Multivariate Analysis of Outcomes in 534 Urethroplasties

Introduction and Objective: Urethroplasty has emerged as the gold standard therapy for urethral stricture, but failures do occur. The purpose of this study is to evaluate overall surgical efficacy and to identify factors that may lead to stricture recurrence.
Materials and Methods: A retrospective review of all urethroplasties performed at a single institution from August 2003 to April 2011. Preoperative data was collected including age, stricture length, location and etiology, co-morbidities, and previous procedures. All urethroplasties were performed by a single surgeon and were assessed within one month post-operatively, had cystoscopy at 6 months and then followed-up as required. Failure was defined as a recurrent stricture on cystoscopic assessment. Multivariate analysis of preoperative and procedural factors was calculated by Cox regression in SPSS 19 software.
Results: There were 534 urethroplasties performed during the study period. Mean patient age was 44.3 with an average stricture length of 4.9cm. Stricture location was anterior urethra in 445 (83.3%), posterior urethra in 63 (11.8%), and panurethral in 26 (4.9%). 114 (21.3%) had a previous reconstruction. Stricture etiology was trauma in 150 (28.1%), hypospadias in 55 (10.3%), lichen sclerosus in 51 (9.6%), iatrogenic in 40 (7.5%), radiation (brachy/EBT) in 16 (3%), inflammatory in 15 (2.8%), and idiopathic in 207 (38.8%). Overall urethral patency was 91.9%. Multivariate regression identifies lichen sclerosus, iatrogenic, and inflammatory etiologies to be independently associated with stricture recurrence with hazard ratios (95% CI) of 10.6 (2.4-47.1; $p<0.01$), 9.3 (2.2-39.8; $p<0.01$), and 18.8 (4.2-83.3; $p<0.001$), respectively. Strictures longer than 5cm trended to recur HR 2.4 (0.93-6.0; $p=0.07$) while strictures located in the anterior urethra appear to have a lower incidence of recurrence HR 0.25 (0.06-1.04; $p=0.056$). Co-morbidities, smoking, previous procedures, type of urethroplasty performed, and an age ≥65 were not associated with stricture recurrence.
Conclusions: Urethroplasty is an excellent option for urethral stricture disease with urethral patency approaching 92%. Lichen sclerosus, inflammatory and iatrogenic strictures are associated with increased risk of stricture recurrence. Strictures longer than 5cm may have increased risk of recurrence. Anatomically, anterior strictures appear to be most amenable to urethroplasty success.