EP014 The use OF 29 MHz transrectal micro ultrasound for the local staging of prostate cancer: A single institutional analysis

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Introduction & Objectives: Local staging is mandatory for the correct management and for a risk-tailored surgical strategy of prostate cancer (PCa). Multiparametric Magnetic Resonance (mpMRI) has demonstrated several limitations in predicting non-organ-confined PCa. We aim to evaluate the feasibility of a novel imaging tool [ExactVu^{TM} 29 MHz transrectal micro-ultrasound (mUS) system] in predicting Extraprostatic Extension (EPE) before radical prostatectomy (RP).

Materials & Methods: We prospectively evaluated 54 consecutive patients scheduled for Robot-Assisted Radical Prostatectomy (RARP) who preoperatively underwent to mUS between November 2019 and February 2020. Exclusion criteria were extracapsular (cT3) disease at DRE; prostate volume ≥100 ml; previous radiotherapy, focal therapy or androgen-deprivation therapy; impossibility to undergo TRUS. All patients underwent a mUS evaluation before surgery. All lesions were classified using the PRI-MUS score. The presence of EPE at final pathology was defined as the presence either of extracapsular extension (ECE) or of seminal vesicle invasion (SVI). According to previous studies on mpMRI and microUS, we assessed the following potential risk factors for EPE: capsular contact Length (CCL) ≥15 mm; capsular irregularity or bulging; visible breach of the prostate capsule; presence of an hypoechoic halo; obliteration of the prostatic-seminal vesicle angle. We compared the results of mUS with definitive pathological results according to the International Society of Urological Pathology (ISUP) standards.

Results: Four patients did not show any lesion at mUS (PRI-MUS 1-2) and had organ-confined disease at final pathology. These individuals were grouped among those not showing any risk factor for EPE. Overall, 24 out of 54 (44.9%) had EPE. All patients with non-organ-confined disease had at least one PRIMUS 4 or 5 lesion. The concordance between mUS and definitive report was 83.3% (45/54). mUS upstaged 6 (11.1%) patients, while 3 (5.5%) patients were understaged, with 1 of these 3 patients showing a focal (microscopic) ECE. Each of the mUS-determined risk factor was positively correlated with EPE. We found a statistically significant relationship between the number of risk factors detected by mUS and the presence of EPE. In detail, if no risk factor was present, the proportion of patients with organ-confined disease was 88.9%, while if one or more risk factors were present the proportion of individuals with non-organ-confined disease increased to 77.8% ($p<0.001$). The use of a mUS-based risk calculator for the prediction of EPE demonstrated a sensibility of 87.5 % and a specificity of 80%.

Conclusions: Our findings suggest that mUS may represent a feasible and reliable technique capable of improving local staging of PCa.