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Transrectal vs. transperineal prostate biopsy under local anaesthesia: Prospective comparative analysis of cancer detection, safety and tolerability using patient-reported outcome measures at a single centre

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Introduction & Objectives: Transrectal ultrasound-guided prostate biopsy under local anaesthesia (LA-TRUSB) has been the gold-standard for prostate cancer detection for decades. Transperineal prostate biopsy under local anaesthesia (LA-TPB) has emerged as an alternative office-based procedure to seek improvement in prostate cancer detection and safety. This study aimed to compare the cancer detection rates, complications, and patient tolerability using patient-reported outcome measure (PROM) questionnaires.

Materials & Methods: Patients suspicious of prostate cancer underwent office-based systematic LA-TPB carried out using a transperineal access device, or standard LA-TRUSB. Time period: October 2018 to September 2019. Inclusion criteria: serum PSA 4-20ng/mL, age 55-80 years, and biopsy-naïve. Exclusion criteria: suspected tumour \geq cT3 on digital rectal examination or medically unfit for treatment. Prostate cancer detection and complications were recorded prospectively. A validated PROM was used to compare overall patient tolerability and safety. Chi-square test and student t-test were used for statistical analysis.

Results: 120 out of 188 patients underwent prostate biopsy in the study period were eligible. Median age was 68 years. Mean presenting PSA was 7.66(\pm 3.23ng/mL). 57(47.5%) patients underwent LA-TRUSB and 63(52.5%) had LA-TPB. More prostate cancers were detected with LA-TPB than LA-TRUSB (31.7% vs 24.6%), but was not statistically significant ($p=0.851$). Proportion of clinically significant prostate cancer were 57.1% with LA-TPB and 45% with LA-TRUSB ($p=0.501$). 55% of LA-TPB patients had prostate cancer detected in anterior prostate. Overall, none of the LA-TPB patients was complicated with sepsis (vs 4.3% in TRUSB, $p=0.045$) or urinary tract infection with bacteriuria (vs 10.6% in TRUSB, $p=0.001$). Mean IIEF-5 change immediately after biopsy was 2.74 in LA-TRUSB and 6.03 in LA-TPB, and was statistically significant ($p=0.023$). There was no statistically significant difference in overall pain scores ($p=0.527$). No statistical significant difference was identified in post-biopsy urinary retention rate, IPSS change, sexual satisfaction, bowel and psychological functions between the two techniques.

Conclusions: Office-based LA-TPB was a well-tolerated procedure when compared to standard LA-TRUSB, with comparable cancer detection rates. LA-TPB was able to prevent potentially life-threatening post-biopsy sepsis. However, erectile function could be affected in the initial period following LA-TPB, and patients should be carefully counselled before the procedure.