Inner Spaces
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Points

- TRUS is an excellent modality for evaluating prostate anatomy and pathology
- Its most important role is in the diagnosis of cancer.
- TRUS-guided biopsy is an excellent tool for further evaluation of patients with nodules or raised PSA levels.

Transrectal Ultrasound (TRUS)

Dr. Somesh Lala

Introduction and Indications

Transrectal ultrasound (TRUS) of the prostate is an excellent modality for evaluating prostate anatomy in detail. It provides clinically important information in benign and malignant conditions, including benign prostatic hyperplasia (BPH) (Fig. 1), prostatitis (Fig. 2), prostatic abscess (Fig. 3), obstructive infertility and most importantly, prostate cancer.

Since TRUS accurately delineates the seminal vesicles, ejaculatory ducts and vas deferens, it has become the premier imaging modality in men with hematospermia.

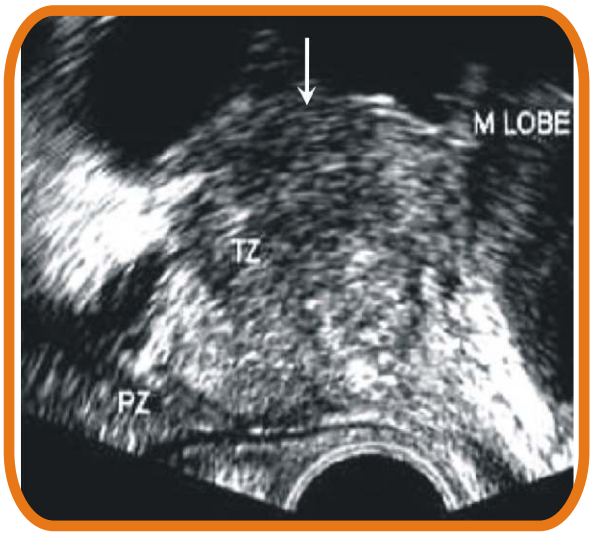

Fig. 1

Figure 1: Benign prostatic hyperplasia. Longitudinal TRUS image shows median lobe hypertrophy (arrow), suggestive of benign prostatic hyperplasia.

Volume Measurements

Due to the proximity of the transducer to the prostate gland in TRUS, the exact size of the gland can be measured. It is far superior to transabdominal USG for measuring prostate volumes. The accuracy of prostate volume measurement can be further improved significantly with the use of 3D-USG and a software package called "Vocal".

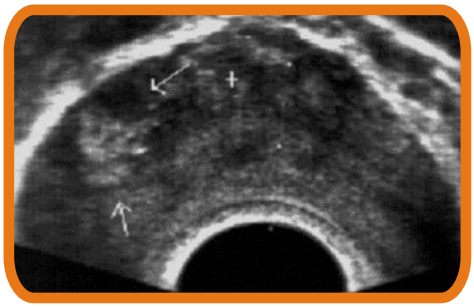

Fig. 2

Figure 2: Prostatitis. Transverse TRUS image shows ill-defined hypoechoic areas in both lobes of the prostate (arrows) and associated calcification in the right lobe.

Fig. 3

Figure 3: Prostatic abscess. Transverse TRUS image shows an enlarged prostate with a large hypoechoic lesion (arrow) occupying both lobes with peripheral vascularity.

The online version is up at ***http://www.jankharia.com/innerspaces/current.htm***

TRUS and Cancer

The most common appearance of cancer is a hypoechoic nodule in the peripheral zone and less commonly the central zone (Fig. 4). TRUS helps in the evaluation of the exact location, nature and vascularity of such lesions. It also helps in biopsy (Fig. 5) and can be a guide to monitoring therapy.

TRUS-Guided Biopsies

TRUS-guided biopsies area relatively straightforward and are performed in the following situations.

1) Abnormal digital rectal examination.

2) Raised PSA levels.

3) Nodule visible at TRUS.

Prior to the procedure, the patient is started on antibiotics, anticoagulants are stopped and the patient is asked to pass stools prior to the procedure. Either six (sextant biopsy) or 13 cores are obtained. Complications include septicemia, hematuria, urinary retention, rectal bleeding and vasovagal reaction.

Limitations:

1) Difficulty in inserting the transducer in patients with previous surgery or in the presence of hemorrhoids.

2) Interobserver variability in assessing prostate cancers with extracapsular and seminal vesicle extension.

Other Applications:

1) High-resolution pelvic access in young girls and unmarried women where transvaginal USG may not be possible.

2) Abscess drainage and biopsies for ovarian, periureteric, bladder and rectal masses.

3) Accurate visualization of the distal ureter and vesicoureteric junction for distal obstructing lesions including calculi.

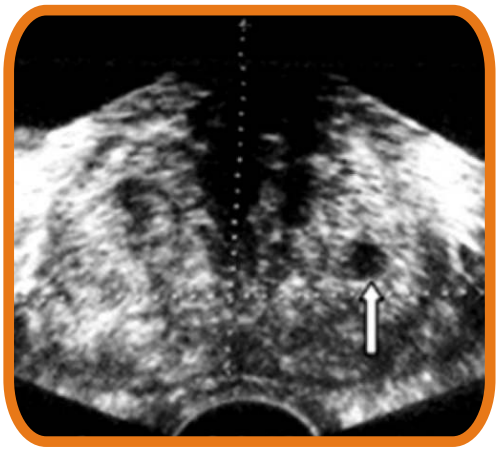

Fig. 4

Figure 4: Carcinoma. Transverse TRUS image shows a well-defined subcentimeter nodule in the left lobe of the prostate (arrow). Biopsy confirmed malignancy.

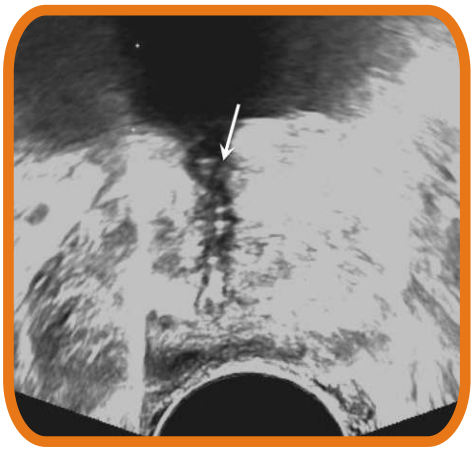

Fig. 5

Figure 5: TRUS-guided biopsy. Transverse image shows the biopsy needle (arrow) in the right lobe of a patient with raised PSA levels. The gland was inhomogeneous with no obvious nodule. A sextant biopsy was performed with six cores, which were all negative for malignancy.

Designed by

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