

Clinical Applications of Robotic Technology in Nephrectomy

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Description

A nephrectomy is a surgical procedure in which one or both kidneys are removed. It may be necessary for various medical reasons, including kidney cancer, severe kidney infections, kidney donation, or to alleviate symptoms of certain kidney conditions. While it carries certain risks and potential complications, advances in surgical techniques have made nephrectomy safer and more effective, with shorter recovery times and improved outcomes for patients. By understanding the types of nephrectomy, the surgical procedure, potential risks, and the recovery process, patients and their families can make informed decisions and better prepare for the surgical experience and postoperative care. Close collaboration between patients, healthcare providers, and support networks is essential to ensure a successful outcome and optimal quality of life following nephrectomy.

Types of nephrectomy

Partial nephrectomy also known as kidney-sparing surgery, this procedure involves removing only the diseased or damaged portion of the kidney while preserving the healthy tissue. It is often preferred for patients with small kidney tumors or those who have only one functioning kidney. It is typically performed when the entire kidney is affected by conditions such as kidney cancer, severe kidney infections, or trauma. Radical nephrectomy this procedure involves the removal of the entire kidney along with surrounding tissues, such as the adrenal gland, lymph nodes, and sometimes, nearby tissues or organs. It is commonly performed for advanced kidney cancer or when the tumor has spread beyond the kidney. Laparoscopic nephrectomy is a minimally invasive procedure where small incisions are made in the abdomen, and specialized surgical tools are used to remove the kidney. It has advantages like a faster recovery time, less pain after the procedure, and smaller scars in comparison to traditional open surgery. Robotic-assisted nephrectomy is a type of laparoscopic surgery where the surgeon controls robotic arms to perform the procedure with enhanced precision and dexterity.

Complications and recovery

While nephrectomy is generally considered safe, it carries certain risks and potential complication, including bleeding there is a risk of excessive bleeding during or after the surgery, which may require blood transfusions or additional surgical interventions to control. Infection at the surgical site or in the urinary tract is possible following nephrectomy pain at the incision site and in the abdomen is common after nephrectomy. Complications from anesthesia adverse reactions to anesthesia, such as respiratory problems or allergic reactions, can occur but are rare. Chronic kidney disease in patients undergoing nephrectomy for non-cancerous conditions, such as kidney donation, there is a potential risk of developing chronic kidney disease over time, especially if the remaining kidney function is compromised. Prolonged immobility during and after surgery increases the risk of blood clots forming in the legs (deep vein thrombosis) or lungs (pulmonary embolism). Incisional hernias, where tissue protrudes through the surgical incision, may develop in some patients following nephrectomy. Pain medications are prescribed to manage postoperative pain. It is essential to take these medications as directed to stay comfortable during the recovery period. Patients are advised to avoid heavy lifting and strenuous activities for several weeks following nephrectomy to allow the surgical incisions to heal properly. Patients should keep the incision site clean and dry, as instructed by their healthcare provider. Regular follow-up appointments with the surgical team are scheduled to monitor the patient's recovery progress, assess kidney function, and address any concerns or complications that may arise. Most patients can gradually their normal activities, including work, exercise, and social engagements, as they regain strength and stamina. A balanced diet and adequate fluid intake are essential for overall health and optimal kidney function. Patients may be advised to follow specific dietary recommendations based on their individual needs and medical history. The emotional and physical aftermath of a nephrectomy can be testing. Patients might profit from looking for help from relatives, companions, support gatherings, or emotional wellness professionals.