**Usage of Electrical Continuity Testing During Artificial Urinary Sphincter Revision**

**Introduction and Objectives:** Long-term success with the artificial urinary sphincter (AUS) is common but device revision and replacement are often needed. While revision surgeries have shown excellent outcomes, identifying the components to repair or replace is important when performing procedures for mechanical AUS complications. We report our experience using the voltmeter as a tool in isolating individual components of the AUS that need to be repaired or replaced during revision.
**Materials and Methods:** The medical records of all patients undergoing AUS implantation and revision from a single surgeon were reviewed between 1992 and 2010 from the University of Montreal Health Center. Patient information related to age, history of diabetes, clean intermittent catheterization, overactive bladder or radiotherapy were included in this analysis. Preoperative clinical variables included aetiology of incontinence and date of insult (if applicable). The date of AUS implantation, presence of a urethral wall stent, reason for revision, date of sphincter revision, volume within the reservoir, and type of revision performed were also included in the analysis. Information on the per-operative use of the voltmeter was available for all patients included in this study. Chi square analysis was used to determine significant differences between patients who had the voltmeter used during AUS revision.
**Results:** There were 144 patients who underwent a 2 incision bulbar urethral AUS implantation between 1986 and 2010. The revision rate was 23%. Primary sphincter revision and secondary revision (>1 revision) were performed in 35 (24.3%) and 25 (17.4%) patients respectively. In our experience the voltmeter was utilized 19 times, 14 times for primary revisions (73.4%), 2 times for secondary revisions (10.5%) and 3 times for tertiary revisions (15.8%). For patients undergoing primary revision, the voltmeter was more likely to be used when patients had a complaint of sudden incontinence as their reason for revision ($X^2$=0.041), when the volume of the reservoir was low ($X^2$ =0.001) or when the reservoir or cuff was replaced ($X^2$=0.007). In our experience during primary and secondary revision, when electrical continuity testing was performed 80% of revisions involved partial explantation and therefore complete device implantation was avoided ($X^2$=0.032).
**Conclusion:** The use of the voltmeter is a safe and effective tool that could be used by the surgeon to identify leaks and avoid unnecessary removal of functional components when performing sphincter revision.