

## A PROSPECTIVE STUDY OF EFFICACY OF INTRACORPUS SPONGIOSUM BLOCK IN HIGH RISK PATIENTS FOR VISUAL INTERNAL URETHROTOMY

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**ABSTRACT: OBJECTIVES:** To study the feasibility of intracorpus spongiosum block (ICSB) in high risk patients for Visual internal urethrotomy. **METHODS:** Visual Internal Urethrotomy (VIU) for urethral stricture can be performed under various types of anesthesia, including topical anesthesia and ICSB. This descriptive study was conducted in Santhiram medical college and general hospital between July 2013 and Dec 2014. Total number of 30 male patients of high risk group with American Society of Anesthesiologists (ASA) physical status grading 3 and 4 having stricture urethra were treated by VIU under ICSB. VIU was performed with a cold-cutting knife. The effect of this anesthetic technique was evaluated by Numerical Rating Scale (NRS) for pain. Out of the 30 patients five patients have no pain, twenty three patients have mild pain only. **CONCLUSION:** ICSB is safe and more effective than topical anesthesia alone for providing pain relief during VIU even in high risk patients

**KEYWORDS:** Intracorpus spongiosum block (ICSB), Visual Internal Urethrotomy (VIU), Urethral Stricture.

**INTRODUCTION:** Urethral strictures are fibrotic narrowing of dense collagen and fibroblasts. The narrowing restricts urine flow and cause dilation of the proximal urethra and prostatic ducts.<sup>1</sup> Patients with stricture urethra usually complain of retention of urine, poor flow, dribbling and frequency of urine. Many procedures are available for the treatment of urethral strictures; VIU is one of the commonest. The use of VIU in the management of urethral strictures has steadily increased since its introduction by Sachse in 1974.<sup>2,3</sup>

This procedure is generally performed under general or spinal anaesthesia.<sup>4</sup> Nevertheless, various local anaesthesia techniques, including topical anaesthesia,<sup>5, 6</sup> corpus spongiosum block,<sup>7</sup> transperineal urethrosphincteric blocks<sup>8</sup> have been used. Due to the short operative time and the frequency of the procedure among endourological interventions, a less invasive and feasible anaesthesia technique will continue to be in demand.

Corpus spongiosum block, a novel technique was described as a simple, inexpensive, safe and effective procedure with efficacy comparable to general or spinal anesthesia in a recent nonrandomized study.<sup>9</sup> Many studies have compared the efficacy of ICSB with topical anaesthesia, sedoanalgesia, spinal and general anesthesia. There are no studies regarding ICSB for VIU in high risk group i.e. American Society of Anesthesiologists (ASA) physical status grading<sup>10</sup> [Table-1] 3 and 4 to assess the efficacy and safety of the block. Various techniques for

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ICSB had been described like injecting 5ml of 1% lignocaine into corpus spongiosum at glans penis and also perurethrally with the help of cystoscopic injection needle. In our study we injected 5ml of 1% lignocaine into corpus spongiosum at or around the stricture with 3.5 Fr Williams cytoscopic needle.

I	A normal healthy patient
II	A patient with mild systemic disease
III	A patient with severe systemic disease that limits activity, but is not incapacitating
IV	A patient with an incapacitating systemic disease that is a constant threat to life
V	A moribund patient not expected to survive 24 hours with or without operation
E	In the event of an emergency operation, an E is placed after the Roman numeral

Table 1: Revised ASA physical status classification (1961)<sup>10</sup>

**METHODS:** Between July 2013 and December 2014, an internal urethrotomy was performed in 30 patients with anterior urethral strictures shorter than 2 cm. All patients included in our study are of high risk group with ASA physical status grade 3 and 4 with single passable anterior urethral stricture of 2 cm or less were assessed. Detailed history and examination was obtained to ascertain stricture etiology and associated comorbidities. The stricture length, location (proximal bulbar, midbulbar, and distal bulbar) were determined by retrograde urethrography (RGU). Sterile urine was mandatory before surgical intervention. The exclusion criteria includes patients with multiple strictures, stricture of fossa navicularis, stricture length of more than 2 cm, known allergy to lignocaine, associated urologic comorbidities (eg: urethral or vesical calculus, and neurovesical dysfunction).

In the operation theatre, intravenous cannula was secured and Ringer lactate solution was started. All patients had received anxiolytic dose of midazolam 0.03mg/ kg and antibiotic prophylaxis. Pulse rate and blood pressure were monitored before starting and throughout the procedure. We prepared and cleaned the genitalia, retracting the foreskin when present, 10 mL 2% lignocaine gel was instilled into the urethra and retained by a penile clamp for 10 minutes. We passed a 0.035 guide wire with the help of cystoscope across the stricture into the bladder. Under cystoscopic guidance with williams cystoscopic injection needle [Fig. 1], 5 ml of 1% lignocaine injected around the stricture into corpus spongiosum. [Fig. 2]



Fig. 1: Williams cystoscopic injection needle

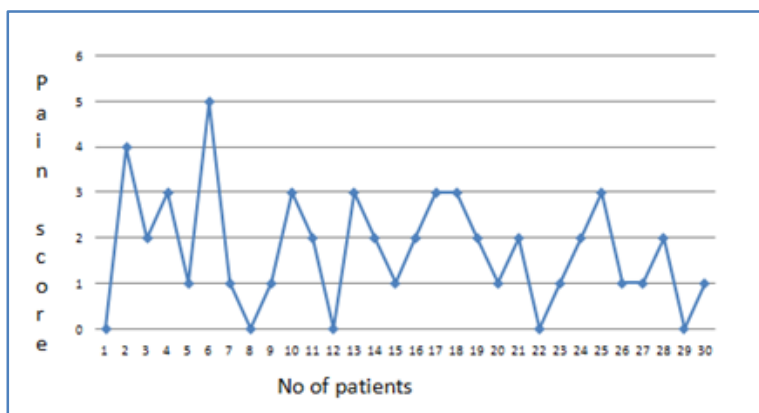


**Fig. 2: ICSB with Williams needle around the stricture**

Then, internal urethrotomy was done with a Storz 21 Fr cold cutting urethrotome. Stricture was carefully cut until the full thickness of the fibrous scar was divided and normal tissue above and below the stricture had been reached.

The 18 Fr Foley catheter was left in place for 5-7 days. All patients were discharged after 6 hours of observaion. At the end of each operation in the operating room, patients were asked to scale their level of discomfort or pain experienced during the procedure using a Numerical Rating Scale (NRS).<sup>11</sup> Score between 0 and 3 was considered acceptable and regarded as no pain to mild pain. In those patients where pain was intolerable during VIU were supplemented with fentanyl and propofol sedation.

**RESULTS:** Total number of 30 patients with stricture urethra were included in this prospective study. Patient age ranged from 44- 90 yrs with a mean age of 67.1 yrs. Pain during VIU procedure was graded using Numerical Rating Scale (NRS) as 0-no pain, 1-3 mild pain, 4-6 moderate pain and >7 severe pain. In this study 5 patients complained of no pain, 23 of mild pain with NRS score 1-3. Only 2 patients complained of moderate pain as score 4 in one and 5 in another. [Fig. 3] We supplemented sedation in only one patient with pain score 5.



**Fig. 3: Numerical rate scale (NRS) scores for pain are shown for patients who received intracorpous spongiosum block (ICSB)**

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There is no significant change in baseline vital parameters i.e. pulse rate and blood pressure compared with parameters during VIU. [Table-2]

	Base line	During VIU
Pulse rate	77.16 + 13.93	78.46 + 12.99
Systolic Blood Pressure	138.93 + 17.84	143.60 + 16.65
Diastolic Blood Pressure	86.53 + 10.54	88.86 + 9.37

Table 2: Comparison of vital parameters

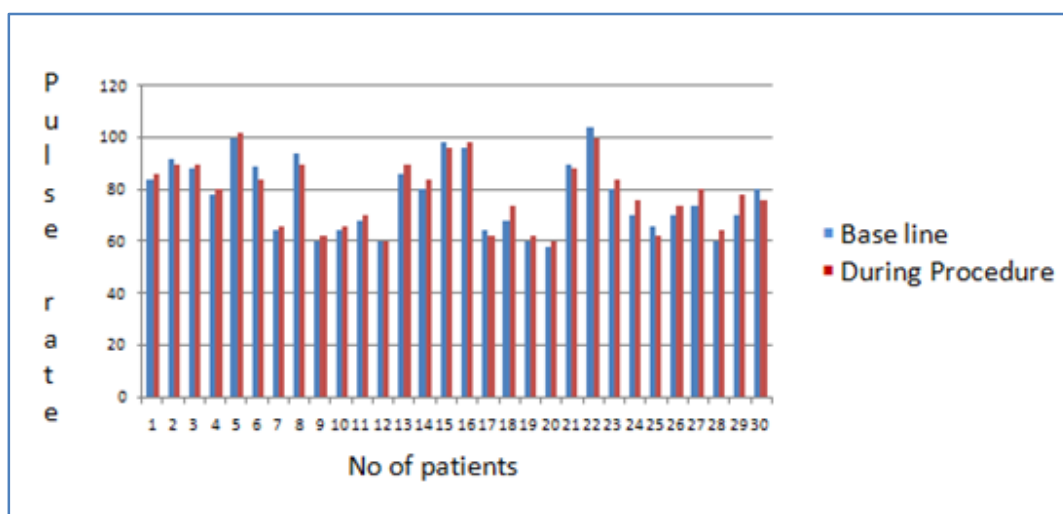


Fig. 4: Comparison of the baseline pulse rate with that during the procedure

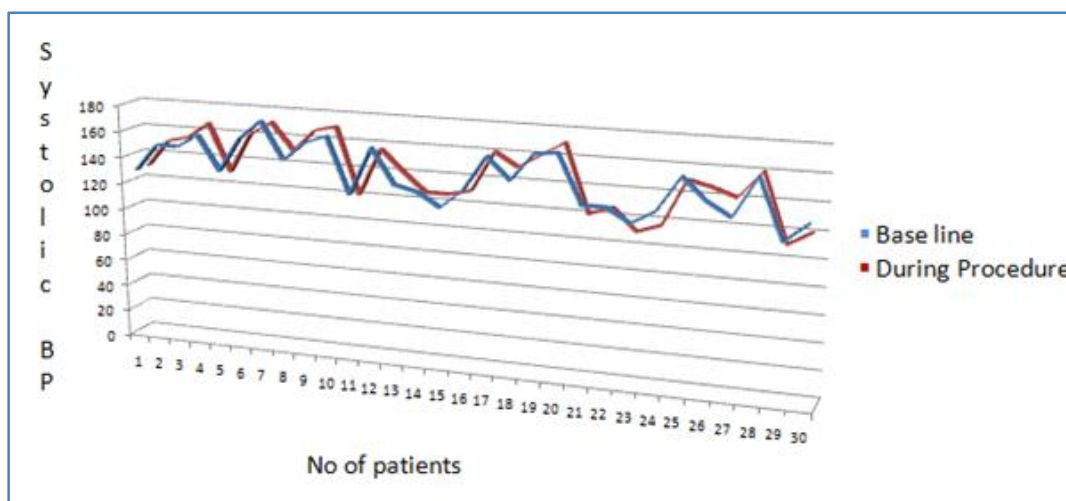


Fig. 5: Comparison of the baseline systolic blood pressure with that during the procedure

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**DISCUSSION:** Urethral stricture is one of the commonest urethral problems and VIU is preferred as the first treatment option by many urologists for strictures shorter than 2 cm. After the introduction of VIU by Sachse, there was a tremendous enthusiasm to establish this procedure as a substitute of urethroplasty. The practice of VIU remains widespread and popular among urologists because it is easy to perform, minimally invasive, and associated with shorter procedure time and less morbidity.<sup>12</sup>

Many studies have shown good long-term outcomes of VIU for short-segment strictures with superficial spongiositis.<sup>13,14,15</sup> When performed under local anesthesia, it reduces time in the operating theatre, cost and hazards associated with general or spinal anesthesia. To overcome this problem, a variety of local analgesic techniques have been applied. Ye et al showed the feasibility of ICSB for performing VIU.<sup>16</sup> Ather et al compared ICSB with general anesthesia for VIU and showed this novel technique was equally effective and beneficial.<sup>17</sup> To date, however there are no studies regarding ICSB in high risk group that is ASA physical status grade 3 and 4 patients.

The anterior urethra is composed of urethral epithelium and underlying corpus spongiosum. When the lidocaine is injected into the syncytium of the corpus spongiosum, it is very easy for the anesthetic to spread extensively through the venous sinuses in the corpus spongiosum, thus quickly anesthetizing the nerve endings in anterior urethra.

Most of the strictures in our study population were pure bulbar strictures. In the present study, we could finish the procedure in almost all patients, indicating the effectiveness of the technique most of the patients have either no pain or mild score. Only two patients complained of moderate pain and stricture length in them was 2cm. Along with the subjective evidence of superior analgesic effect of ICSB, there were objective data too, as evidenced by no significant change in pulse rate and blood pressure. No complication attributable to the anesthetic technique was encountered. One patient in the ICSB group developed urinary extravasation, which had no relationship with anesthetic technique. All of the patients were fit enough to be discharged after 6 hours. Patients were satisfied with the anesthetic effect of ICSB and agreed to opt for similar anesthesia if needed in future. One limitation of our study is that we did not compare with topical anesthesia alone group. Many studies showed that pain scores were significantly less in the ICSB group than in the topical anesthesia group

**CONCLUSIONS:** The ICSB is a more effective technique for providing pain relief during VIU and is also a safe procedure. In view of its proven efficacy and safety, ICSB should be the preferred technique for VIU, particularly in patients at high risk for general anesthesia, such as those with significant cardiopulmonary disease, hepatic and renal diseases. However, this could also become the anesthesia technique of choice for performing VIU of anterior urethral strictures on an outpatient basis in view of the cost advantages. We now routinely use ICSB for all patients receiving internal urethrotomy for anterior urethral strictures.

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