

Diagnostic Value, Safety, and Patient-Reported Outcomes of Total Free-Hand LATP Biopsy Technique

Aikaterini Eleftheriadou[1], Charlotte Collins[1], Dilaaniy Kannapiran[1], Faria Rahman Antara[1], Moustafa Elhammadi[1], Katarina Bunce[1], Holly Prescot[1], Shymol Varghese[1], Sarosh Janardanan[1], Michael Mikail[1], Nimalan Arumainayagam[1], Danny Darlington Carbin[1]

1. Ashford and St Peter's Hospitals Foundation Trust, Department of Urology, Surrey, United Kingdom

NHS Ashford and St. Peter's Hospitals NHS Foundation Trust

Introduction

Prostate biopsy is the key diagnostic modality for detecting prostate cancer.

USS-guided transperineal approach is preferred over older techniques, performed under local (LATP) or general anaesthesia. Transperineal access devices can be used to stabilise the biopsy needle with the ultrasound probe.

These devices are expensive, non-reusable, and can restrict clinicians, who may prefer the total free-hand approach (tF-LATP) for better access to prostatic zones.

Aim

We aim to assess the pain tolerability, diagnostic value and safety of tF-LATP technique.

Method

Study Period: June 2022 - June 2024

Setting: Single consultant
Clinic-based procedure room

Data Collected:

Patient Variables:
- PSA levels
- Prostate size
- Prostate mpMRI findings

Biopsy Details:
- Cancer detection
- Need for further biopsy
- Pain tolerability (VAS scores at probe insertion and post-biopsy)
- Complications

Technique for Total Free-Hand LATP Biopsy:

Apply Ethyl Chloride spray to skin

Subcutaneous Infiltration:
- 4 ml 1% Lignocaine (without adrenaline), 4 ml normal saline, 2 ml 8.4% Sodium Bicarbonate
- Needle direction perpendicular to the skin, targeting the right and left lobes of the prostate

Pudendal Block:
- Using fingers in the rectum as a guide

TRUS Probe Insertion:
- BK Medical bk3000 Ultrasound®
- With cognitive fusion to MRI images (where available)

Needle Insertion:
- Bard Truguide® 13G, 7 cm biopsy needle from midline perineal skin under TRUS guidance towards the prostate
- 22G x 18 cm spinal needle co-axially through the 13G needle for prostate block

Prostate Block:
- Perform apical and periprostatic block infiltration with 20 ml of 0.25% Bupivacaine

Additional LA:
- Withdraw the spinal needle
- Inject LA around the anterior and posterior aspects of the perineal subcutaneous space

Biopsy Procedure:
- Use freehand technique with an 18G biopsy gun through the 13G needle for biopsies
- Adjust the 13G needle as needed and perform biopsies based on cognitive fusion with MRI images and systematic biopsies
- Administer top-up LA as needed

Post-Procedure Care:
- Discharge once urine is passed satisfactorily and bladder scan rules out retention
- Advise painkillers (Paracetamol + NSAID/opioids combination)

Note: No antibiotics or alpha-blockers are administered post-LATP

Figure 1: Posterior freehand biopsy

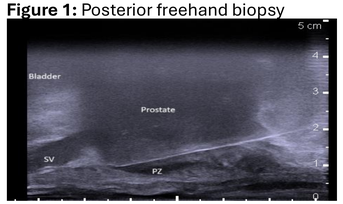
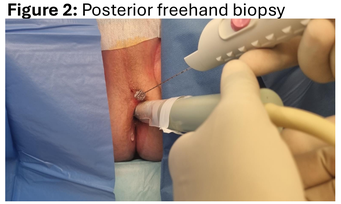


Figure 2: Posterior freehand biopsy

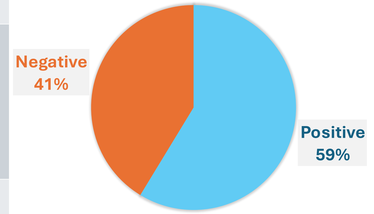


Results

Baseline Characteristics*	
Number of patients	75
Age, years	67 (11)
PSA, ng/mL	7.05 (4.3)
Prostate volume, cc	55 (22.5)
Cancer stage (MRI)	
cT2a	18 (27)
cT2b	8 (12)
cT2c	34 (51)
cT3a	3 (4)
cT3b	4 (6)
Number of biopsy cores	
10-20	18 (24)
20-30	37 (50)
30-40	17 (23)
>40	2 (3)

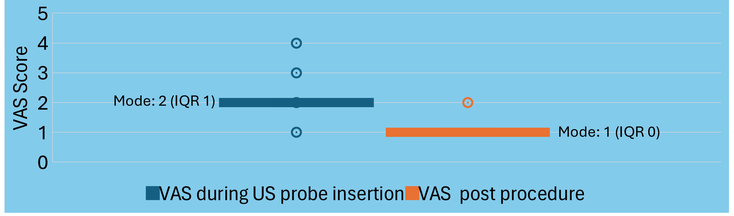
*Continuous data is presented as Median (Interquartile Range) and discrete data as the number of patients (%)

CANCER DETECTION -BIOPSY RESULTS



There were no complications or need for re-biopsy due to under-sampling

PAIN TOLERABILITY



Conclusion

The tF-LATP technique is safe, diagnostically effective, and well-tolerated. Its cost-effectiveness and ability to access all prostate lobes make it a valuable option for wider clinical adoption.