1052

Urethral length and diameter of the external urethral sphincter as predictors of continence after laparoscopic radical prostatectomy

Minami K., Ooishi Y, Azumi M., Harabayashi T., Nagamori S.

Hokkaido Cancer Center, Dept. of Urology, Sapporo, Japan

Objectives

Membranous urethral length is one of several factors that can influence return of continence after radical prostatectomy. We assessed urethral length (with MRI) and external urethral sphincter (EUS) diameter (with voiding cystourethrography : VCUG) correlate with return to urinary continence and quality of life as determined by the Expanded Prostate Cancer Index Composite (EPIC) score.

Table 1. *Demographic and clinical data*

Variable	Mean	(range)
Age	66.0	(48 – 78)
PSA (ng/ml)	8.1	(2.41 – 45.1)
Prostate weight (g)	37.0	(10 – 105)
BMI (kg/m2)	23.5	(10 – 105)
Baseline EPIC urinary incontinence subscale	92.9	(57.1 – 100)
Urethral length (mm)	14.8	(7.4 – 22.7)
EUS diameter (mm)	5.6	(2 – 12)

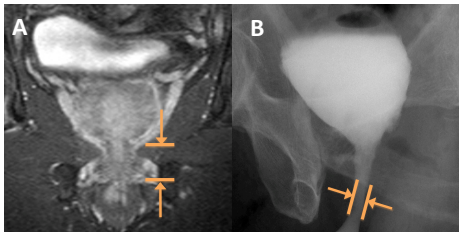

Figure 1. *MRI and VCUG*
(A) Coronal image of an MRI image. Distance from prostatic apex to penile bulb represents urethral length. (B) VCUG for measuring internal diameter of external urethral sphincter.

Materials & Methods

A total of 101 patients who underwent laparoscopic radical prostatectomy, MRI and voiding cystourethrography at the time of catheter removal were analyzed. Urethral length was measured in the coronal plane. To determine EUS inner diameter on a given voiding cystourethrogram the sphincter was measured on consecutive images and the narrowest diameter was chosen. The primary end point was time to continence defined as necessitating 0 to 1 pad per day (PPD). Preoperative EPIC were recorded. Univariate and multivariate Cox regression analysis were performed to determine the association between urethral length and EUS diameter and return to continence as well as EPIC.

Table 2. *Univariate Cox Regression analysis*
Event:Reached 0 to 1 PPD

	HR (95%CI)	P *value*
Age	0.955 (0.925-0.988)	0.160
Prostate weight	1.001 (0.989-1.012)	0.888
BMI	0.887 (0.806-0.974)	0.011
Baseline EPIC urinary incontinence subscale	1.025 (0.997-1.058)	0.294
		0.0923
Urethral length	1.232 (1.149-1.319)	<0.001
EUS diameter	0.802 (0.729-0.879)	0.021

Table 3. *Multivariate Cox Regression analysis*

	HR (95%CI)	P *value*
BMI	0.910 (0.812-1.015)	0.0923
Urethral length	1.231 (1.136-1.333)	<0.001
EUS diameter	0.836 (0.755-0.924)	0.030

Results & Conclusions

Mean age was 66.0 (standard deviation [SD] 6.4); 38.2% had nerve sparing. Mean urethral length was 14.8 mm (SD 3.4 mm). Mean prostate size was 37.0 g (SD 17.9). By 3 months, 52 patients achieved 0 to 1 PPD (mean 9.5 weeks, SD 8.9). Increased urethral length was related to decreased time to continence both as a continuous variable (p <0.001), and when dichotomized to ≥18 vs<18mm (p <0.001)(Table 2 and Fig 2A). In addition to wider EUS diameter was also associated with a longer time to achieve 0 to 1 PPD both as a continuous variable (p =0.02), and when dichotomized to ≥4 vs <4mm (p =0.08) (Table 2 and Fig 2B). On multivariate analysis controlling for body mass index, and both urethral length and EUS inner diameter correlated with decreased time to continence (p<0.001 and p = 0.03 respectively)(Table 3).

Longer urethral length and narrower EUS inner diameter increased the likelihood of achieving continence at early points post-operatively.

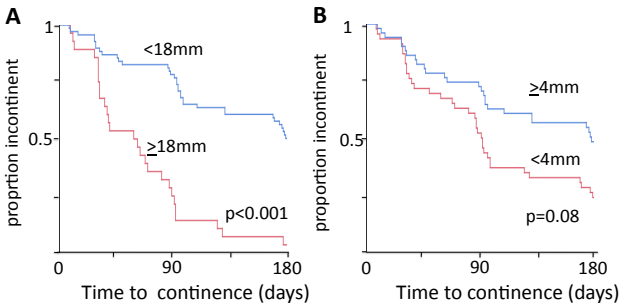

Figure 2. *Survival Curves Comparing Time to Continence*.
(A) Kaplan-Meier analysis for MRI urethral length cutoff at 18 mm (0 to 1 PPD). (B) Kaplan-Meier analysis for VCUG EUS diameter cutoff at 4 mm (0 to 1 PPD).