Unmoderated Posters: Stones and Endourology

UP-44

Maintenance of Continence with Rigid Endoscopic Procedures in Continent Cutaneous Urinary Diversions

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Introduction and Objectives: There is concern that using rigid endoscopes through the stoma of a continent cutaneous urinary diversion damages the continence mechanism. We report the largest and longest series to date from a single institution demonstrating the safety of trans-stomal rigid endoscopy.

Methods: We performed a retrospective review of a prospectively accrued database of patients with urinary diversions that underwent rigid endoscopic procedures for various reasons between 2000-2013. Pre and postoperative continence, difficulty with catheterization, and need for surgical revision post procedure were evaluated.

Results: From 2000-2013, seventy-one patients with continent cutaneous diversions underwent 191 endoscopic procedures by a single surgeon. Mean follow-up was 603 days (33 days - 6.3 years). Mean age was 58.4 (38-94 years). The mean number of procedures per patient was 2.7 (1-7). All procedures were performed by gaining access through the stoma with an offset rigid nephroscope and a 24-28Fr access sheath. The majority of indications for treatment included afferent valve stenosis and pouch calculi. Two patients reported continence issues postoperatively; one patient was treated conservatively by way of indwelling catheter for one week and the continence returned completely. The second patient had small volume incontinence preoperatively which worsened postoperatively. The procedure uncovered an already existent pouch-cutaneous fistula, which was revised surgically. Patients with repeated procedures were not found to be at any higher risk of incontinence. No patients had difficulty with catheterization postoperatively. No surgical revisions were required for worsened continence postoperatively except for the patient.

Conclusions: Trans-stomal rigid endoscopic procedures do not negatively affect the continence mechanism in continent cutaneous urinary diversions. Transstomal endoscopy allows for safe access in this patient population.

UP-45

The Best Choice and Use of Guide Wires When Buttressed during Stenting or Ureteroscopy

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Introduction and Objectives: During stenting or ureteroscopy, a large or impacted stone can often impede passage of the guide wire. One of the tricks to overcome this is to use a ureteric catheter to buttress and give support to the flexible tip of the wire. In order to examine the safety of the previously mentioned maneuver we compared four guide wires with regard to their tip bending force when buttressed at various distances from the tip.

Materials and Methods: Using an Imada digital force gauge DS2 and a motorized horizontal stand (Imada Inc.), we measured the tip bending force of four guide wires at different distances from the tip [the Nitinol Biwire, the Fixed core polytetrafluoroethylene (PTFE), the Amplatz Extra stiff (Cook Medical Inc) and the Nitinol straight tip Sensor (Boston Scientific Microvasive)].

Results: The two stainless steel wires (the Fixed core and the Amplatz extra stiff) had a more rigid tip and required high forces to bend the tip when supported closer at 3 and 2 cm from the tip (1.51±0.6 vs. 0.1±0.009 N, P<0.001) and (6.86±5.5 vs. 0.27±0.03 N, P=0.001) respectively. The two Nitinol Hydrophilic tip wires required the least amount of force to bend the flexible tip at all the distances measured compared to the stainless steel wires, but this force increased dramatically to forces capable of perforating the ureter when supporting the hydrophilic tipped wires at a distance less than 1 cm from the tip (2.85±0.34 vs. 1.86±0.26 N, P<0.001 @ 0.5 cm from the tip) for the Biwire and the Sensor wire respectively.

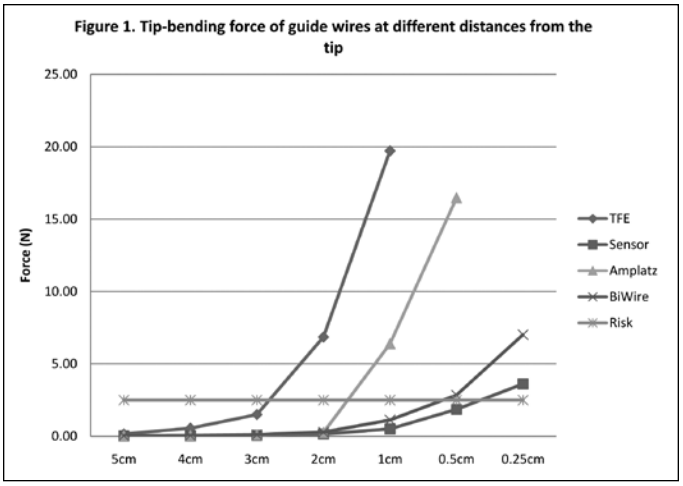

Fig. 1. UP-45.

Conclusions: It is safer to use Hydrophilic wires when a large or impacted stone impedes passage of the guide wire. A hydrophilic wire is preferable when using a ureteric catheter to buttress and support the wire in difficult situations, but the ureteric catheter should remain at least 1 cm proximal to the tip of the hydrophilic wire to minimize the risk of ureteric perforation when the wire exits the ureteric catheter.

UP-46

Infection Stones: An Old Acquaintance, with a New Face?

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Introduction and Objectives: Infection stones account for 10 to 15% of urinary calculi, and are exclusively associated with urinary tract infections triggered by urease producing bacterial species. Considering that they are often associated with staghorn calculi, struvite stones carry significant morbidity and are challenging to cure. Infection stones are typically composed of struvite or carbonate apatite homogenously or heterogeneously in combination with other stone types. The present study aims to re-characterize struvite stones based on urinary metabolic profiles, bacterial speciation, and stone analysis.

Methods: Retrospective data was collected at VGH, Mayo Clinic, Cleveland Clinic and University Hospital Grosshadern for patients diagnosed with infection stones between 2008 and 2012. Stone analysis, cultures, 24-hour urine collections, and clinical data were collected and analyzed. In parallel, *in vitro* experiments were performed to determine the effect of varying urinary parameters on bacterial growth and urinary pH changes.

Results: Most stones were renal in location and heterogeneous in nature. *Proteus* and *E. coli* species were the most common bacterial isolates. Mean urinary pH was 6.54. Large variability existed among urinary parameters. *In vitro*, lower urea concentrations result in faster bacterial growth but slower increase in urinary pH, while higher urea concentrations resulted in slower growth and a rapid increase in pH.
Conclusions: Infection stones are often struvite containing but heterogenous in composition. Urinary ions and pH appear to be highly variable in this stone population. *Proteus* remains a common bacterial isolate, however *E. coli* appears to be equally prevalent. At higher urea concentrations, less bacteria are required to trigger struvite formation.

UP-47

Evaluation of Risk Factors and Treatment Options in Patients with Ureteral Stricture Disease at a Single Institution

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Introduction and Objectives: Ureteral strictures are a significant cause of morbidity and mortality. Causes include radiation, trauma from calculi impaction, pelvic surgery or ureteroscopy (URS). We identified the risk factors in our patients with ureteral stricture, and assessed how they were treated at our institution.
Methods: A retrospective chart review of 13 patients with ureteral strictures was performed to determine the success of their treatment.
Results: The median age of our patients was 57 years (range 33-98) with median BMI 27.5 (range 18.5-39.8). The majority of cases were caused by impacted stones, 61.5% (8/13). Median stone size was 1.4 cm (0.37-1.8 cm). Intervention for stones prior to stricture development included ESWL combined with URS (61.5%), URS and percutaneous nephrolithotomy (12.5%), URS only (12.5%), and stone manipulation with ureteric orifice resection (12.5%). 50% of patients with impacted stones had ureteric complications during stone treatment including perforation (2), and fractured ureteral guidewire left in situ (1). Other etiologies included radiation (15%) and endometriosis (7.7%). Treatment of strictures included ureteroureterostomy (2), ureteral reimplant +/- balloon dilation (2), autotransplant (1), laser endoureterotomy +/- balloon dilation (3), laparoscopic nephrectomy in a non-functioning kidney (1), open nephrectomy with ileal conduit (1), balloon dilation only (2), and temporary stent placement (1). 11 of 13 patients had normal imaging with 2-6 months follow-up.
Conclusions: The most common risk factor identified for ureteral stricture formation was impacted ureteral calculi. Ureteroscopic complications, such as perforation, increase this risk. We will continue to follow these patients with the goal of gaining better understanding of the management of stricture disease.