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Transperineal versus Transrectal Prostate Biopsy: A Comparative Analysis of Pathological Upstaging Rates at Radical Prostatectomy

Authors: WL So, CW Wu, CF Kan, WH Au
Division of Urology, Department of Surgery, Queen Elizabeth Hospital

Introduction and objectives

This study assesses whether transperineal biopsy (TPBx) maintains the diagnostic accuracy of transrectal ultrasound-guided biopsy (TRUS) in predicting Gleason scores at radical prostatectomy (RP), essential for preoperative risk stratification and treatment planning.

Patients & Methods:

A retrospective cohort study was conducted at Queen Elizabeth Hospital (QEH) including 215 patients undergoing prostate biopsy and subsequent RP in QEH. The TRUS group included 118 patients biopsied from 2016 to 2018, and the TPBx group comprised 97 patients biopsied between 2022 and 2024 following the Ginsburg protocol. Pathological upstaging was defined as an increase in International Society of Urological Pathology (ISUP) grade from biopsy to final pathology.

Results:

	TRUS	TPBx	Difference
Overall	46/118 (39.3%)	25/97 (28.9%)	+13% (P=0.043)
Apex only	14/39 (35.9%)	3/24 (12.5%)	+5%
Anterior only	11/21 (52.4%)	9/19 (47.4%)	+23.4%
Anterior and apex	11/28 (39.3%)	10/31 (32.3%)	+7%
Neither location	10/30 (33.3%)	3/23 (13.0%)	+20.3%

Conclusion:

TPBx shows better concordance with final pathology, with lower global upstaging rates. The data suggest TPBx is more effective in sampling high-grade tumors in the apical and peripheral non-anterior regions, whereas both methods perform similarly in the anterior zone. These findings highlight the impact of biopsy technique and tumor location on accurate prostate cancer grading, supporting wider adoption of TPBx for improved diagnostic precision.