

SHORT TERM/IMMEDIATE COMPLICATIONS ASSOCIATED WITH TRANSRECTAL ULTRASOUND GUIDED OCTANT PROSTATE BIOPSY

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ABSTRACT

OBJECTIVE: To determine the frequency of complications in TRUS guided prostate biopsies by octant method in patients having clinical suspicion of prostate malignancy. **METHODS:** This is a case series carried out in radiology department of SIUT, From June 2009 to Dec 2009. Patients were included in this study who had raised serum PSA levels (> 10 ng/ml), underwent transrectal ultrasound (TRUS) guided octant prostate biopsy. Complications were defined as hematuria, rectal bleeding and hemospermia recorded on clinical follow-up till one month period. Patients having acute urinary tract infection, uncorrectable bleeding diathesis and rectal fistulas were not included in the study sample. **RESULTS:** Hematuria was seen in 49.8 % patients, rectal bleeding noted in 19.8 % and hemospermia was identified in 10.6 %. All the complications were self-limiting, did not need any interventional management or treatment. **CONCLUSION:** Transrectal ultrasound guided octant prostate biopsy is a very important diagnostic tool for the early diagnosis of prostatic carcinoma and it has very low complication rate.

Keywords: Prostatic Neoplasm, Hematuria, Hemospermia, Transrectal ultrasound, Biopsy.

Introduction

Prostate cancer is the second most commonly diagnosed cancer in men world wide and it is responsible for over 221,000 deaths each year, equivalent to one every two minutes.¹ Although many men will never experience complications or a reduced life-span from prostate cancer, a diagnosis of prostate cancer can result in anxiety in some patients and caregivers.² Owing to wide spread use of prostate specific antigen (PSA) screening the majority of currently diagnosed prostate cancers are organ confined.³ Prostate is deeply located so it is difficult to study the details of its echotexture by trans-abdominal ultrasound. Considering these difficulties the evolution of transrectal ultrasound has taken place.⁴

The most important lesion of prostate cancer is prostate intraepithelial neoplasia (PIN).⁵⁻⁷ Biopsy

sampling improves the pretreatment characterization of prostate cancer in terms of location, cell type and staging.¹

The octant (eight core) biopsy protocol has a cancer detection rate of 39.7% as compared to sextant (six core) biopsy protocol which is about 33.5%. In both groups at least 50% patients having hematuria for up to 7 days after the procedure, hemospermia is seen between 9.8% to 50%, severe vasovagal response is seen in 1.4% to 5.3% and acute urinary retention is seen in 0.2% to 0.5% of cases.⁷

So it is said that in patients with PSA levels of more than 4 ng/ml, the eight core biopsy method has shown an edge over the sextant biopsies in terms of prostate cancer detection rate.⁸ In another study, prevalence of hematuria in octant biopsies is 41%, hemospermia is 16% while rectal bleeding is 26%.⁹

Prostate specific antigen screening has led to an

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increase in number of patients undergoing prostate biopsy which in turn increases the post biopsy complications.¹⁰ The endeavor should be to continue to improve the biopsy technique to identify prostate carcinomas more accurately.

To our knowledge no data has been published from our part of world related to complications in Transrectal octant prostate biopsy. Therefore, the objective of this study was to assess the frequency of immediate/short term complications in TRUS guided prostate biopsies by octant method in patients having raised serum PSA levels (>10 ng/ml), in our setup.

Material and Methods

The participants of the study were included from the patients presenting to SIUT Karachi with clinical suspicion of prostate malignancy. A group of 207 patients were included in this study from OPD in SIUT. Patients having acute urinary tract infection, uncorrectable bleeding diathesis and rectal fistulas were not included in the study sample. All these patients underwent Transrectal ultrasound guided octant prostate biopsy. Later on final outcome was assessed after 1 week in OPD follow up. Complications were recorded in the performa for each patient by a team of urologists conducting the OPD clinics. The complications were labeled positive according to the following criteria.

- Hematuria (> 2 red blood cell per HPF).
- Rectal bleeding as soaking of dressing gauze after the procedure.
- Hematospermia presence of RBC's in semen analysis.

All patients were counseled and an informed written consent was obtained prior to biopsy. All patients were prescribed an oral Quinolone and Metronidazole 2 days prior and 3 days after the biopsy procedure. No dietary restrictions were planned prior to biopsy. Klean enema was given in the morning of biopsy to attempt completerectal evacuation. Patients were asked to stop all anticoagulants (aspirin, warfarin) one week prior to biopsy. Biopsies were performed in patients who had raised PSA level > 10 ng/dl. Biopsies were obtained

with the patient in lateral decubitus position with knees and hips flexed. No oral or intravenous sedation was used prior or during the biopsy. Xylocaine gel was used as a local anesthetic agent. Ultrasound probe covered with condom & xylocaine gel was introduced gently and initial assessment of prostate gland was made. For the biopsy purpose prostate was imaged in sagittal plane. (Fig. 1&2) 18 gauge biopsy needles of (Bard-Monoply; Bard, Covington GA) were used. All biopsy samples were adequate and placed in formalin. All patients were allowed to ambulate 15 minutes after biopsy and were again checked after approximately 1 hour following the biopsy to see any hematuria or rectal bleeding. Statistical analysis was performed with SPSS version 14. After entering the data in SPSS percentages, frequencies were calculated for the complications of hematuria, rectal bleeding and hematospermia.

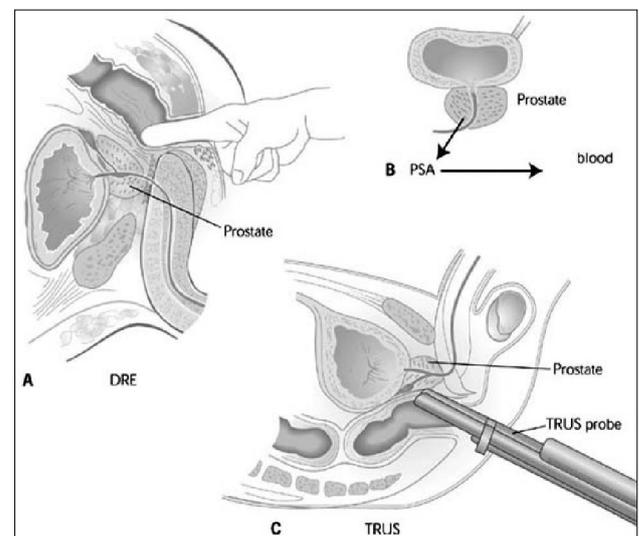


Figure 1: Anatomy and procedure method

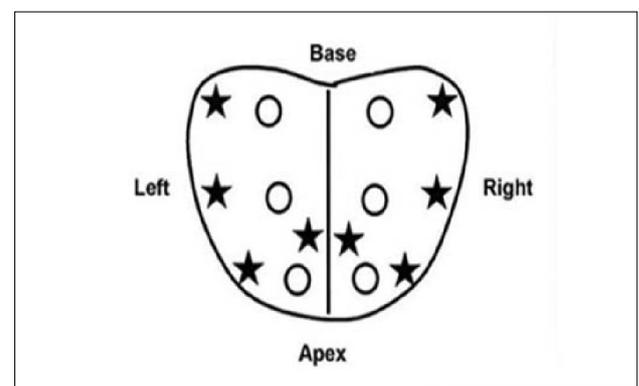


Figure 2: ★ represents octant biopsy sites

Results

The final number of patients in our study was 207. The age ranged from 42 years to 95 years. The mean age was 68.64 years (\pm 9.24). Total 1656 biopsy samples were taken from 207 patients. Number of prostate biopsy cores was same in all the patients. The recorded complications and their percentages are shown in (Tab. 1). 103 (49.8 %) patients out of 207 patients developed self-limiting hematuria and it is the most common complication in our study, while 41 (19.8 %) patients had self limiting rectal bleeding and 22 (10.6 %) patients out of 207 patients had hematospermia after octant TRUS biopsy. The hematuria was most common and hematospermia was the least common complication recorded. The maximum number of complications was seen in age group between 60-69 years. (Tab. 2) All these complications were self-limiting. No life threatening or complication requiring active intervention was noted.

Complications of Biopsy	Number out of 207	Percentages (%)
Hematuria	103	49.8
Rectal Bleeding	41	19.8
Hematospermia	22	10.6
Total no of complications	166	

Table 1: Frequencies and Percentages of Complications

AGE GROUPS (In years)	NO OF COMPLICATIONS	Percentages (%)
40-49	2	1.2
50-59	22	13.2
60-69	63	37.95
70-79	58	34.93
80-89	20	12.04
90-99	1	0.60

Table 2: Stratified Data According to age Groups

Discussion

Cancer of prostate is a commonly diagnosed cancer in western men, however, there is sparse information about the demographics of this malignancy in Pakistan. An approximate 60% increase was observed between 1995 and 2002 with age specific

curves showing a gradual increase in risk from the 5th decade onward.

Implementation of prostatic carcinoma screening and public health education is a necessity today.¹² Prior to the widespread availability of methods enabling early detection of prostate cancer, including digital rectal examination (DRE), transrectal ultrasonography (TRUS), and prostate-specific antigen (PSA) measurement, most men with prostate cancer received a diagnosis of advanced disease and died within a few years of diagnosis.¹³ Many men die with prostate cancer rather than die from prostate cancer; however, some cancers are aggressive, with a rapidly worsening course.¹⁴

The clinically significant disease should be distinguished from insignificant disease which may pose little or no biological danger to the patient.¹⁵ Accurate characterization of prostate cancer is crucial for treatment planning and patient management.¹⁶ Early prostate carcinoma detection has led to significant stage migration and thus to an increased proportion of men diagnosed with clinically localized disease.¹⁷

Prostate biopsy is an uncomfortable procedure.¹⁸ Before transrectal systemic sampling, prostate biopsies were usually performed with a transperineal approach, using a manually fired 14 gauge needle under digital guidance, and were directed at palpable nodules.¹⁹ Now, TRUS guided needle biopsy of the prostate is the standard technique in the diagnosis of prostate cancer.²⁰ About 70% of carcinoma of prostate originate in peripheral zone, 10 to 20% in transition zone and 5-10% in central zone.^{5,7} The widely adopted sextant protocol did not detect as many cancers as did a more extensive biopsy procedure.²¹ In octant biopsy, prostate cores are obtained from the six regions of the peripheral gland and two additional cores were obtained from the transitional zone on each side of the gland.²²

Bleeding is the most common complication rectal bleeding is typically minor but brisk hematochezia may require anoscopic intervention. Other complications include UTI, fatal septicemia, severe vasovagal response and acute urinary retention.²³ In octant and sextant biopsies 50% patients are having hematuria, hematospermia is seen between 9.8% to 50.3%, severe vasovagal response in 1.4% to

5.3% and acute urinary retention is seen in 0.2% to 0.5% of cases.⁷ Our study showed the frequency of three main complications of octant TRUS biopsy including hematuria, rectal bleeding and hematospermia. In this section we discuss and compared the results of our study with the other studies in terms of technique, criteria and interpretation. In the study done by Ghani KR et al¹⁰ hematuria was seen in 41%, hematospermia was seen in 16% and rectal bleeding in 26% patients after TRUS guided octant biopsy. In our study the frequency of hematuria was 49.8 %, rectal bleeding 19.82 % and hematospermia was 10.6 %. The difference in these two studies is because the Ghani KR et al¹⁰ was done over a period of 5 years and it included the 6, 8 and 12 core biopsies, in contrast to our study which only evaluated the 8 core biopsies and was for six month duration.

In the study by de Jesus CM et al²⁴ hemorrhagic complications were most common (75.3%). Our study also showed hematuria (49.8 %) as the most common among the three complications, which was significantly less than that of the above mentioned study. This difference in the complication rate could be due the fact that our institute has a large output for these procedures and as thus more experience with these patients may have contributed the lower rate of complication in our study.

Study done by Vazquez Rodriguez A et al²⁵ between 1995-2005 shows that self-limiting hematuria and rectorrhagia (rectal bleeding) accounted for 82% of all complications. In our study the hematuria and the rectal bleeding accounted for only 69.6 % complications. Periprostatic hematoma is seen in about 87% of the cases studied by Vazquez Rodriguez A et al.²⁵ This study was based on large duration and since newer better ultrasound and biopsy equipment has developed since then, as well as the refinement in technique, thus explaining the lower complication rate in our study.

In the study done by Lee G et al²⁶ hematospermia, hematuria and rectal bleeding characteristics were evaluated after 2 weeks of TRUS prostate biopsy by a questionnaire method. 63% patients experienced hematuria, 25% patients experienced a rectal bleed, 13% patients had difficulty in passing urine. 38% patients had some degree of discomfort. In our study follow-up of patients were done after 1 week of the

TRUS biopsy instead of 2 weeks and the frequencies of hematospermia, hematuria and rectal bleeding were recorded by detailed performa and were found to be 10.6 %, 49.8 % and 19.8 % respectively. Here again we see the difference in hemorrhagic complication in favor of our study because of the fact that the procedure was done by urologists not by radiologists, who have better skills for an image guided procedures.

Our study has few limitations including single center, small sample size and no long term follow-up was taken from patients underwent TRUS prostate biopsy.

Conclusion

The TRUS ultrasound and TRUS guided biopsy play a major role in diagnosing prostatic carcinomas. The standard octant prostate biopsy has a significantly high prostate detection rate over the sextant biopsy with low complication rate. In our study all the major complications including hematuria, rectal bleeding and hematospermia were self limiting. This is the first study from Pakistan on frequency of complications associated with octant prostate biopsy. The complication rate is similar to that reported previously around the world.

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