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### **Novel use of a coaxial film-based occlusion device for optimal access during percutaneous nephrolithotomy.**

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**Background:** Intercostal renal access during percutaneous nephrolithotomy (PCNL) is associated with an increased incidence of pneumothorax, hydrothorax, or hemothorax post-operatively. We sought to utilize a new coaxial film-based occlusion device, the Coaxial Accordion (PercSys, Mountain View, CA), in a novel fashion to lower the kidney in situations when intercostal access appeared to be unavoidable and to establish a more ideal subcostal renal access.

**Methods:** Five patients were identified at the time of PCNL who either had relatively superiorly located kidneys (2 patients) or who required upper pole access (3 patients). In each instance, the patient would have required intercostal access to reach the intended calyx of entry. In two cases the access would have been supra-11<sup>th</sup> and the other 3 supra-12<sup>th</sup> rib. The 15 mm Coaxial Accordion occlusion device was deployed within the renal pelvis as it normally is done to prevent stone migration. During the process of percutaneous needle access, gentle traction was held at the ureteropelvic junction to prevent upward movement of the kidney with ventilation.

**Results:** In two patients, this technique was used to establish access at the 11<sup>th</sup> intercostal space instead of the 10<sup>th</sup>. In three patients, the kidney was mobilized and lowered to establish subcostal renal access. No injury to the UPJ, renal pelvis, or ureter was identified upon endoscopy due to the atraumatic nature of this device. In all five patients, stone-free status was achieved and no stone migration occurred. Mean operative time and hospital stay were similar to patients undergoing PCNL without use of the technique.

**Conclusion:** Deployment of a coaxial film-based occlusion device can be used to lower the kidney during percutaneous needle placement, potentially avoiding complications associated with intercostal renal access.

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