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ASSESSMENT OF NEEDLE TIP DEFLECTION DURING TRANSRECTAL GUIDED PROSTATE BIOPSY- IMPLICATIONS FOR TARGETED BIOPSIES

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Background: In the present era of targeted prostate biopsy precise sampling of the region of interest is critical.

Objective: To measure real-time the needle tip deflection during TRUS prostate biopsy and evaluate predictors for needle tip deflection .

Design, Setting & Participants: Analysis of 568 prostate biopsies obtained from 51 consecutive patients who underwent a standard 12-core TRUS guided prostate biopsy. TRUS guided prostate biopsies were performed using BK flex500, with a side-fire biplane probe. Each biopsy core image was captured. And clinical data were recorded prospectively.

Intervention: The angle between the expected trajectory of the needle and actual needle course was measured using the longitudinal view of the captured image. Needle deflection was then calculated assuming a 90 degree triangulation .

Outcome Measurements & Statistical Analysis: median and interquartile needle deflection measurement stratified by side and location (apex, midgland, base) are reported. Univariable and multivariable linear regressions analysis were performed.

Results & Limitations: The overall median needle tip deflection was 1.77 mm (IQR 1.35-2.47). Location did not significantly alter needle deflection measurements. On multivariable linear regression analysis higher prostate volume (0.07 95%CI 0.04-0.011 ; $p < 0.001$) and the right sided biopsy (0.11 95%CI 0.05- 0.34; $p = 0.010$) emerged as predictors of higher needle tip deflection .

Conclusions: To the best of our knowledge this is the first study to measure needle tip deflection during TRUS guided prostate biopsies. We demonstrated that larger prostate size and side may affect the accuracy of biopsies. These results may have clinical implication to those performing targeted biopsies.