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PERCUTANEOUS NEPHROSTOLITHOTOMY USING A NOVEL ONE-STEP DEVICE: THE HUMAN EXPERIENCE

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(Presentation to be made by Dr. Baldwin)

Purpose: Percutaneous nephrostolithotomy (PCNL) is the treatment of choice for large renal calculi. The technique most commonly utilized in the performance of percutaneous nephrolithotomy (PCNL) involves insertion of a dilating device such as the high-pressure balloon catheter followed by insertion of a sheath into the collecting system after the tract has been established. After developing and testing a novel single-step percutaneous balloon/sheath combination (ES) (Pathway™, Onset Medical, Irvine, CA) in the porcine model, this device was utilized in human patients. The purpose of this study was to review our initial human experience with this novel percutaneous access sheath.

Patients and Methods: All patients who underwent percutaneous nephrostolithotomy using the novel single-step percutaneous access device were retrospectively reviewed. Demographic data, operative data, outcome and complications were reviewed in order to determine the safety and efficacy of this device.

Results: A total of 15 patients underwent PCNL at one of two institutions. Mean age was 42.2 (range 11-76 years), BMI was 31.7 (range 17.1-45.4). Two procedures were performed in horseshoe kidneys. Two patients had full staghorn calculi. Mean operative time was 90 minutes (range 61-151 minutes). Overall stone free rate was 73%. In one morbidly obese patient with an upper pole access the ES device was not long enough and an extra long sheath was required to obtain renal access. In one patient with prior renal surgery the ES device did not adequately dilate the tract. A second ES device was inserted and access obtained without complication. There were no complications related to renal access. In all patients the sheath allowed for both rigid and flexible nephroscopy as necessary.

Discussion: This novel single-step percutaneous access balloon and sheath combination is safe and effective for PCNL. The single-step access is easy to use and has been shown to have a faster insertion time in the animal model. This device is a promising new option for obtaining renal access during PCNL.