SUMMARY

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The liver is the largest gland of the body. The division of the liver into segments, which are delinated by fissures and the destribution of the vascular and ductal structures, has led to a much more aggressive approach to liver surgery. There are 8 segments: four on the right, three on the left and one corresponding to the caudate lobe and process. Segment II to IV compose the left lobe & segments V to VIII the right. Segment I corresponds to the caudate lobe and process.

The basic functions of the liver can be divided into: (1) its vascular functions for storage and filtration of blood, (2) its metabolic functions concerned with the majority of the metabolic systems of the body and (3) its secretory and excretory functions that are responsible for forming the bile that flows through the bile ducts into the gastrointestinal tract.

Some of the problems that biochemical tests of liver function traditionally attempted to solve, are now more readily and reliably solved by imaging techniques, while biopsy almost always provides definitive answers in chronic disease. Nevertheless, biochemical tests provide simple, widely avaliable and essentially non invasive means of detection and monitoring abnormalities of liver function and cellular integrity.

According to experimental as well as elinical data, the liver seems to be a privileged organ regarding its resistance to antibody-mediated injury. In

these two drugs with azathioprine and antilymphoid globulins, has an immediate impact on the transplantation of all organs, but especially of the liver.

The time and efficancy are the basic feactures of the search for the ideal preservation method. With the development of University of Wisconsin (UW) solutiom it is claimed that the goal of semielective liver transplantation has been achieved. Tolerance of cold ischemia by the human liver appeared to be significatly improved from 8 hours or less with Collin's solution to more than 10 h (range = 11-20 hr) with UW solution.

Today any patient with an irreversible and progressive liver disease that is intractable to other medical or surgical therapy and who does not have a contraindication to transplantation is a potential candidate for liver replacement. The diseases for which liver transplant is most often indicated in adults include chronic active hepatitis, primary biliary cirrhosis, sclerosing cholangitis, autoimmune hepatitis, alcoholic liver disease, and schistosomae hepatic fibrosis. Less common indications are Wilson's disease, α -antitrypsin deficiency, Budd chiari syndrome, and haemochromatosis. The feasibility of liver transplantation in acute liver failure is now well established, although the advantage of relative easier surgery is offset by anaesthetic and medical problems caused by haemodynamic instability, cerebral oedema, and sepsis. Consequently the results are not quite as good as for elective transplantation.

Although the value of orthotopic liver transplantation as definitive therapy for hepatic malignancy has been questioned, the long term survival achieved in a significant proportion of these patients emphasized that hepatectomy and liver transplantation can be an effective approach.

Idealy, liver transplantation should be carried out at the latest stage in the course of the illness which is still compatible with an optimal chance of survival.

Conversely undue delay does not only put the patient at risk of dying as a result of cerebral oedema and bleeding before transport to the transplant center, or death while waiting in hospital, but also diminishes the prospects of survival following transplantation.

Careful selection of patient for liver transplantation is crucial. Psychological assessment and education of patient is essential and in all liver transplant programmes much time is spent preparing the patient and his family. Absolute contraindications are findings which render a successful outcome impossible. These include; active sepsis outside the liver and biliary tree, HIV positivity and metastatic hepatobiliary malignancy. Relative contraindications are factors which place the patient in a high risk category. The most important factors are impaired renal function, hyponatraemia, muscle wasting, hepatitis B or D, pulmonary hypertension,previous upper abdominal surgery, active post-sclerotherapy ulceration, bacteraemia, and spontaneous bacterial peritionitis. Surgery must be delayed until the reversible abnormalities have been corrected.

The donors for liver transplantation are characteristically between two months and forty five years of age, victims of brain injury which has resulted in brain death. Cardiovascular and respiratory functions are sustained artificially by mechanical ventilation. The donor should suffer from no other disease. Routine biochemical tests of liver function should be normal at the time of donation. The donor should not have had periods of prolonged hypotension or anoxia.

There are two general approaches for the transplantation of the liver. In the first method, the host liver is removed and replaced with a homograft (orthotopic transplantation). The alternative technique is the insertion of an extra liver (auxiliary homotransplantation) at an ectopic site.

The process of liver transplantation can be broken into three stages: donor

hepatectomy, recipient hepatectomy and liver implantation. Each one of these stages in the transplant process is directly affected by the immediately preceding period, mandating precise operative technique and full knowledge of the potential problems in each phase of the procedure.

Reduced-size liver transplantation, in which only a lobe of the liver is used as a graft, overcomes size disparity and shifts the available supply of organs from older donors to younger recipients. Reduced-size liver trans-plantation represents a safe and effective therapy for clinically ill children suffering from end stage liver disease. Split-liver transplantation, in which two recipients receive grafts from a single donor, is based on the fact that one potentially usable lobe is discarded during the reduced-size liver transplantation. Two additional advances that make use of the technical gains achieved during the performance of reduced-size liver transplantation and split liver transplantation are the use of a liver lobe as an auxiliary liver graft and transplantation using living donors.

Much of the success of the procedure of liver replacement depends on the deligence and quality of the immediate postoperative management which is very complex and demanding. The early postoperative care program includes immediate immunosuppression regimen, pulmonary, cardiovascular, hepatic, renal, metabolic, bleeding, coagulation and infection complications as well as postoperative nutrition and pain control. Complications of liver transplantation fall into two groups: Hepatic allograft dysfunction and extrahepatic complications. Hepatic allograft dysfunction incluade: Primary graft failure, harvesting induced injury, vascular thrombosis, rejection, infection, bile duct complications, drug induced hepatic injury and hemolysis. All body systems are stressed in patients undergoing liver transplantation, either by the severe preexisting liver failure, during the operative procedure itself or in the postoperative period.

Acute rejection is one of the most important factors influencing results of liver transplantation. One can expect the rejection pattern by knowing the patient's individual HLA compatibility. In patients with DR-mis match the clinical type II (increase in bilirubin and temperature) and histological cholangitis is frequently present, whereas with DR compatibility, the clinical type 1 (increase in transaminase) is mostly seen. Perhaps the de-novo expression of MHC antigens, especially the DR expression on bile duct epithelium play a major role in establishing the different kinds of rejection phenomena.

Chronic rejection is a major cause of late liver allograft failure. Generally accepted pathological features of this condition include chronic obliterative arteriopathy and bile duct loss. Bile duct loss has been attributed to direct lymphocytotoxic attack, which seems reasonable considering the histologic appearance of rejection. However, ischaemia due to chronic obliterative arteriopathy has been largely overlooked as a cofactor in the pathogenesis of bile duct loss.

Due to variety of factors, such as better initial selection of candidates for the procedure, refinements in the techniques of organ procurement and surgical grafting, the introduction of cyclosporine A, and improvements in the pre-and post-operative management of such patients, the life expectancy of patients undergoing orthotopic liver transplantation has increased considerably over the last several years. The vast majority of the postoperative deaths has occurred within the first 2 postoperative months and are related primarily to sepsis. Rejection is also frequent albeit controllable problem.