

## **Original Research Article**

# **A prospective analytical study of pain control during transrectal ultrasound guided prostate biopsy: Combined periprostatic nerve block with lignocaine gel and only intrarectal lignocaine gel.**

**Dilip Kumar Pal<sup>1</sup>, Rajendra Prasad Ray<sup>2</sup>, Anup Kumar Kundu<sup>3</sup>**

<sup>1</sup>Professor & Head, Department of Urology

<sup>2</sup>Senior Resident, Department of Urology

<sup>3</sup>Ex Professor & Head, Department of Urology

Institute of Post Graduate Medical Education & Research, Kolkata-700020, India

### **\*Corresponding author**

Prof. Dilip Kumar Pal

Email: [drdkpal@yahoo.co.in](mailto:drdkpal@yahoo.co.in)

---

**Abstract:** To evaluate the efficacy of two different analgesic techniques during transrectal ultrasound (TRUS) guided prostate biopsy. It may help in highlighting the importance of implementing an analgesic protocol. In this prospective analytical study 104 patients underwent TRUS guided prostate biopsy were included in two groups. Prostatic biopsy was performed using combined periprostatic nerve block with intra rectal lignocaine gel in Group 1 and using intra rectal lignocaine gel in Group 2. Visual analogue scale (VAS) pain scores were compared using Mann-Whitney U test. In results one hundred and four patients were analyzed. The mean age was 65.6(±10.8) years. The age, digital rectal examination (DRE) findings and mean serum PSA values were comparable among these two groups. The mean VAS pain score during was significantly less in Group1 compared to Group2 with p value <0.001. The conclusion in this study it was shown that combined periprostatic nerve block with intra rectal lignocaine gel helps in reducing pain significantly during prostatic biopsy. Periprostatic nerve block is safe, minimally invasive procedure and should be employed during the procedure.

**Keywords:** Transrectal ultrasound, prostate, biopsy, Periprostatic nerve block, Lignocaine

---

### **INTRODUCTION:**

Transrectal ultrasound (TRUS) guided prostate biopsy is a gold standard for diagnosing prostate cancer [1, 2]. Although TRUS-guided prostate biopsy is a common procedure, there is no standard guideline or protocol for the preparation of the patient. Patients always experience pain during the procedure. The pain usually occurs during placement of the probe into the anal canal and during retrieval of the biopsy by needle. An analgesic and anesthetic protocol are needed to decrease their pain. Consequently, the patient's adaptation to the procedure is enhanced. It helps in reducing the rate of retrieval of an insufficient biopsy specimen from the incorrect location [2, 3]. There are several different approaches that are reported for patient's comfort during procedure [4-6].

In the present study, we compared the efficacy of two method, periprostatic nerve block along with intrarectal lignocaine gel and intrarectal lignocaine gel instillation only in controlling pain during TRUS-

guided prostate biopsy. It may help in implementing an analgesic and anesthetic protocol during the procedure.

### **MATERIAL AND METHODS:**

This prospective analytical study was conducted in Urology department of IPGMER and SSKM Hospital from January 2013 to December 2014. One hundred and four patients between age group of 40 to 90 years who underwent TRUS guided prostate biopsy were included in this study. Patients with acute prostatitis; acute rectal pathology such as hemorrhoids, anal fissures or other painful rectal conditions; a history of lignocaine allergy; bleeding diathesis and who cannot able to rate a visual analogue scale (VAS) were excluded from this study. Patients were allocated alternately into two groups: Group 1 (combined periprostatic nerve block with intra rectal lignocaine gel) and Group 2 (intra rectal lignocaine gel). Periprostatic nerve block is performed in sagittal plane at the notch between the prostate and the seminal vesicle using Mount Everest sign technique with 5ml 1% lignocaine on each side. A 10-point visual analogue

scale (VAS) was used to assess the pain scores during the needle biopsy procedure.

**Statistical Analysis:**

The statistical analysis was done using STATISTICA, Version 6 software (Stat Soft, Inc., Tulsa, OK, USA, 2001). The distribution of the studied variables in both the group is assessed using Student's unpaired t test, Fisher's exact test and Chi-square test. VAS pain score is compared between two groups by Mann-Whitney U test. P value <0.05 was considered as significant.

**RESULTS:**

The 104 patients were enrolled for the study and underwent TRUS guided prostate biopsy at urology dept in IPGMER & SSKM HOSPITAL during February 2013 to December 2014. Table 1 summarizes the distribution of the studied variable. The mean age was 65.6(±10.8) years with a range from (42 to 85) years. The median Serum PSA was 16 ng/ml ranging

from 2.0-737.9 ng/ml. The 60.58% of the patients undergoing the procedure had both positive DRE finding and raised PSA. The rest had either raised PSA or positive DRE. The complications following TRUS guided biopsy was seen in 56 patients. But majority (39.42%) were mild hematuria and were required no treatment. The 3(2.88%) patients presented with clot retention. Urinary tract infection was seen in 4 patients and 8 patients complained of self limiting mild rectal bleeding.

Although values of Age are normally distributed, while those of PSA is skewed; mean age of the patients, mean volume of the prostates, DRE findings and mean serum PSA values were comparable among these two groups. In our study, the mean VAS pain score during the biopsy was significantly less in Group1 (mean score of 1.12, range 0-4), compared to Group2 (mean score of 4.31, range 1-8) with p value <0.001.

**Table I: Distribution of the studied variables in the sample of the study N=104**

Clinical parameters	No.	%
Mean Age (years)	65.6 (r 42 to 85)	
Median PSA(ng/ml)	16 (r 2.0-737.9)	
Indication		
DRE only	7	6.73
PSA only	33	31.73
DRE+PSA	64	61.54
PSA		
0-4	7	6.73
4.01-10	34	32.69
>10	63	60.58
Mean VAS		
GR1	1.5±1.2 (r 0-5.0)	
GR2	3.8 ±2.1 (r 1.0-8.0)	

**Table II: Complication of TRUS biopsy**

Complication	n	%
Hematuria	41	39.42
Rectal Bleeding	8	7.69
Clot retention	4	3.84
Infection	3	2.88

**Table III: Comparison of variables in Group1 and Group 2**

Variable	p Value
Age	0.156
PSA	0.938
Prostate size	0.759
DRE findings	0.531.

**Table IV: Comparisons of VAS pain score between Groups 1 and 2 – Mann-Whitney U test.**

variable	Rank Sum Group 1	Rank Sum Group 2	U	Z	p Value	Valid N Group 1	Valid N Group 2
VAS Pain score	1601.500	3858.500	223.500	-7.33659	< 0.001*	52	52

\*p value is significant

**DISCUSSION:**

During TRUS guided biopsy of the prostate, the patient often describes two sources of pain: during insertion of the ultrasound probe into the rectum because of mechanical stretching of the anal canal distal to the dentate line and during needle biopsy. As the prostate capsule and parenchyma are very sensitive to pain, needle biopsy is always painful procedure. Various available literatures also suggested that although prostate is supplied by autonomic innervations, patients experience pain during needle biopsy. Periprostatic nerve block was first defined by Nash *et al.*; they found that pain scores were significantly lower in the patients with a unilateral prostatic nerve block, compared with the pain scores of patients who did not.<sup>7</sup> This procedure was modified by Soloway and Obek with two additional injections on each side; one at the midgland and one at the apex of the prostate [8]. In our study, the mean pain score during the biopsy was significantly less in Group1 (mean score of 1.12, range 0-4), compared to Group2 (mean score of 4.31, range 1-8) with p value <0.001. This result was in conformity with that of Obek *et al.*; [9]. Raber *et al.*; Noticed a similar benefit to combined periprostatic nerve block and intra-rectal local anesthetic over periprostatic nerve block alone [10]. A study conducted by Sataa *et al.*; showed that apical periprostatic nerve block significantly reduces pain during transrectal prostate biopsy, without increasing complication rate [11]. Anup *et al.*; also found that the combination of perianal-intra-rectal lignocaine-prilocaine and periprostatic nerve block works better than alone [12]. Although, Wu *et al.*; mentioned that periprostatic block has no significant effect in pain control [13]. A recent meta-analysis has suggested significant reduction of pain in periprostatic nerve block when compared to no anesthesia or placebo [14].

Our study showed that periprostatic injection of Lignocaine is effective for pain control during prostatic biopsy and patients are more compliant to the procedure. We found that patients received periprostatic nerve block with intra-rectal lignocaine gel wants repeat biopsy more often than patients who were received intra rectal lignocaine gel only. Although it is said that intra-rectal lignocaine gel is better than placebo or no anesthesia, we found it is not suitable for prostatic biopsy. In our series the mean VAS score was 1.12(range 0-4). Similar to our finding, available studies have also suggested that intra-rectal local anesthetic

alone is not sufficient for pain relief during the biopsy procedure [15]. In contrary to most of the studies, Kumar *et al.* has shown that prostatic nerve block is not sufficient to control pain during biopsy [16]. However our experience does not support it.

**CONCLUSION:**

Periprostatic nerve block is a cost effective, easily performed and minimally invasive method with high success in patients. We recommend that periprostatic nerve block be routinely used before the procedure to improve patient comfort and increase the ease of the biopsy procedure. The application of an intrarectal gel may make the procedure easier. It will help in reducing pain during TRUS probe insertion into the rectum.

**REFERENCES:**

1. Irani J, Fournier F, Bon D, Gremmo E, Doré B, Aubert J; Patient tolerance of transrectal ultrasound guided biopsy of the prostate. *Br J Urol.* 1997; 79: 608-10.
2. De Sio M, D'Armiento M, Di Lorenzo G, Damiano R, Perdonà S, De Placido S, *et al.*; The need to reduce patient discomfort during transrectal ultrasonography-guided prostate biopsy: what do we know? *BJU Int.* 2005; 96: 977-83.
3. Clements R, Aideyan OU, Griffiths GJ, Peeling WB; Side effects and patient acceptability of transrectal biopsy of the prostate. *Clin Radiol.* 1993; 47: 125-6.
4. Autorino R, De Sio M, Di Lorenzo G, Damiano R, Perdonà S, Cindolo L, *et al.*; How to decrease pain during transrectal ultrasound guided prostate biopsy: a look at the literature. *J Urol.* 2005; 174: 2091-7.
5. Bhomi KK, Lim HH, Consigliere DT, Tiong HY; Control of pain during transrectal ultrasound-guided prostate biopsy: a prospective study comparing two methods. *Urol Int.* 2007; 79: 332-5.
6. Mireku-Boateng AO; Intravenous ketorolac significantly reduces the pain of office transrectal ultrasound and prostate biopsies. *Urol Int.* 2004; 73: 123-4.
7. Nash PA, Bruce JE, Indudhara R, Shinohara K; Transrectal ultrasound guided prostatic nerve blockade eases systematic needle biopsy of the prostate. *J Urol.* 1996; 155:607-609.

8. Soloway MS, Obek C; Periprostatic local anesthesia before ultrasound guided prostate biopsy. *J Urol.*2000; 163:172-173.
9. Obek C, Ozkan B, Tunc B, Can G, Yalcin V, Solok V; Comparison of 3 different methods of anesthesia before transrectal prostate biopsy: a prospective randomized trial. *J Urol.* 2004; 172:502-505.
10. Raber M, Scattoni V, Roscigno M, Dehò F, Briganti A, Salonia A *et al.*; Topical prilocaine-lignocaine cream combined with peripheral nerve block improves pain control in prostatic biopsy: results from a prospective randomized trial. *Eur Urol.* 2008; 53(5):967-973.
11. Sataa S, Ramzi M, Mohamed C, Imed BS, Sami BR, Ghassen H, *et al.*; Local anesthesia in transrectal ultrasound-guided prostate biopsy: apical periprostatic nerve block versus endorectal lignocaine gel. A randomized controlled trial of 100 patients. *Tunis Med.* 2010; 88:217-22.
12. Anup K, Pawan V, Niraj K, Biswajit N, Nayan MK; A prospective randomized trial comparing three different analgesic techniques for pain control during transrectal ultrasound guided prostate biopsy: a single center experience. *Minerva Urol Nefrol.* 2013; 65:77-82.
13. Wu CL, Carter HB, Naqibuddin M, Fleisher LA; Effect of local anesthetics on patient recovery after transrectal biopsy. *Urology.* 2001; 57:925-929.
14. Tiong HY, Liew LC, Samuel M, Consigliere D; Esuvaranathan K; A meta-analysis of local anesthesia for transrectal ultrasound-guided biopsy of the prostate. *Prostate Cancer Prostatic Dis.* 2007; 10:127-136.
15. Yurdakul T, Taspinar B, Kilic O, Kilinc M, Serarslan A; Topical and long-acting local anesthetic for prostate biopsy: a prospective randomized placebo-controlled study. *Urologia internationalis.* 2009; 83:151-154.
16. Kumar A, Griwan MS, Singh SK, Sen J, Pawar DS; Is periprostatic nerve block a gold standard in case of transrectal ultrasound-guided prostate biopsy? *Urol Ann.* 2013; 5:152-6.