WHAT IS KIDNEY FAILURE?

The main function of the kidneys is to eliminate excess fluid and waste material from the blood. When the kidneys lose this ability, dangerous levels of fluid and waste accumulate in the body leading to a condition known as kidney or renal failure. This may be due to various factors including infections, autoimmune diseases, hypertension, diabetes, cancer, and toxic drugs. Once kidney failure occurs, it requires immediate management.

WHAT ARE THE TYPES?

There are two main types of kidney failure:

**ACUTE RENAL FAILURE (ARF) OR ACUTE KIDNEY INJURY (AKI)**

This is characterised by a sudden impairment of renal function marked by rapid, and steadily increasing accumulation of toxic products in the blood, normally excreted by the kidneys. The causes of acute kidney failure include:

- Factors that interfere with renal blood flow (for example: fluid and electrolyte depletion, haemorrhage, severe infections, cardiac or liver failure, heat stroke, fluid depletion due to burns).
- Factors that cause obstruction to the urinary tract (for example kidney stones can also lead to acute kidney failure).
- Other causes are factors that impair the renal function directly (for example acute glomerulonephritis, a disorder involving swelling and inflammation of filtering cells of the kidney).

**CHRONIC RENAL FAILURE (CRF) OR CHRONIC KIDNEY DISEASE (CKD)**

This is characterised by a slow, gradually progressive irreversible impairment of the excretory and regulatory functions of the kidneys over a period of more than 3 months to years. The causes of CKD include:

- Chronic glomerulonephritis, a disorder involving swelling and inflammation of filtering cells of the kidney.
Kidney transplantation is considered the treatment of choice for many people with severe chronic kidney disease because quality of life and survival are often better than in people who use dialysis. People who undergo kidney transplantation do not require hours of dialysis treatment. Ideally, patients who are eligible to get a kidney transplant do so before ever starting on dialysis. However, there is a shortage of organs available for donation.

A kidney can come from a living relative, a living unrelated person, or from a person who has died (deceased or cadaver donor); only one kidney is required to survive. In general, organs from living donors function better and for longer periods of time than those from donors who are deceased. Family members are often the most likely to be compatible kidney donors. But many people undergo successful transplants with kidneys donated from people who are not related to them.

The first successful renal transplantation in India was performed on 2nd February 1971 at AMC Vellore. Since then, the program of renal transplantation has come a long way. Better immunosuppressive drugs have reduced the complications and improved graft and patient survival. In Indian scenario kidney transplant also offers least expensive form of renal replacement therapy. Hemodialysis for a year will cost around Rs.3-4 lakhs (including cost of medicines) post renal dialysis is even costlier, renal transplant will cost around 3-3.5 lakh rupees moreover there is survival advantage, better quality of life and one can return to normal activities within 1-2 months of transplant and can earn for himself and his family. The quality of dialysis is poor in most dialysis units further compromising patients survival on hemodialysis.

Having done more than 50 successful renal transplants at Max Hospital Mohali which includes first ever renal transplant across blood group barrier in northern region. Lastly, healthy lifestyle with increased physical activity and healthy diet, strict monitoring of cholesterol and avoidance of smoking goes a long way in maintaining the cardiovascular health of the person, especially in view of increased incidence of heart disease in patients with CKD.

WHAT IS THE TREATMENT?
In acute kidney failure, general treatment measures include avoiding drugs that require renal excretion, strict monitoring of daily weight, fluid intake and output, high carbohydrate and low-protein diet, decreased intake of salt and potassium, prevention of injury or infection, electrolytes monitoring, and monitoring of vital signs, cardiac status, and mental status. Peritoneal or haemodialysis is the treatment of choice when other measures fail. Drugs are used to reduce the blood pressure; diuretics (drugs that increase urine output) are used in cases of fluid overload, intended to improve the urine output and also assist in blood pressure control. Antibiotics may be needed to treat associated infections while avoiding potential kidney toxic antibiotics and adjusting the dosage of administered medications based on the level of kidney function.

In CKD, general treatment measures include a diet low in sodium, potassium, and phosphate. Other measures include balanced fluid intake, and monitoring weight changes, vital signs, electrolyte balance, cardiac and mental status.

1. **DRUG THERAPY**: This includes antihypertensives for hypertension, diuretics for oedema, phosphate binders for hyperphosphataemia (increased phosphate levels in the body), antiemetics (drugs that prevent vomiting) for nausea, laxatives for constipation, calcium, iron, and vitamin supplements.

2. **DIALYSIS**: Peritoneal dialysis or haemodialysis is often required for end-stage disease.

3. **SURGERY**: Kidney transplantation is the solution for patients best with CRF. The results of transplantation are now extremely good with improved five-year survival rates, excellent long-term outcomes and quality of life.

**HOW TO PREVENT CKD?**
Prevention of the causative factors, wherever possible, may help in preventing the development of the disease. Control of blood sugar in diabetics is of great importance. After the disease has developed, specific drug therapy based on the cause of kidney disease (steroids and certain immunosuppressive medications prescribed for certain types of glomerulonephritis) may help reverse the disease progression while strict blood pressure (BP) control (target BP goal <130/80mmHg) and avoidance of exposure to potential kidney toxic medications (like common pain medications Voveran, nimesulid and brufen) helps to delay the progression of CKD over period of years. Lastly, healthy lifestyle with increased physical activity and healthy diet, strict monitoring of cholesterol and avoidance of smoking goes a long way in maintaining the cardiovascular health of the person, especially in view of increased incidence of heart disease in patients with CKD.
WHICH OPERATIONS CAN BE DONE LAPAROSCOPICALLY?

Operations for kidney, adrenal, urinary system and prostate involve superspeciality skill & expertise, requiring high-end laparoscopic instruments & devices. Kidney surgery by laparoscopy has already been well established and reached the level of perfection, so that this is the standard of care as of now.

Use of laparoscopy and robotics in kidney cancer surgeries have enabled very precise dissection under magnified vision and thus effective & curative cancer surgery along with salvaging the unaffected half of kidney (Partial nephrectomy).

With availability of robotics & laparoscopic facility and expertise in many centers the radical prostatectomy has become the treatment of choice in localised high grade prostate cancers which in earlier days were treated by hormonal manipulation, otherwise reserved for advanced / metastatic prostate cancer. Robotic prostatectomy facilitates easy & precise dissection and suturing, resulting in more effective cancer control, less complication and morbidities.

WHICH KIDNEY DISEASES CAN BE MANAGED LAPAROSCOPICALLY?

Various operations of the kidneys urinary & genital systems done Laparo-endoscopically include -- removal of nonfunctioning &/or infected kidney, renal tumors (radical / partial nephrectomy) and large complex cysts (deroofing/excision), surgical correction of pelvi-ureteric junction obstruction & ureteral strictures (pyeloplasty), urinary stones (PCNL, URS, RIRS, Cystolithotripsy), removal of bladder & prostate for cancers (lap radical cystectomy & robotic radical prostatectomy) and bladder augmentation.

Retroperitoneal and pelvic lymph nodes dissection for testicular or penile cancers are also now days being done laparoscopically effectively with lesser morbidity than the open surgery.

WHAT ARE THE COMMON SYMPTOMS OF KIDNEY DISEASES BY WHICH WE CAN KNOW THEM AT AN EARLY STAGE?

Obstruction to kidney by stones, blood clot or growth usually causes pain in flank or back. Kidney cancers in early stages are usually asymptomatic – continuous back pain can occur once it stretches kidney capsule due to large size or if the cancer spreads beyond the kidney into retroperitoneal nerves. Some patients may pass blood in urine. In very advanced stage of cancer patients may have loss of weight, decreased appetite or weakness.

ADVANTAGES OF LAPAROSCOPIC KIDNEY SURGERY

- Extreme precision during surgery
- Less pain after the surgery
- Early food intake after surgery
- Early ambulation
- Short hospital stay
- Minimum scar
- No risk of hernia formation

TEAM THAT CARES

Dr. Vinay Sakhuja
Director Nephrology & Transplant Medicine Max Hospitals-UNR

Dr. Sananda Bag
Senior Consultant Urology & Renal Transplant

Dr. Munish Chauhan
Consultant, Nephrology & Transplant Physician

Max Super Speciality Hospital, Mohali is empanelled with ECHS, ESIC, CGHS Haryana & HP Govts and all Major TPA’s & Corporates & PSU.

For any query please contact us at: Contactusatmohali@maxhealthcare.com