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Title of the presentation: Transrectal Ultrasound Guided Prostate Biopsy - An Audit

Category: Non Vascular Interventions

Authors and Institute:

Presenting Author : Dr Saket Patwardhan

Co Authors: Dr Sanjay Kulkarni, Dr Pankaj Joshi, Dr Shreyas B,

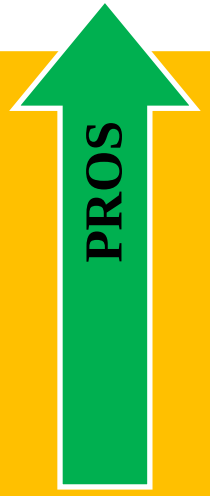
Dr Amit H, Dr Uday C, Dr Apurv A, Dr Adarsh K, Dr Amey T

Institute: Urokul - Kulkarni Urosurgery Institute Pune, Maharashtra, India

Introduction

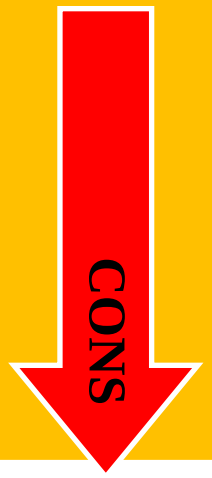
Prostate cancer is among the most common cancers in men, being the sixth leading cause of cancer-related death globally. Most prostate cancers are slow growing, but aggressive prostate cancers are also seen. Biopsy is the only test able to confirm the diagnosis of prostate cancer - performed most commonly via transrectal ultrasonography (TRUS). TRUS guided prostate biopsy is an important tool in diagnosis of prostate cancer. It is usually indicated in case of elevated PSA levels, PIRADS 3 or more on MPMRI Prostate. Under local anesthesia and USG guidance, targeted sampling of the prostate is done and multiple cores of tissue are obtained. It is a daycare interventional procedure with few risks such as hemorrhage and infection. Procedure usually takes 30 mins and the patient can be discharged within 2 hours. Other approaches include transperineal or transurethral routes. Variations of TRUS biopsy are tried in different studies to increase the diagnostic yield. They concentrate on higher number of cores taken. Also, targeting the lateral lobes and the peripheral zone, especially in larger prostates. Thus, there is improved prostate cancer detection by almost 20–35%, now widely practised in Urology.

TRUS Biopsy



- Fast
- Familiarity
- Local anaesthesia
- Lower risk of urinary retention
- Cost-effective

- Antibiotic prophylaxis required due to risk of infection and sepsis
- Limitations in targeting



Indications

- **PSA levels higher than normal for age (>4ng/ml)**
- **MPMRI : PIRADS score > or = 3**
- **Suspicious masses during a digital rectal exam**
- **Previous biopsy with a normal result, but persistent elevated PSA levels**
- **Increased PSA Density or PSA Velocity**

Aims & Objectives

Primary

To detect accuracy of the Transrectal Ultrasound Guided Prostate Biopsy procedure

Secondary

To detect rate of complications associated with the procedure

Methodology

A series of 40 prostate biopsies performed at our institute presented. These include patients of varying ages from 52 to 86 years. Pre biopsy PSA levels ranged from 3.6-128 ng/ml. MPMRI prostate was reviewed in all cases. Systematic 12 core biopsy protocol and additional targeted biopsy protocol were used as per MPMRI and TRUS findings. Procedure was done using local anaesthesia and periprostatic nerve blockade. Average procedure time was 28 minutes. Success rates were obtained. Histopathology results and rates of complications were analysed. Correlation with post surgical HPE reports was also done in cases where patient underwent TURP or robotic /Laparoscopic simple / radical prostatectomy procedures. Analysis results obtained and conclusions drawn.

Inclusion Criteria

1. All patients with TRUS guided biopsy of prostate included in the study.
2. Patient who underwent biopsy and had radiological images available
3. Post-biopsy HPE reports available
4. Post- surgical HPE reports available (if operated).

Positive

1. Sample adequate for analysis
2. With a histological diagnosis Benign or malignant.

Negative

1. Non- diagnostic - No cells
2. Haemorrhagic material
3. Necrotic material insufficient for analysis

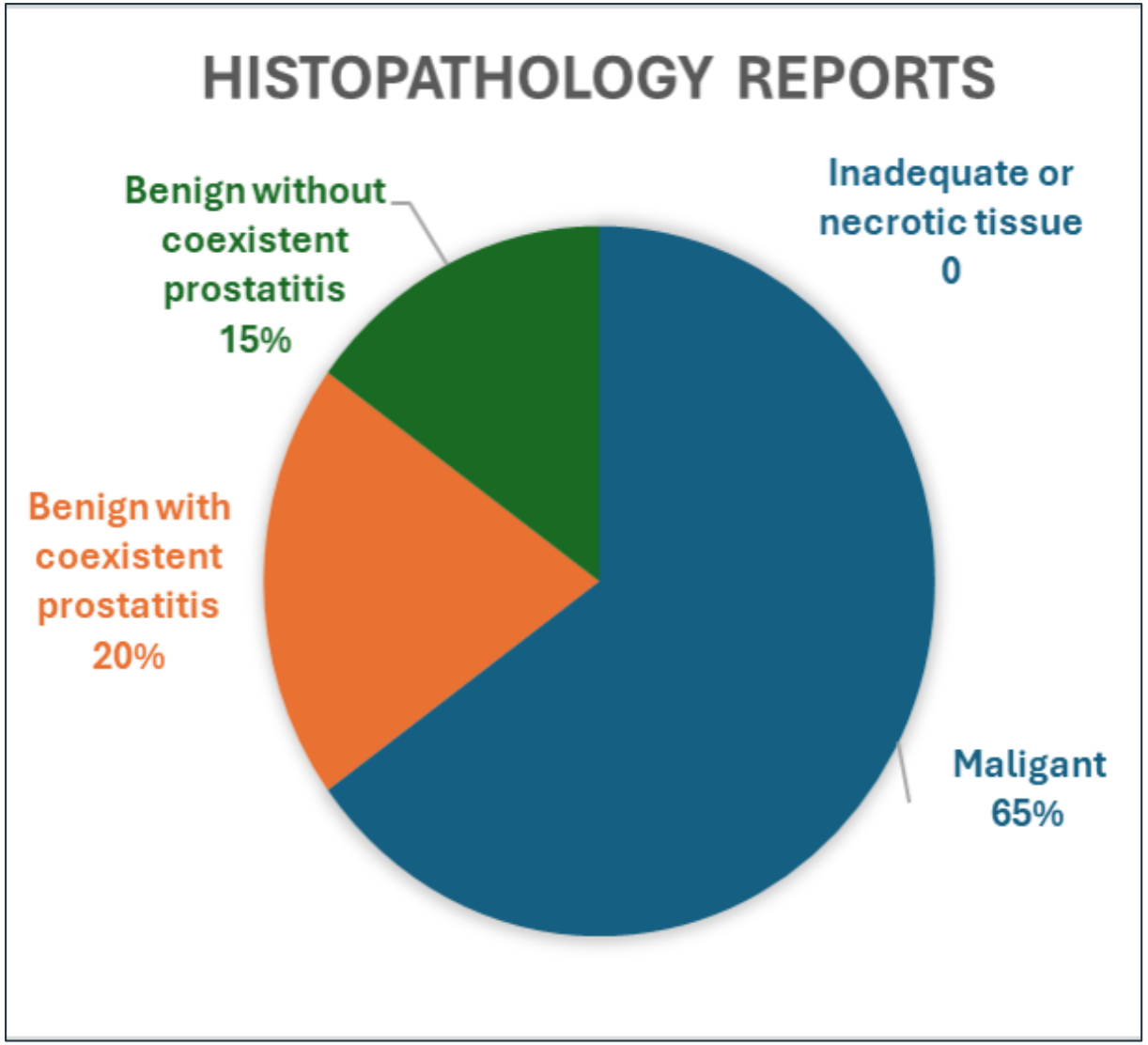
Results

In our study, we evaluated the accuracy, safety and complication rate for transrectal ultrasound guided prostate biopsies.

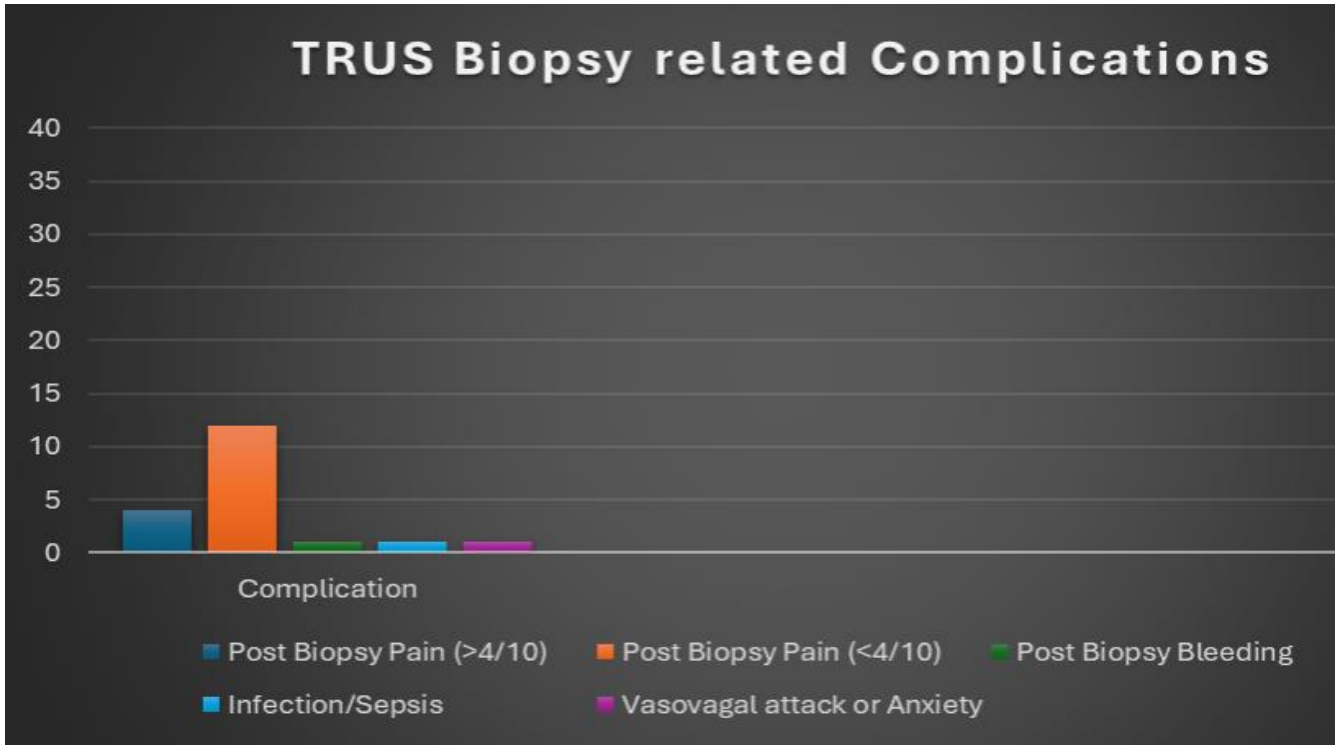
Accuracy: All biopsies yielded a positive result suggestive of 100% accuracy - malignant, benign and inflammatory etiology were the histopathological diagnoses. No inadequacy of samples was noted. No repeat biopsy was needed.

26 biopsy reports were diagnostic of carcinoma prostate, 14 biopsy reports were diagnostic of benign enlargement of prostate with or without prostatitis. 8 patients had coexistent prostatitis. One case of granulomatous prostatitis was also seen.

Complications : 2 major complications occurred in the dataset. Post biopsy bleeding occurred in 1 patient. 1 patient developed urinary tract infection 3 days post biopsy. Pain was the most common complication overall. 1 patient had brief vasovagal syncope. No other significant complication was seen.



Results

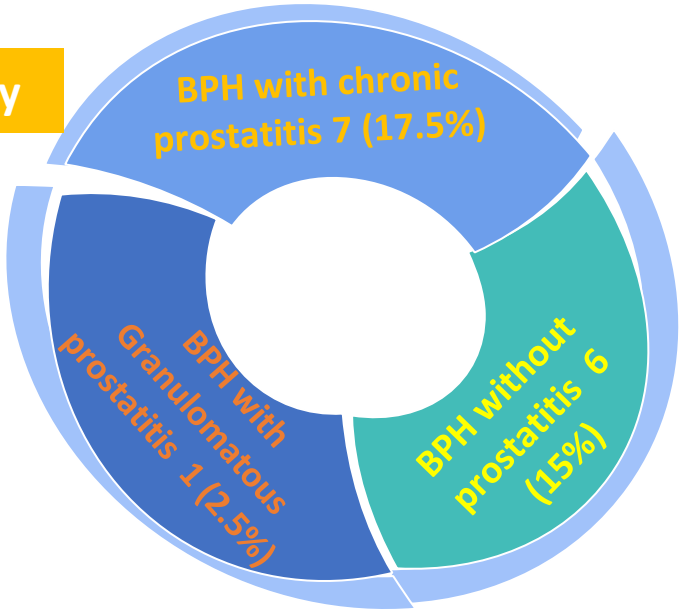


Malignant Etiology

Peripheral Zone 22
55 %

Transition Zone 4
10 %

Benign Etiology

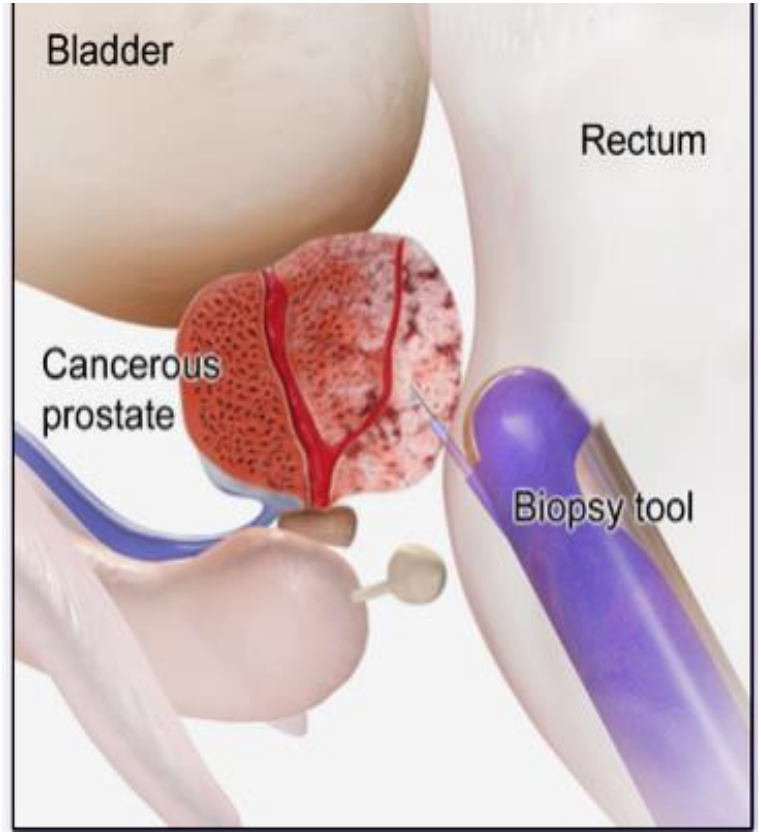


Technique:

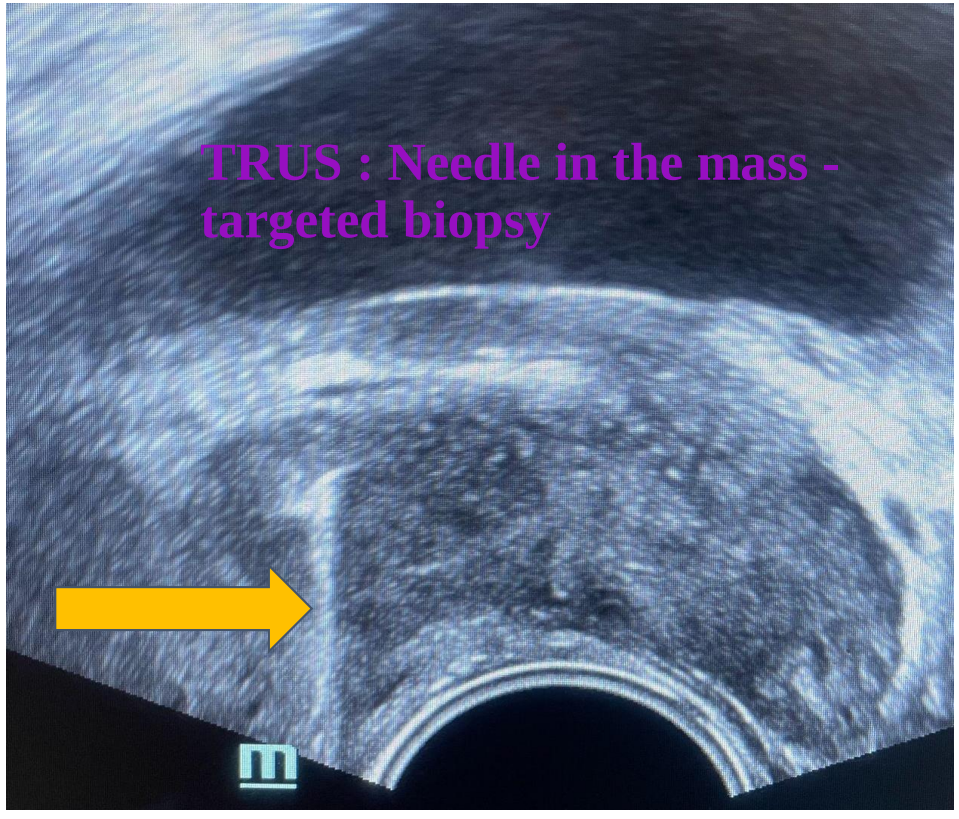
A standard technique performed in our institute as follows:

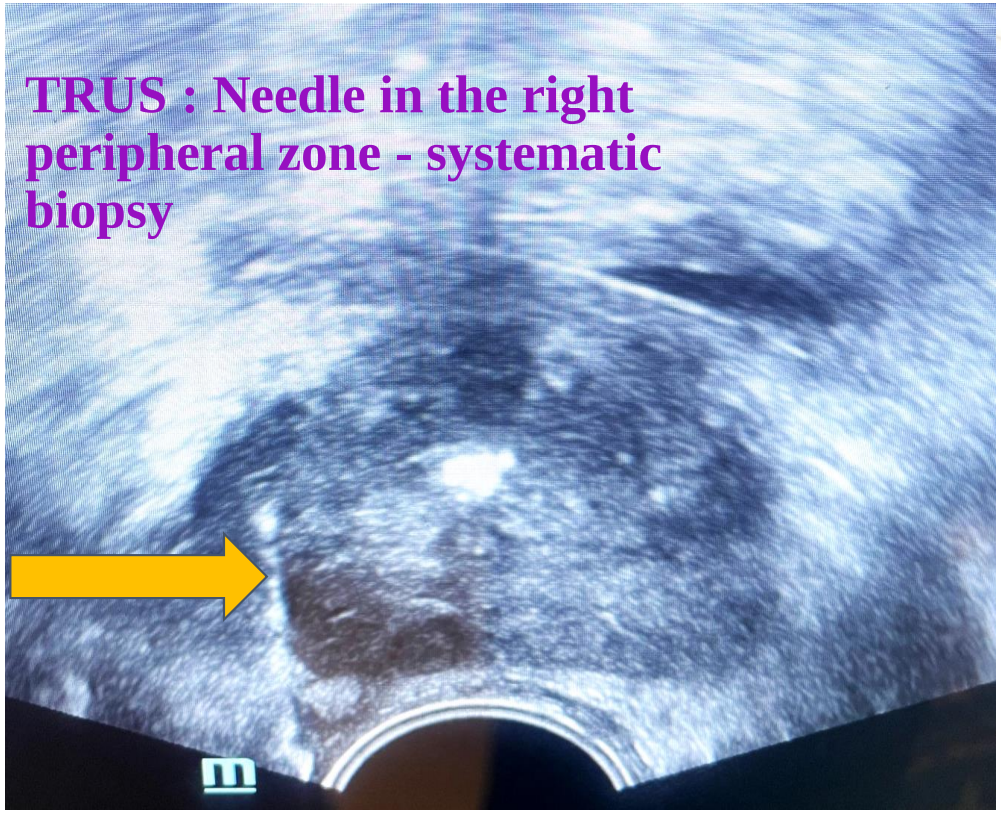
TRUS biopsy is a Daycare procedure. Patient is in the left lateral decubitus position. Digital rectal examination performed. Per Rectal local anasthetic agent lignocaine applied. A semiautomatic BARD biopsy gun and a 10 MHz endorectal ultrasound probe used. The probe is covered with ultrasound jelly, a thin probe cover/condom, and a coat of lignocaine jelly. The probe inserted in the rectum and prostate visualised. 5 ml Lignocaine is injected into the peri-prostatic neurovascular bundles on each side. Prostate size and volume measured, then systematic and additional targeted core prostate biopsies obtained. Hemostatis achieved by probe compression 10 mins post biopsy. Gauze piece kept in the rectum, which is removed 2 hours post observation.

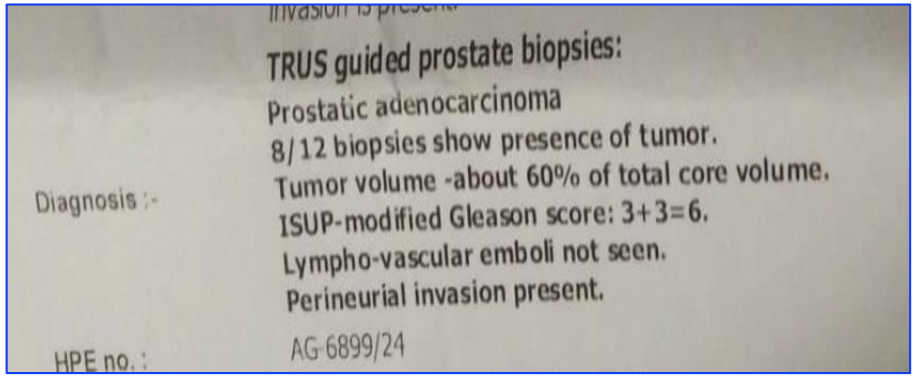
Representative Images



Representative Images






Invasion is present.

TRUS guided prostate biopsies:

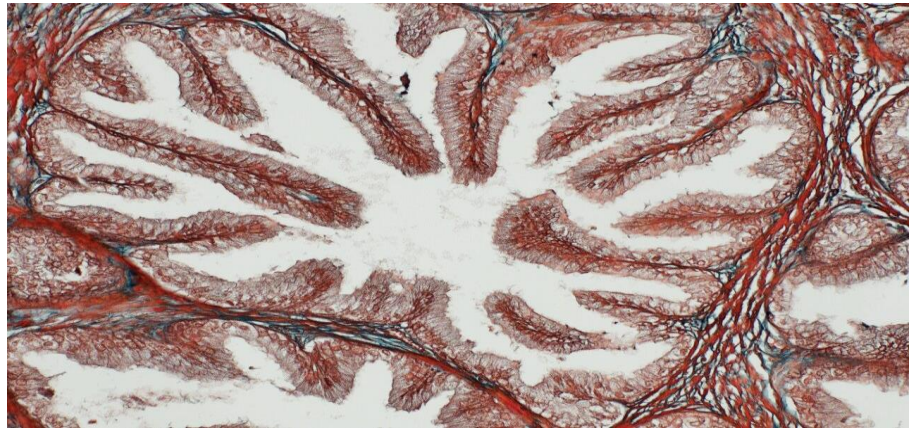
Diagnosis :-

Prostatic adenocarcinoma
8/12 biopsies show presence of tumor.
Tumor volume -about 60% of total core volume.
ISUP-modified Gleason score: 3+3=6.
Lympho-vascular emboli not seen.
Perineurial invasion present.

HPE no. :

AG-6899/24

Histopathology Report and Image



Conclusions

TRUS guided prostate biopsy is a useful tool in the optimum management of prostate cancer as well as mimickers such as chronic granulomatous and non granulomatous prostatitis.

Transrectal ultrasound guided prostate needle biopsy is safe for diagnosing prostate cancer with few major and minor complications.

TRUS-guided prostate biopsy remains a rapid, cost-effective and a well accepted modality. The most significant disadvantage is the risk of infections/sepsis. With careful selection of patients and prophylactic antibiotics, these can be reduced.

TRUS biopsy is and will be a valuable tool in low resource and high-volume centres.

References

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