

Need for renal transplantation programme in Bir Hospital

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Human beings do not burst like a balloon, they fall apart pieces by pieces. Clinical Organ Transplantation is designed to replace the exhausted organs as they fail. Human Organ Transplantation is one of the greatest achievements of Medical Science of the 20th Century. Before the development of Renal Transplantation and Haemodialysis all the patients suffering from the End Stage Renal Disease (ESRD) would succumb to death. The management of a patient of ESRD with intermittent dialysis for a long period is impossible because of its high cost and its associated complications with the increased number of the procedures. The result of graft survival has improved because of introduction of better immunosuppressive drugs, good perfusion solutions, better surgical technique, quick harvesting of donor kidney, HLA test, blood grouping and tissue typing tests. At present all concerned professionals working as a team: surgeon, nephrologists, immunologist can rehabilitate most of the ESRD patients by renal transplantation. These patients are restored to a normal life after transplantation. The success of the renal transplantation has lead to encouragement for other organ transplantation e.g. heart, heart and lungs, liver transplantation, pancreatic transplantation and lately small bowel transplantation.

Renal replacement therapy (RRT) started in Bir Hospital in 1973, in the form of intermittent peritoneal dialysis. Thereafter haemodialysis was introduced in 1987. As there are growing numbers of chronic renal failure (CRF) cases these facilities were inadequate, so there was urgent need to expand these facilities to other health institutions and private hospitals.

Since 1995 there are altogether 8 Centres established in the country that provide haemodialysis, continuous ambulatory peritoneal dialysis (CAPD) and peritoneal dialysis to the needy patients. The new cases of ESRD is increasing on an average of 11.6% per month in the last three years (135 patients in 2057 BS, 104 in 2058 and 182 in 2059 BS). These figures were taken from the Nephrology Unit in Bir Hospital. Because of the unavailability of transplantation service in the country, most of these cases have to travel abroad to avail of transplantation service costing enormous amount of money for travelling,

fooding and lodging. This obviously results in lot of inconvenience. Thus there is a great need to start such services within the country preferably in the oldest tertiary level Bir Hospital. This would ensure that people get this service inside the country at an affordable cost without much inconvenience and hassles.

How Transplantation programme is done

The programme starts many months prior to the actual day of surgery. At first, blood group matching and search of a live related donor (cadaveric donation is not practised in our country) and his fitness for donor nephrectomy is done by a thorough evaluation and the ESRD patient for the fitness as a recipient of the kidney. The other most important factor is that the recipient and his relatives should be in a position to support the cost of surgery and expensive immunosuppressive drugs for life long after transplantation. The programme has four phases:

1. Pre Transplantation Phase

The donor and recipient evaluation should be done thoroughly. The recipient is sick and is on dialysis with reduced blood parameters. The donor and recipient are ideally matched some 2-3 months prior to the operation by the nephrology unit. The donor should be below 50 years of age, the GRF (glomerular filtration rate) more than 80ml/minute and should not be suffering from renal disease, heart disease or liver diseases. The donor should also be nonhypertensive and nondiabetic. A series of investigations, which includes urine routine microscopy, complete blood count, bleeding, clotting, prothrombin time, renal function test, liver function test, blood sugar, viral markers, renogram, intravenous pyelogram, renal angiogram are done. Doppler USG scan abdomen and if possible CT angiogram, HLA typing and crossmatching with the recipient are also required. In case of incompatibility or any major problem, donor will be rejected.

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Recipient should be evaluated for cardiac status, active pulmonary tuberculosis or active infection and viral markers, HIV infection, disseminated malignancy, persistent coagulation disorders, mental retardation, severe psychosis, alcoholism or drug addiction, refractory cardiac failure, chronic respiratory failure and advanced hepatic disease as all of these are contraindication for transplantation. If recipient or his relatives can't bear the cost of operation or life long immunosuppressive medicine cost he is rejected. The recipient is admitted two weeks before surgery and dialysed as frequently as necessary. Erythropoietin therapy, vaccination for hepatitis B and immunosuppressive therapy should be started two days before operation.

2. Transplantation operation Phase

It is a major operation which involves a healthy donor and a diseased recipient. The process involves two teams of anaesthesiologist, surgeons, well trained O.T. nurses and other required manpower in O.T. Two teams of surgeons one for donor nephrectomy, another to harvest kidney in the recipient to work together in a twin theatre with monitoring facilities during surgery, are required. The donor nephrectomy can be done by classical method / mini donor nephrectomy or laparoscopic donor nephrectomy. It is started at first with a meticulous procedure, sharp dissection is done under vision and all minute vessels are ligated during mobilization of kidney and a good length of renal artery renal vein is taken. The side which has single vessel is preferred. Ureter is dissected upto the pelvic brim which is ligated and cut. A good amount of peri urethral fat and tissues are preserved with ureter. So the blood supply is not compromised. The removed kidney is taken immediately for perfusion. Perfusion solution is run through renal artery till the return solution from renal vein is clear of blood and clots removed from the kidney which then become blanched white and cold. It is packed in a plastic ice filled bag and kept in a steel jar containing ice and covered with jar lid. This kidney is ready for transplantation. Kidney can survive and function after longer cold ischaemic time than other organs. Function can be maintained upto 72 hours but optimal function is achieved if cold ischaemic time is kept to 24 hours.

Recipient operation is started at this stage, a hockey shaped incision starting from (R) costal arch 2 cm above the umbilicus extending upto symphysis pubis at lateral border of rectus abdominis. Peritoneum and small bowel and caecum are pushed medially. The kidney bed is prepared in the retroperitoneum. The kidney is placed in the right iliac

fossa. Renal vein is anastomosed with the external iliac vein and renal artery with internal iliac artery with 5/0 prolene suture. Ureter is reimplanted into bladder with 4/0 PDS suture and double J stent put inside ureter and bladder.

3. Post operative Phase

Immediate post operative transplant period is crucial for the recipient. Constant monitoring of vital signs, urine output and colour is a must. One also has to observe for any sign of acute rejection, graft failure and sign of infection. Facility for urgent Doppler study, and means to revasculate in case of clot must be available. Recipient should be kept in a special isolated room with close monitoring by trained nursing staff and supervised by a doctor. Good dose of immunosuppression is administered. The patient is supervised jointly by transplant surgeon and nephrologist for about 10 days after which period s/he can be discharged.

4. Late post operative Phase

The recipient will be followed jointly by nephrologist and transplant surgeon weekly by regular investigations of Hb/TLC/DLC, platelet count, renal function test, and blood level of cyclosporine at the time of discharge and after 4-6 weeks post transplant. If there is any sign of toxicity, dose of immunosuppression is reduced. Liver function test should be done if patient develops jaundice or signs of hepatotoxicity.

In some patients immunosuppression and steroid may result in secondary diabetes. In such a situation blood sugar estimation is advised. High doses of steroids and immunosuppression therapy can result in weight gain, swelling of face and hirsutism. Patients should be counselled for this. All transplant patients need good follow up for 3 months period; only then can they be sent home where they can consult local physician in case of need.

The main target of this programme is to keep the recipient with good functioning graft for many years. The graft survival rate for renal transplantation for cadaveric transplant at 1 year is 87% and 5 years survival rate is around 62%. In case of living related donor renal transplant; the graft survival rate at 1 year improves to 93% with a 5 years survival rate of about 77%. At present we plan to do live related renal transplant. In the future cadaver transplant will also be taken up.

The survival of graft and patient are influenced by various factors e.g. episodes of acute rejections, infection and good immunosuppression in optimal

dosages and financial condition of patient. By a rough estimate the cost of transplantation will be Rs. 80,000-100,000; operative cost Rs. 30,000 per month for first year and Rs. 10,000 per month after one year for the rest of his life for immunosuppressive medicines.

Beside this, in some cases if any untoward complications develop an extra cost of Rs. 50,000 may be needed to treat episodes of acute rejection and infection. In such situation the graft survival will be drastically reduced if not diagnosed and dealt timely.

Conclusion

The Renal Transplantation programme is a team work needing combined effort and support from the all concerned party e.g. surgeon, nephrologist, pathologist, anaesthesiologist, trained O.T. nurses, transplant post-operative ward nurses and many others like patient party. It is high time to start the programme because assistance of Indian Embassy, Government of India has already been taken for this purpose. Bir Hospital has acquired all necessary trained manpower who are capable to start and sustain programme successfully so that our people can get its benefit at a low cost and with much ease.

"We Treat God Cures"

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