**The membranous urethral length: A continence predictor on MRI with high interobserver variability**

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**Introduction & Objectives:** Urinary incontinence after radical prostatectomy (RP) is a major determinant of patient quality of life. The membranous urethral length (MUL) and inner levator distance (ILD) have been shown to be associated with continence outcomes, however, literature on the reproducibility of these variables is still scarce. This study aims to assess the reproducibility of these radiological parameters predictive for continence within a regional prostate cancer (PCa) network in the Netherlands.

**Materials & Methods:** Patients in whom a prostate magnetic resonance imaging (MRI) had been performed between January 2021 and July 2022 at one of five regional higher-volume diagnostic centers and in whom the MUL and/or ILD had been determined, were retrospectively included. All prostate MRIs were centrally reassessed by expert radiologists within a high-volume RP center. MUL and ILD measurements from the original reports (from the regional hospitals) were compared to the MUL and ILD measurements from the reassessment reports. To assess the reproducibility of MUL and ILD measurements, the interobserver agreement, expressed as intraclass correlation coefficient (ICC), was calculated.

**Results:** In total 248 men were included in the analysis. In general, an almost perfect interobserver agreement regarding ILD measurements was observed (ICC 0.82; 95% confidence interval (CI) 0.74-0.87). In contrast, only a moderate interobserver agreement with respect to MUL measurements was observed (ICC 0.56; 95% CI 0.47-0.64). At the initial assessment, a median MUL of 15 mm (interquartile range (IQR) 13-18) was observed, whereas at reassessment this was 17 mm (IQR 15-19). At reassessment, the MUL measured was statistically significantly longer compared to the initial assessment (2.0 mm; 95% CI 1.5-2.4, p<0.001), resulting in a different prediction of the risk of urinary incontinence after RP (Figure 1).
Conclusions: As opposed to ILD measurements, there appears to be considerable variation in MUL measurements among different assessing centers. Although predictive of postoperative urinary continence, a high interobserver agreement is required before MUL-based risk stratification should be applied in daily practice. Efforts will need to be made to achieve uniformity in assessment, utilizing a standardized MUL-definition, training, performance feedback and peer consultation.

Figure 1. Bland-Altman plots of measured membranous urethral length. The red line represents the mean difference, whereas the grey lines represent the upper and lower 95% control limits (mean ± 2SD).