INTRODUCTION AND OBJECTIVES: The purpose of the study was to determine independent risk factors for explantation of artificial urinary sphincters (AUS) from a large, multi-center, prospective outcomes study.

METHODS: From April 2009 to February 2012, 386 patients with at least 3 months follow-up were treated with AUS for stress urinary incontinence at eight institutions and demographic and surgical data on these men were collected prospectively. Retrospective analysis of the collected data was then performed looking for risk factors predictive for explantation using both univariate and multivariate techniques. Risk factors of particular interest included 1) history of pelvic radiation 2) prior urethroplasty 3) bladder neck contractures 4) prior AUS explantation 5) prior urethral stent. Patients with any of these risk factors were then categorized as high risk (HR). Additionally, we analyzed the affect that transcorporal (TC) and 3.5 cm cuff placement had on explantation risk.

RESULTS: Explantation occurred in 31 (8.03%) at a median time of 15.1 +/- 7.8 months. Erosion risk did not vary by surgeon (p=0.2). Univariate analysis revealed higher erosion risks for radiated patients (15.9% vs 3.6%, p <0.0001), those with urethral stents (33.3% vs 7.4%, p = 0.0047), and prior AUS explantation (13.3% vs 6.75%, p = 0.06). TC placement of the cuff did not affect erosion risk (10.1% vs 7.1%, p = 0.32) but 3.5 cm cuffs resulted in significantly higher rates of erosion (15.9% vs 7.0%, p = 0.04). In HR patients, explantation rates were similar in TC patients (11.24% vs 15.24%, p = 0.4) but considerably higher when a 3.5 cm cuff was placed (27.3% vs 11.6%, p = 0.04). Multivariable logistic regression of significant univariate predictors revealed radiation (OR 4.82, 95% CI 2.02-11.49), urethral stent placement (OR 5.71 (1.2-27.2) and 3.5 cm cuffs (OR 3.2 (1.2 – 8.8) to be independent predictors of explantation.

CONCLUSIONS: Prior radiation and prior urethral stent placement were independent predictors for AUS explantation in this large multiinstitutional study, as was the use of a 3.5 cm cuff, which resulted in especially high rates of explantation in the HR patients. In HR patients found to have a urethral size < 4.0cm, 3.5 cm cuffs should be used with caution and a TC cuff placement may result in superior outcomes.

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