracorporal spongiosum block versus intraurethral lignocaine in visual internal urethrotomy for short segment anterior urethral strictures. *Urology annals.* 2016;8:317.

**Source of Support:** Nil; **Conflict of Interest:** None

**Submitted:** 05-03-2019; **Accepted:** 26-03-2019; **Published:** 29-04-2019