Recent Status of Hepatic Transplantation

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An Essay
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By

Waheed Haleem Rafla
M.B. B.Ch.
Ain-Shams University

6.7.554
W. H

Supervisors

Prof. Dr. Amir Ismail El Lamie
Professor of General Surgery
Faculty of Medicine
Ain-Shams University

Dr. Husam El-Din Hassan El-Azazi
Lecturer of General Surgery
Faculty of Medicine
Ain-Shams University

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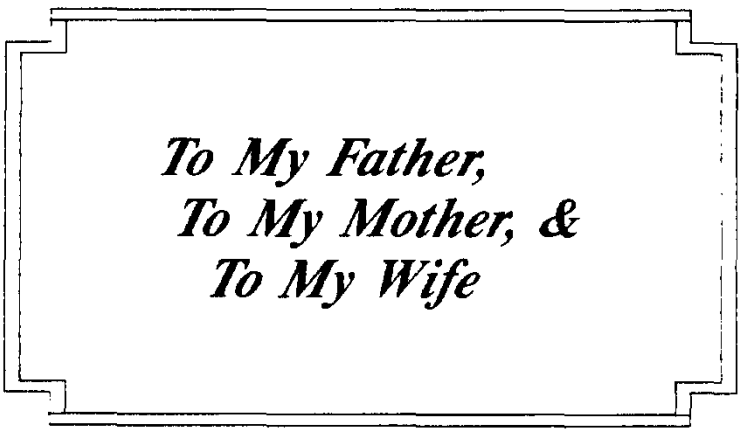

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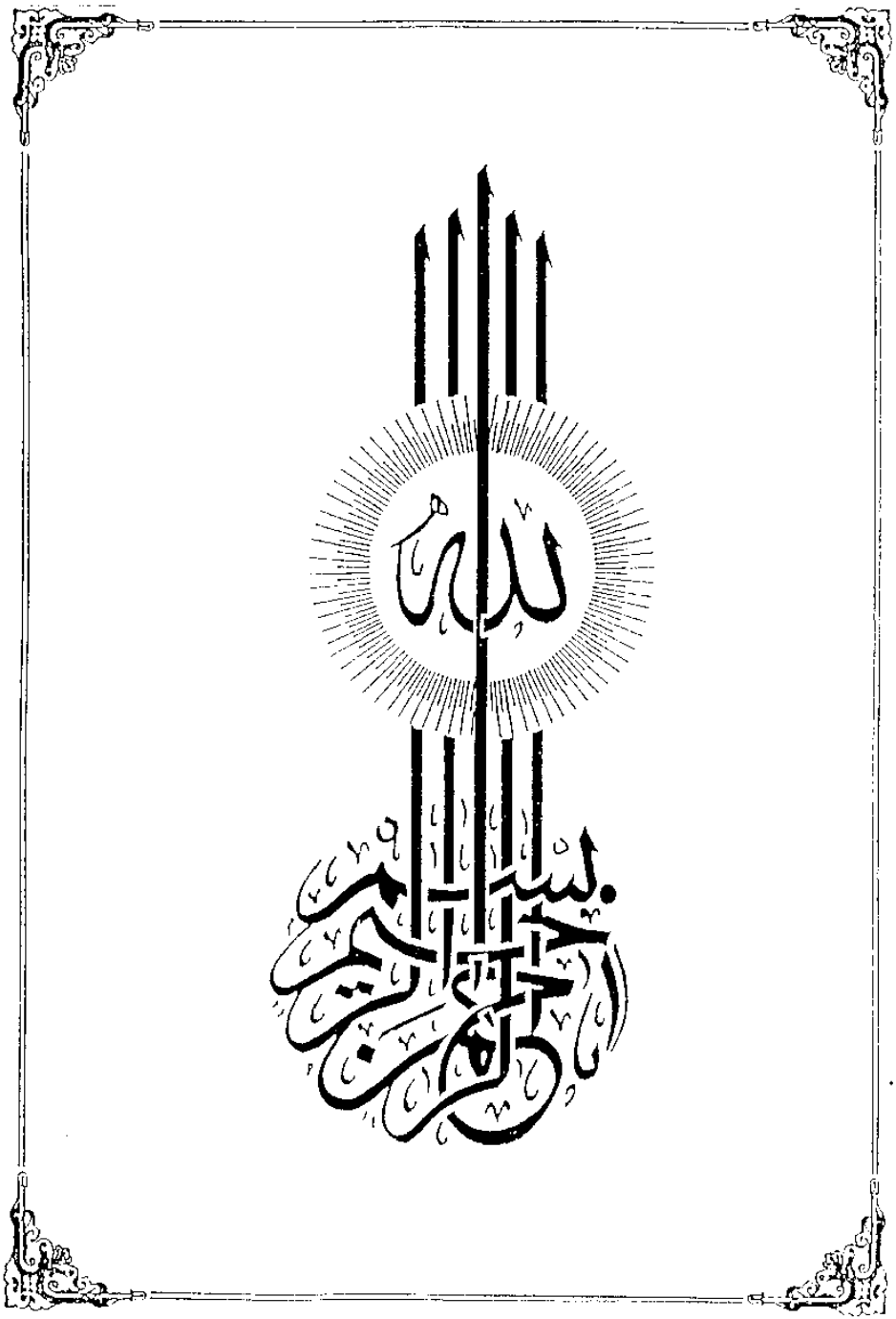

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Waheed Haleem Rafla

M.B., B.Ch.

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HISTORY

A review of the history of liver transplantation

The history liver transplantation dates back to the immediate post world War-II years when early experimental dogs showed the technical feasibility of transplanting a new functioning liver into a recipient, either heterotopically as an accessory organ or orthotopically, i.e by complete replacement of the original organ **[Schmid 1984].**

Few experimental studies are available concerning whole organ liver homotransplantation, and all of these involve the use of dogs.

Goodrich and Welch and their colleagues (1956) published the first extensive experiments on heterotopical transplantation of the liver, the value of these experiments was limited by the fact that the organs were transplanted to the pelvis, without removal of the dogs own liver, these investigations, taken by different surgical centers (Starzl in Denever and Mallet-Guy in Lyon Leger and Jacob in Paris), became interested in the subject of transplantation, **[Coated in Fagarsanu 1972].**

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The first known efforts at experimental orthotopic transplantation of the liver were made by Cannon [1958].

Orthotopic transplantation of the dog liver were initiated by Moore and his associates in 1958. They had carried out experimental whole organ homotransplantation of the liver in the dogs, transplanting this organ to its normal anatomical position and blood supply with maximum survival of 12 day after the operation **[Moore et al., 1960].**

Starzl and his associates also succeeded in orthotopic transplantation of Canine liver and achieved 20.5 days graft survival **[Starzl et al., 1960].**

Kestens and Dormott [1961]: Marchioro et al., [1963]: Kestens [1964-1965]; and Iacobescu et al., [1967], published important studies concerning perfusion of the isolated liver and its preservation in view of transplanting with or without selective hypothermia. **[Coated in Fagarsanu 1972].**

Hagihara and Absolon. Mehrez et al., 1964-1965 reported on their experimental and clinical investigation with hetertopic liver homograft **[Coated in Fagarsanu 1972].**

During the same period, interesting works of **Mikaeloff (Lyon). Legar et al.; Lortat-Jacob et al. (Paris); Mallet-Guy and Micher-**

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ilier (Lyon); and Gilbertini et al., (Modera), supplied new technical solutions, with a survival of several months in the case treated with immunosuppressions the first human orthotopic liver transplantation was performed by starzl and his associates in 1963 at the university of Colorado in Denever, but the first and several subsequent patients survived for only a short time **[Schmid 1984]**.

The first attempt resulted in failure on the operating table, where the patient died from haemorrhage during the operations, the course of the second two patients established the feasibility of such an operation in humans, despite the fact that death occurred 22 and 7.5 days after transplantation from pulmonary emboli **[Starzl et al., 1963]**.

The first extended survival of human recipient was achieved in 1967, the patient 1.5 year old girl with large primary hepatocellular carcinoma, lived for more than 13 months after the procedure before dying of metastasis **[Starzl et al., 1966]**.

Although survival improved during the following years, the one year survival by Starzl's team in the pre-cyclosporine era i.e. from 1963 to late 1970's ranged from 23% in adults to 33% in children.

Because of these discouraging results, liver transplantation during this decade was performed almost exclusively by Denever center, although in 1968 Calne at University Hospital at Cambridge

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and Williams at the king's college hospital in London had set up a center which together with that of Starzl in Denever are considered the two major liver transplant centers in the world.

In late 1970's several other centers were established, among which those in Hanover and Groningen have contributed the largest number of cases. Small series of technically successful liver transplantations also have been reported from other parts of the world and most recently from several other institutions in the United States **[Schmid, 1984]**.

Liver transplantation was introduced in Germany by **Gutgeman in 1968** who performed nine transplantations in Bonn. Pichlmayer and his associates started liver grafting in Hanover in 1977, only few patients were initially treated, a regular transplant program began in 1979. In Easter Germany, Waloff (Dresden, Berlin), has performed 19 liver transplantations since 1978.

In Austria Margreiter in Innsbruch has performed 10 transplantations and Fritsch and Pizza in Vienna have performed 13 transplantations **[Pichmayer et al., 1984]**.

In Groningen in the Netherlands, Krom and his associates successfully started their program of liver transplantation in March 1979 **[Krom et al., 1984]**.

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Now there are 32 European centers in eleven countries where liver are transplanted **[Bismuth et al., 1987]**.

In 1979 a new era in the development of liver transplantation began when the clinical use of cyclosporine A was introduced by Calne for the first time.

As a result, significant increase in survival occurred, with abrupt improvement of the reliability and predictability of liver transplantation, a procedure considered in precyclosporine era to be heroic and unpredictable treatment for end stage liver disease.

Between March 1980 and December 1985, 500 patients with end stage liver disease have been treated with orthotopic liver transplantation at the University of Colorado and the University of Pittsburgh, using cyclosporine and low dose prednisone as immunosuppressant.

Three hundred forty patients (68%) are surviving 1 month to 6 years after transplantations **[Trakis et al., 1987]**.

Heterotopic liver transplantation in human was done by Absolon and his associates in 1965 but 1-year survival was not achieved until 1979 by Fortner and Coworkers in New York City.

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*Because of the technical difficulties in heterotopic liver trans*plantation and the lake of space within the abdominal cavity (especially in children), this method of transplantation has had limited use **[Trepstra et al., 1988].**

Clinical experience with reduced-size liver grafting have been developed in an attempt to overcome the shortage of pediatric organs. Reduced size liver transplantation can provide life- sustaining liver function in urgent clinical sittings. The graft can serve as temporary or permanent liver replacement with evolution of the technique. Reduced-size liver transplantation could eventually be offered to more elective candidate and increase the utilization of available donors by reducing size limitations in orthotopic liver transplantation **[Broelsch et al., 1988].**

A new method of segmental orthotopic liver transplantation is described. This method involve the resecting the recipient liver off the inferior vena cava, which is left in situ, and the donor hepatic Vein is anastomosed end to side to I.V.C.

The technique allows orthotopic liver transplantation with widely mismatched size from adult to infants **[Strong et al., 1988].**

In June 1983, National institute of health convened a consensus development conference of liver transplantation, the conference made the statement that, the procedure should be applied both to

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children and adults who have irreversible liver injury and who have exhausted alternative medical and surgical treatment and are approaching the terminal phase of their illness. **[NIH consensus development conference June 20-23, 1983].**

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