

# EVALUATION OF COMPLICATIONS OF INTRA-PROSTATIC LOCAL ANAESTHESIA AND PERIPROSTATIC LOCAL ANAESTHESIA FOR TRUS GUIDED PROSTATE BIOPSY

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## Abstract:

**Objectives :** To evaluate complications in Intra-prostatic local Anaesthesia and Periprostatic local Anaesthesia for TRUS Guided Prostate Biopsy.

**Methods:** This study was carried out in the Department of Urology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka Medical College (DMCH) and Comfort Nursing Home, Dhaka during the period of January 2009 to October 2009, evaluate complications between periprostatic with intraprostatic local anaesthesia for transrectal prostate biopsy. For this purpose, a total number of 60 consecutive patients having increased prostate specific antigen (PSA >4.0ng/ml), abnormal DRE/transrectal ultrasound were admitted in the above mentioned hospitals were enrolled in this study for surgical management.

**Result :** The age ranged from 50 to 90 years and the maximum number was found in the age group of 61-70 years in both groups. The mean( $\pm$ SD) age was 68.5 $\pm$ 7.5 years and 70.3 $\pm$ 8.2 years in group I and group II respectively. No systemic lidocaine toxicity was observed in group II. But only dizziness were found in 2 cases (6.7%) and visual disturbance were found in 1 (3.3%) case respectively in group I. Urinary tract infection was found 2(6.7%) in group I and 1(3.3%) in group II patients. Hematuria was found 23(76.7%) in group I and 19(63.3%) in group II. Rectal bleeding was found 14(46.7%) in group I and 11(36.7%) in group II. The statistically not significant ( $p>0.05$ ) between two groups in chi square and fisher exact test respectively.

**Conclusion :** It is a simple and safe method that is less painful and it should be considered in all patients undergoing transrectal ultrasound guided prostate biopsy. Complications were less in intra-prostatic local anaesthesia than periprostatic local anaesthesia for TRUS guided prostate Biopsy.

**Key words:** Prostate cancer, Prostate biopsy, Intraprostatic local anaesthesia, Periprostatic local anesthesia.

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## Introduction:

Transrectal ultrasound guided prostate biopsy is one of the most common procedures performed by urologists since its introduction in late 1980, TRUS guided biopsy has become a routine outpatient procedure for the diagnosis of prostate cancer. Over the past decade, one of the most significant development has been the ability

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to provide local anaesthesia to patients undergoing TRUS procedure. Initially, biopsy involved taking a limited number of cores from a needle, but it has been changed with the sextant biopsy technique, which soon became the standard[1].

Despite the procedure was being well tolerated by most patients and performed without any form of anesthesia in most centers, this procedure has been reported to have a 13–90% rate of discomfort [2,3,4]. Additionally,

the discomfort tends to become more severe with the increase in the number of cores biopsies and the prevalence of repeat biopsies[5,6]. Despite the abundance of reports in the literature regarding the evaluation of the efficacy of the Intra-prostatic local anesthesia and determination of the optimum value for number, amount and site of injection, little emphasis has been placed on complications and limitations associated with the method[7]. The vast majority of prostate cancers currently are detected by a combination of PSA screening and TRUS-guided biopsy of the prostate. Patient tolerance is a critical consideration based on the sensitivity of the prostate. Previously there was debate as to whether prostate biopsy actually causes significant discomfort for the patient, and clinicians traditionally took the biopsies with no anaesthesia[8]. A review of published reports on prostate biopsy and anaesthesia revealed that the Intraprostatic biopsy is the most safe method [9]. The most common technique uses a basal approach, where lidocaine, under TRUS guidance, is injected directly to the prostate from apex to base.

Local anesthetic administration for TRUS-guided prostate biopsies has been extensively written by many investigators. Many studies report the benefit of local anesthetic injection. Most of them assess and report the benefit of intraprostatic local anesthetic injection evaluated the effect of intraprostatic injection with local anesthetic on the level of patient discomfort against no anesthetic injection and found that the former significantly reduced patient discomfort during the procedure[10,11,12,13]. In most recent studies, some investigators reported that intraprostatic local anesthetic injection significantly decreased the pain associated with prostate biopsy[14,15,16]. The use of local anesthetic to reduce patient discomfort during this procedure, as multiple recent studies have also concluded. To minimize further pain a completely new method, namely intraprostatic anesthesia and compared it with traditional periprostatic anesthesia. Better analgesia would be achieved by anesthetizing the prostate itself, which is the source of pain. Such a method would need to block all sensory nerves, not only from the posterior, but also from the anterior side. Intraprostatic administration of local anesthesia significantly decreases pain during prostate biopsy compared with periprostatic injection.

#### Materials and Methods :

The study was a hospital based prospective study comprises of 60 adult male patients with increased prostate specific antigen( PSA > 4.0 ng/ml ), abnormal DRE finding and abnormal transrectal ultrasound, attending in BSMMU, Dhaka Medical College Hospital

and Comfort Nursing Home from January 2009 to October 2009 in the department of Urology , BSMMU. Patients were included according to selection and exclusion criteria with a target to recruit finally not less than 30 cases in each group . Grouping was done as Group I : Periprostatic L/A (30 )and Group II : Intraprostatic L/A(30) . Inclusion criteria was : a) Adult male b) Increased prostate specific antigen (PSA > 4.0 ng/ml) c) Abnormal DRE finding ( nodule ) d) Abnormal transrectal ultrasound (hypoechoic lesion). All patients were given an explanation of the study and informed written consent was taken each patient as per instruction of the ethical committee. Patients were usually placed in the left lateral position with knees and hips flexed at 90°. Lidocaine gel was used with 7 MHZ probe . The prostate was imaged in the transverse and sagittal planes and prostate volume was measured by the non planimetric ellipsoid method. For periprostatic anaesthesia 5 ml 1.0% lidocaine were injected via 7 inch 22 gauge PCN needle into region prostatic vascular pedicle at the base of the prostate just lateral to the junction between the prostate and seminal vesicles and for intraprostatic a total of 10 ml 1.0% lidocaine in portions were injected at 2 sites in the right and left sides of the prostate from base to apex[16,17]. Immediately after injections 10 core biopsies were obtained with an 18 gauge needle. After completion of the procedure patients were given a questionnaire enquiring about morbidity and pain threshold . They were asked to complete it and mail it to the urology department . Safety measure was taken to monitor lidocaine toxicity.

#### Result :

After proper explanation of all aspects of the study, every patient was scheduled for USG - guided transrectal prostatic biopsy under local anesthesia.

**Table I**  
*Systemic lidocaine toxicity in periprostatic and intraprostatic group*

Systemic lidocaine Toxicity	Group I (n=30)		Group II(n=30)	
	n	%	n	%
Lidocaine allergy	0	0.0	0	0.0
Hypotension	0	0.0	0	0.0
Anaphylactic reaction	0	0.0	0	0.0
Dizziness	2	6.7	0	0.0
Visual disturbance	1	3.3	0	0.0

Group I: Periprostatic

Group II: Intraprostatic

Table – I showed that the no systemic lidocaine toxicity was observed in group II. But only dizziness were found in 2 cases (6.7%) and visual disturbance were found in 1 (3.3%) case respectively in group I.

**Table II**  
*Complications in periprostatic and intraprostatic groups*

Complications	Group I (n=30)		Group II(n=30)		P Value
	N	%	n	%	
Urinary tract infection					
Yes	2	6.7	1	3.3	<sup>b</sup> 0.500
No	28	93.3	29	96.7	
Hematuria					
Yes	23	76.7	19	63.3	<sup>a</sup> 0.259
No	7	23.3	11	36.7	
Rectal bleeding					
Yes	14	46.7	11	36.7	<sup>a</sup> 0.432
No	16	53.3	19	63.3	

Group I: Periprostatic Group II: Intraprostatic <sup>a</sup>= p value reached from chi square test <sup>b</sup>= p value reached from fisher exact test

Regarding the complications the table- II showed urinary tract infection was found 2(6.7%) in group I and 1(3.3%) in group II patients. Hematuria was found 23(76.7%) in group I and 19(63.3%) in group II. Rectal bleeding was found 14(46.7%) in group I and 11(36.7%) in group II. The statistically not significant ( $p>0.05$ ) between two groups in chi square and fisher exact test respectively.

#### Discussion :

TRUS-guided biopsy of the prostate has become a ubiquitous and critical tool for evaluating and managing prostate cancer. Improving patient tolerance and comfort associated with the procedure, by decreasing associated pain and morbidity, is therefore of paramount importance. Regarding the complications of biopsy procedure a study showed that rectal bleeding was more than urinary tract infection in their series [28,29,30,31]. In a current study urinary tract infection, hematuria were found less in a group which were given intraprostatic anaesthesia during TRUS[10,32,33,34].

Regarding lidocaine toxicity, it was observed that lidocaine allergy, hypotension and anaphylactic reaction were not found in both groups. However, dizziness and visual disturbance were found 1(3.3%) and 1(3.3%) in group I and group II respectively. As regards to the systemic lidocaine toxicity, a number of investigators studied 2.0% in their studies[18]. Regarding the complications biopsy procedure the present study showed that rectal bleeding and urinary tract infection were observed 2(6.7%) and 1(3.3%) in group I and group II respectively. The same complication were found in 2% of case in the study in their series[3,19,20,21] In the current study urinary tract infection was 2(6.7%) in

group I and 1(3.3%) in in group II. Regarding the hematuria, there are other studies have shown in a prospective study that having 63.0% and 75.0% in group I and group II respectively, which are consistent to the present study, where the present study found hematuria 23(76.7%) in group I and 19(63.3%) in group II. Similar results obtained by some investigators in their study[3,12]. In this study it was observed that Rectal bleeding was 14(46.7%) in group I and 11(36.7%) in group II. Similar findings were found [12].

#### Conclusion:

This prospective study was carried out to assess systemic lidocaine toxicity and complications between periprostatic with intraprostatic local anaesthesia for transrectal prostate biopsy. TRUS-guided biopsy of the prostate has become a ubiquitous and critical tool for evaluating and managing prostate cancer. Complications were less in intra-prostatic local anaesthesia in comparison to periprostatic local anaesthesia for TRUS guided prostate biopsy. Intraprostatic local anesthesia technique is more acceptable technique for prostate biopsy. It is a simple and safe method that is less painful and it should be considered in all patients undergoing transrectal ultrasound guided prostate biopsy.

**Conflict of Interest:** None declared

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**Abbreviations:**

- DRE : Digital Rectal Examination  
 PSA : Prostate Specific Antigen  
 TRUS : Transrectal ultrasound