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Exploring renal stone treatment options in pediatrics: a comparative analysis of micro-perc and retrograde intrarenal surgery

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Description

Pediatric urological care has made remarkable advancements in recent years, particularly in the management of renal stones. Among the minimally invasive surgical techniques used, Micro-Percutaneous Nephrolithotomy (micro-PERC) and Retrograde Intrarenal Surgery (RIRS) have gained popularity due to their effectiveness in treating renal stones. This study compares and evaluates the outcomes of micro-PERC and RIRS in pediatric patients with renal stones, shedding light on the potential benefits and limitations of each procedure. The Rise of Micro-PERC: Micro-PERC is a minimally invasive procedure that involves the removal of renal stones through a small percutaneous access tract. This technique utilizes a miniaturized nephroscopy, which allows for precise stone fragmentation and extraction. Micro-PERC offers several advantages, such as reduced blood loss, shorter hospital stays, and faster recovery compared to traditional Percutaneous Nephrolithotomy (PCNL). Additionally, it has shown excellent stone clearance rates and lower complication rates in various studies. A Safe and Effective Alternative: Retrograde Intrarenal Surgery (RIRS) is another minimally invasive technique used to treat renal stones in pediatric patients. It involves the insertion of a flexible ureter scope through the urethra and bladder, allowing direct access to the stones within the kidney. RIRS has gained popularity due to its lower morbidity rates, minimal invasiveness, and excellent stone clearance rates. It avoids the need for any incisions, resulting in reduced postoperative pain, decreased hospital stays, and faster recovery.When comparing the outcomes of micro-PERC and RIRS in pediatric patients with renal stones, both procedures have demonstrated high success rates and low complication rates. However, certain factors should be considered when selecting the most appropriate technique for each patient. Stone size, location, and complexity, as well as patient age and comorbidities, play a crucial role in the decision-making process. Micro-PERC has shown promising results in treating larger stones and complex cases. It allows for efficient stone fragmentation and removal, particularly in cases where multiple stones are present. Additionally, the use of miniaturized instruments reduces the risk of collateral damage to surrounding tissues. However, it should be noted that the procedure may require a higher level of expertise and specialized equipment, limiting its availability in some healthcare settings. On the other hand, RIRS is considered a safer option for smaller stones and less complex cases. It provides excellent visualization and access to the entire renal collecting system, enabling thorough stone clearance. RIRS is less invasive, making it suitable for patients with comorbidities or anatomical

abnormalities. It has become the preferred choice in cases where the stone burden is not extensive.

Conclusion

In conclusion, both micro-PERC and RIRS have revolutionized the management of renal stones in pediatric patients. While micro-PERC excels in treating larger stones and complex cases, RIRS offers a safer and less invasive alternative for smaller stones and patients with additional health concerns. The choice between these techniques should be made based on individual patient characteristics, stone characteristics, and the expertise available in the healthcare setting.As pediatric urologists continue to refine and improve these techniques, it is crucial to consider long-term outcomes, cost-effectiveness, and patient preferences. Future research and advancements in technology will further enhance the understanding of these procedures and allow for better tailored treatment options. Ultimately, the goal is to provide optimal care to pediatric patients with renal stones, ensuring successful stone clearance, minimal morbidity, and improved quality of life.