

A Brief Overview: Surgical Intervention in Clinical Nephrology

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DESCRIPTION

Diagnosis and treatment of kidney-related diseases, including Acute Kidney Injury (AKI), Chronic Kidney Disease (CKD), and End-Stage Renal Disease (ESRD), are included in the field of clinical nephrology. While there are many kidney problems that may be treated medically, in certain circumstances surgery may be necessary to restore function, reduce symptoms, or avoid consequences. In clinical nephrology, surgical treatments are often done. This note gives a brief summary of these procedures, emphasizing their reasons, methods, results, and concerns.

Common surgical interventions in clinical nephrology

Nephrectomy: Nephrectomy is the surgical removal of a kidney and is suitable for treating localized renal tumors, non-functioning kidneys, and permanently damaged kidneys (e.g., from trauma, infection, or chronic illness). Robotic-assisted laparoscopic nephrectomy is one type of minimally invasive approach; other open surgical options include standard and laparoscopic methods. Relieving symptoms, maintaining renal function in unilateral nephrectomy instances, and controlling cancer in renal tumor cases are the main objectives of nephrectomy. Risks following a nephrectomy include bleeding, infection, discomfort following the procedure, and maybe even loss of renal function, especially in individuals with Chronic Kidney Disease (CKD) or single kidney disease.

Pyeloplasty: Ureteropelvic Junction Obstruction (UPJO), a congenital or acquired disease producing blockage at the junction of the ureter and renal pelvis, is suggested for treatment with pyeloplasty. In order to relieve blockage and restore normal urine outflow, pyeloplasty entails surgical repair or revision of the ureteropelvic junction. Among the methods are robotically assisted pyeloplasty, open pyeloplasty, and laparoscopic pyeloplasty. Pyeloplasty attempts to maintain renal function by reestablishing normal urine flow while also relieving symptoms including flank discomfort, hydronephrosis, and UTIs. Risks related to pyeloplasty include infection, recurring blockage,

leaking of urine, and the requirement for stent implantation or removal following surgery.

Lithotripsy: Treatment options for kidney stones (nephrolithiasis) that cause urinary blockage, discomfort, or recurrent UTIs include Extracorporeal Shock Wave Lithotripsy (ESWL), endoscopic procedures such as Ureteroscopy (URS), and Percutaneous Nephrolithotomy (PCNL). Utilizing shock waves (ESWL), endoscopic tools (URS), or percutaneous access (PCNL), kidney stones can be fragmented or removed utilizing lithotripsy procedures. Procedures such as lithotripsy are designed to dissolve or remove kidney stones, treat urinary blockage, reduce discomfort, and stop the stones from coming back. Ridovascular damage, bleeding, infection, leftover stone pieces, and the requirement for further operations or treatments for stone removal are among the dangers associated with lithotripsy procedures.

Vascular Access Surgery: Patients with CKD or ESRD who need hemodialysis should have vascular access created surgically. Arteriovenous Fistula (AVF), Arteriovenous Graft (AVG), and Central Venous Catheter (CVC) insertion are examples of vascular access types. In vascular access surgery, a central vein (CVC) is punctured to allow access for dialysis, or anastomoses between an artery and a vein (AVF or AVG) are made. Reliable hemodialysis treatment is made possible by successful vascular access surgery, which also reduces access-related problems (such as infection and thrombosis) and increases access lifespan. Careful patient selection, preoperative evaluation of the vascular architecture, and continuous surveillance to watch for problems like stenosis, thrombosis, or infection are necessary for vascular access surgery.

Kidney Transplantation: In patients with End-Stage Renal Disease (ESRD), kidney transplantation is recommended if they meet transplant eligibility requirements. It provides better renal function, survival rates, and quality of life than dialysis. A donor kidney is surgically implanted into the recipient's pelvis during a kidney transplant. This is usually done with robotic assistance or open surgery (either conventional or laparoscopic). Effective kidney transplantation increases long-term survival and transplant patients' quality of life while restoring renal function

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and removing the need for dialysis. Sterile donor-recipient matching, immunosuppressive medication to avoid transplant rejection, and continuous post-transplant surveillance for problems like transplant rejection, infection, or graft failure are all necessary for kidney transplantation.

CONCLUSION

In clinical nephrology, surgical treatments are essential for managing a range of kidney-related illnesses. Surgical techniques,

ranging from vascular access surgery and kidney transplantation to nephrectomy and pyeloplasty, are designed to enhance patient outcomes, relieve symptoms, avoid complications, and restore renal function. Despite the fact that surgical treatments have many advantages, there are hazards and factors to be carefully considered. by carefully choosing patients and performing precise surgery.