# Hepatic Transplantation

## An Essay

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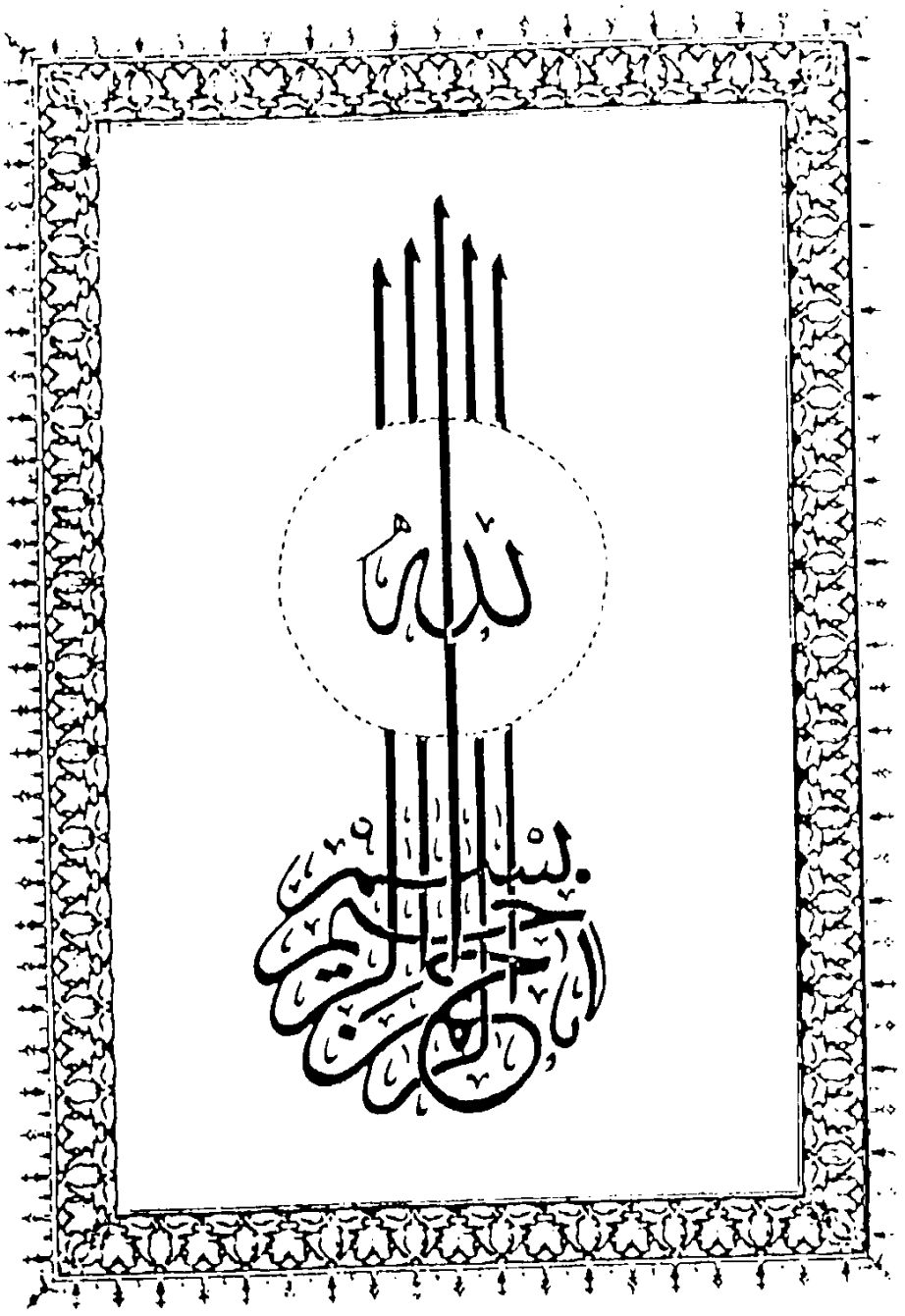


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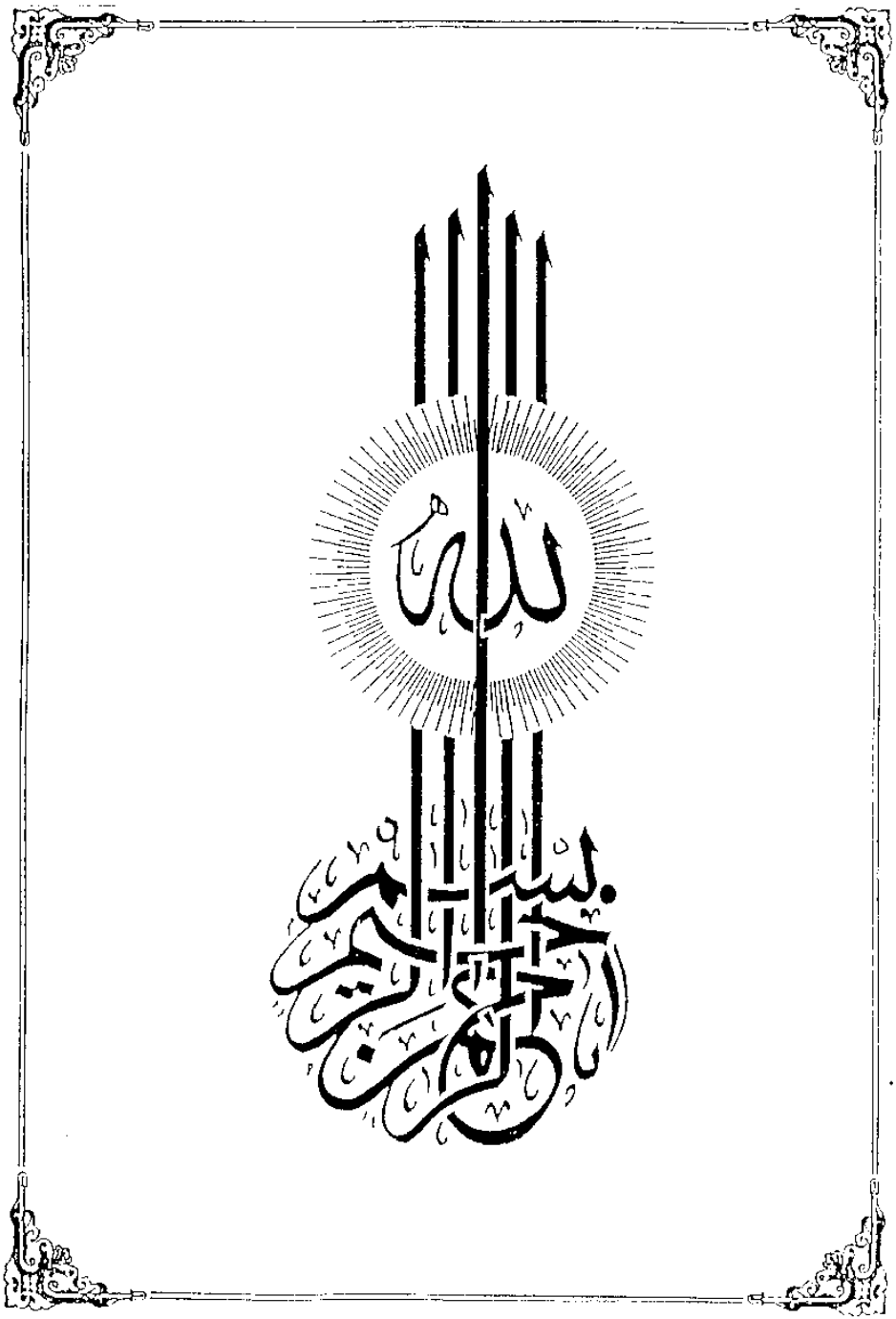


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# A C K N O W L E D G E M E N T

To Prof. Dr. FAKHERY HAMID EBIED,

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Before all and above all thanks to GOD.

Adel Kamal Saleh

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TO MY PARENTS

MY WIFE

AND MY SON WALEED

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# INTRODUCTION

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## Introduction

Liver transplantation has emerged as an acceptable treament modality for adults and children with end-stage liver disease who otherwise are doomed to disability and death. The further development of this therapeutic modality depends on the careful training of transplant teems to perform the procedure effectively and to manage its complications.

Orthotopic liver transplantation is one of the most difficult and demanding surgical procedures in modern medicine. This procedure cannot be performed as an individual effort; total institutional commitment is required for therapeutic success. Surgical units interested in such a program are currently derived from operating teams experienced in renal transplantation and liver surgery. Surgical training in animal models is important to familiarize a team with crucial technical maneuvers, but it cannot replace direct experience with human liver replacement. Considerable demands may

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be placed on blood banking facilities, operating personnel, and critical care beds ( Jenkins, et al; 1985 ).

In the early 1960's, several several experimental liver transplantation in dogs were performed in Boston by Moore and his associates but without long-term survival, about 12 days ( Moore, et al; 1964 ).

The first orthotopic human liver transplantation was performed by Strazl and his Colleagues in 1963 in Denver. After that, a number of attempts have been made at homotransplantation of the human liver. All resulted in death of the patients, the maximum survival being few weeks. Many centers had performed liver grafts, but until, 1980, there are only two large series, that of Denver and Cambridge/King's College Hospital series,( Calne, 1980 ).

There are two general approaches to transplantation of the liver. With one method, an extra liver is inserted at an ectopic site, without

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removal of the diseased native liver (auxiliary or heterotopical transplantation). Because of the poor clinical results, the number of attempts at human auxillary transplantation has declined to such a point that this kind of operation will not be considered further more. With other method, the diseased host liver in removed, creating a space into which a graft is transplanted with as normal an anatomic reconstruction as possible (orthotopic transplantation). (Starzl, et al ; 1985).

As a result of major advances in immunosuppression and surgical tschnology, liver replacement has become a major focus of interest. Through the efforts of Starzl, et al; in the United States and Calne, et al; in England long-term survival can be achieved( Starzl, et al;1982 ).

The introduction of cyclosporine (1978) and low-dose steroids for immunosuppression after liver transplantation has been associated with a dramatic doubling of the survival rate during the first postoperative year. Previous clinical trials

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demonstrated survival rates of about 40 % at one year. Now with cyclosporine a possible survival rate of 75 % to 80 % at one year can be achieved. Mortality rates are somewhat lower in the pediatric age group than in adults(Jenkins,et al; 1985).

Although a number of questions remain unanswered, agreement is reached that liver replacement represents a reasonable treatment option that desrves more widespread application in specific states of liver disease(Jenkins,et al;1985).

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# Anatomical Basis of Liver Transplantation



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# ANATOMICAL BASIS OF LIVER TRANSPLANTION

The liver is the largest organ in the body, weights between 1200 and 1500 gm. It is relatively large in the foetus than in the adult . The liver is situated in the upper right part of the abdominal cavity, occupying almost the whole of the right hypocondrium. the greater part of the epigastrium. ( Davies, 1967 ) .

The liver has two surfaces ; diaphragmatic & visceral . The diaphragmatic one is boldy convex, moulded to the diaphragm . The visceral one is flat , slopes down to the right and forwards . Faint visceral impressions are moulded on this surface . From the diaphragmatic and visceral surfaces , peritoneal folds pass respectively across to the diaphragm and down to the stomach , these persist from the ventral mesogastrium into which the developing liver grows ( Last , 1979 ).

## Lobes of the liver " SEGMENTAL ANATOMY "

From the early days , the liver has been described in two lobes , but incorrectly . This division has until recently been accepted by the authers of many texts . Surgical interest in resections of the liver and knowledgeable care in cases of hepatic trauma have led to a more careful definition of the intrahepatic arrangements ( Kennedy , 1977 ) .

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On the anterior surface , the falciform ligament's attachment divides the liver into named right and left lobes . On the visceral surface , the grooves for the ligamentum teres and ligamentum venosum divide the liver into these right and left lobes . The visceral surface to the left of these grooves was named the left lobe . The visceral surface from the sharp lower border to the porta hepatis , between the ligamentum teres and the gall bladder is named the quadrate lobe . The visceral surface behind the porta hepatis , enclosed by the ligamentum venosum and its attached lesser omentum is named the caudate lobe . This lies up on the diaphragmatic surface and it is joined by an isthmus of liver surface to the right lobe . This isthmus is called the caudate process which lies at the limit of the epiploic foramen , between the porta hepatis and the groove for the inferior vena cava . The visceral sueface to the right of the gall bladder and the inferior vena cava is called the right lobe . The old description include the quadrate and caudate lobes in the right lobe ( Last,1979 ).

The old anatomists knew but failed to understand why the right and left branches of the hepatic artery and portal vein are of equal diameter , as are the right and left hepatic ducts . They failed to appreciate that the liver is in two halves ( Last, 1979 ) .

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The plane of division runs from the fossa of the gall bladder below, to the fossa of the inferior vena cava above . The angle of this plane is about $35^{o}$ with the vertical plane and $20^{o}$ with the sagittal plane opening anteriorly ( Kennedy , 1977 ) .

The quadrate and caudate lobes are thus , parts of the left lobe of the liver . They are supplied by the left branches of the hepatic artary and portal vein, and drain into the left hepatic duct ( Last, 1979 ) .

The right lobe is subdivided into anterior and posterior segments by the right segmental fissure . The left lobe is subdivided into medial and lateral segments by the left segmental fissure , marked by the position of the falciform ligament ( Way , 1981 ) .

Corrosion casts of the liver in which the portal system , the hepatic arteries and bile ducts have been injected show very clearly the main boundary fissure between the two lobes , as well as , the right segmental fissure between the anterior and posterior segments of the right lobe . Subsegments are clearly demonstrated as well ( Kennedy , 1977 ) .

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