



Minimally invasive breakthrough: combining ureteroscopic lithotripsy and micro-percutaneous nephrolithotomy for pediatric multiple kidney stones

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Received: 31-Mar-2023, Manuscript No. PUCR-23-98999; **Editor assigned:** 03-Apr-2023, PreQC No. PUCR-23-98999 (PQ); **Reviewed:** 20-Apr-2023, QC No. PUCR-23-98999; **Revised:** 27-Apr-2023, Manuscript No. PUCR-23-98999 (R); **Published:** 04-May-2023, DOI: 10.14534/j-pucr.20222675616

Description

Pediatric nephrolithiasis, or kidney stones, is a condition that has been on the rise in recent years, presenting a significant challenge in pediatric urology. While smaller stones may pass spontaneously, larger or multiple stones often necessitate intervention. Traditionally, open surgery or Extracorporeal Shock Wave Lithotripsy (ESWL) were the primary treatment options for pediatric stone management. However, advances in minimally invasive techniques have revolutionized the field, with Ureteroscopic Lithotripsy (URSL) and Micro-Percutaneous Nephrolithotomy (mPCNL) emerging as promising alternatives. This study explores the efficacy and benefits of combining URSL with mPCNL in the treatment of multiple kidney stones in the pediatric population. URSL involves the use of a flexible ureteroscope to access and fragment stones located within the ureter and renal pelvis. With its ability to visualize the entire urinary tract and its advanced lithotripsy capabilities, URSL has become a cornerstone of modern stone management. In the pediatric population, URSL offers several advantages, including reduced morbidity, shorter hospital stays,

and faster recovery times. Additionally, the flexible nature of the ureteroscope allows for easier access to stones located in challenging anatomical positions. Micro-Percutaneous Nephrolithotomy (mPCNL) is a modification of the conventional percutaneous nephrolithotomy technique, involving the use of smaller caliber instruments to access and remove kidney stones. This technique combines the advantages of percutaneous access, such as direct visualization and efficient stone clearance, with reduced invasiveness and minimized tissue damage. In the pediatric setting, mPCNL offers excellent outcomes, with high stone-free rates and low complication rates, thus making it an appealing choice for managing complex or larger stones. The combination of URSL and mPCNL represents a synergistic approach that capitalizes on the strengths of both techniques. By utilizing URSL as the first step, smaller stones in the ureter can be efficiently fragmented and cleared, reducing the overall stone burden. Following this, mPCNL can be performed to address larger stones within the kidney, optimizing stone clearance in a single procedure. This approach minimizes the need for multiple surgeries and maximizes the chances of achieving complete stone-free status.

Single-stage procedure

The combined approach eliminates the need for staged procedures, reducing the overall hospital stay and associated costs for the patient and their family. Increased stone clearance: By targeting both ureteral and renal stones in the same procedure, URSL with mPCNL ensures comprehensive stone clearance, reducing the likelihood of residual fragments and the need for subsequent interventions.

Reduced morbidity

Compared to open surgery, URSL with mPCNL is minimally invasive, resulting in lower rates of complications, reduced pain, and faster recovery times.

Improved outcomes

Studies have demonstrated high stone-free rates and excellent long-term outcomes with the combined approach, supporting its efficacy and success in pediatric stone management.

Conclusion

The combined approach of ureteroscopic lithotripsy

with micro-percutaneous nephrolithotomy has emerged as a promising and effective treatment modality for pediatric patients with multiple kidney stones. This minimally invasive technique offers several advantages, including high stone clearance rates, reduced morbidity, shorter hospital stays, and improved postoperative recovery. By utilizing a combination of ureteroscopy and micro-percutaneous nephrolithotomy, urologists can achieve a comprehensive stone clearance in a single session, minimizing the need for multiple surgeries and potential complications.