



Minimally invasive ureteral reconstruction for infant mid-ureteric valve defects

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Description

Laparoscopic ureteral reconstruction has emerged as a viable surgical approach for correcting Congenital Mid-Ureteric Valve (CMUV) in infants. CMUV is a rare urological anomaly characterized by a pathological fold or narrowing in the mid-portion of the ureter, leading to obstruction, urinary tract dilation, and potential renal damage. In the past, open surgical techniques were commonly employed; however, laparoscopic procedures offer advantages such as reduced invasiveness, shorter hospital stays, and quicker recovery times.

CMUV is a congenital anomaly that affects the ureter, causing partial obstruction and urinary stasis. This condition often presents in infancy with symptoms such as recurrent urinary tract infections, flank pain, or hydronephrosis detected by prenatal or postnatal imaging studies. The diagnosis of CMUV involves a combination of clinical symptoms, imaging studies (ultrasound, MRI, or CT scans), and sometimes a Voiding Cystourethrogram (VCUG) to visualize the urinary tract. Preoperative assessment focuses on evaluating renal function, degree of obstruction, and the

extent of urinary tract dilation. The infant is carefully prepared for surgery, ensuring appropriate hydration and fasting before the procedure. General anesthesia is administered to ensure the patient's comfort and safety during the operation.

The infant is placed in the appropriate position on the operating table, often in a modified flank position, to allow access to the affected ureter. Small incisions are made, and trocars are inserted into the abdominal cavity to accommodate the laparoscopic instruments and camera. The affected ureter and the area of the mid-ureteric valve are carefully identified using laparoscopic visualization. The pathological segment of the ureter containing the mid-ureteric valve is meticulously dissected and excised. Depending on the extent of the resected segment, various reconstructive techniques are employed, such as end-to-end anastomosis, ureteroureterostomy, or insertion of a stent or tube to maintain ureteral patency. Once the reconstruction is completed, the incisions are closed, and the infant is carefully monitored in the recovery room.

Following surgery, the infant receives postoperative care in the hospital to monitor for any complications, ensure adequate pain management, and maintain hydration. Antibiotics may be prescribed to prevent urinary tract infections. Regular follow-up visits are scheduled to monitor the infant's recovery, assess renal function, and evaluate the success of the surgical intervention. Imaging studies, such as ultrasound or a nuclear medicine renal scan, may be performed to evaluate the resolution of hydronephrosis and assess renal function.

Laparoscopic surgery in infants requires specialized skills and expertise due to the smaller size of the patient

and the delicate nature of the procedure. Surgeons must be highly skilled in pediatric laparoscopic techniques to perform the surgery effectively. General anesthesia, necessary for this surgical procedure, carries inherent risks in pediatric patients, including potential adverse reactions and complications related to anesthesia. Working in a confined space in the infant's abdomen can be challenging, potentially limiting visibility and maneuverability during the laparoscopic procedure, leading to technical difficulties.

Laparoscopic surgery minimizes the trauma to surrounding tissues, resulting in reduced postoperative pain and faster recovery compared to traditional open surgery. Small incisions lead to minimal scarring, which is especially beneficial in pediatric patients. Infants undergoing laparoscopic procedures often experience

shorter hospital stays, allowing for quicker return to normal activities. Laparoscopic surgery is associated with lower rates of postoperative complications such as wound infections and hernias. Laparoscopic ureteral reconstruction effectively corrects the mid-ureteric valve abnormality, improving urinary flow and potentially preserving renal function.

Conclusion

In conclusion, laparoscopic ureteral reconstruction offers a minimally invasive and effective surgical approach for correcting congenital mid-ureteric valve in infants. This technique, coupled with appropriate preoperative assessment and postoperative care, contributes to improved outcomes and a better quality of life for pediatric patients affected by this condition.