بسم الله الرحمن الرحيم

شبكة المعلومـــــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

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ROLE OF INTRAOPERATIVE ULTRASONOGRAPHY IN THE MANAGEMENT OF LIVER TUMORS

Thesis submitted for
partial fulfillment of
M. D. Degree in Radiodiagnosis

By

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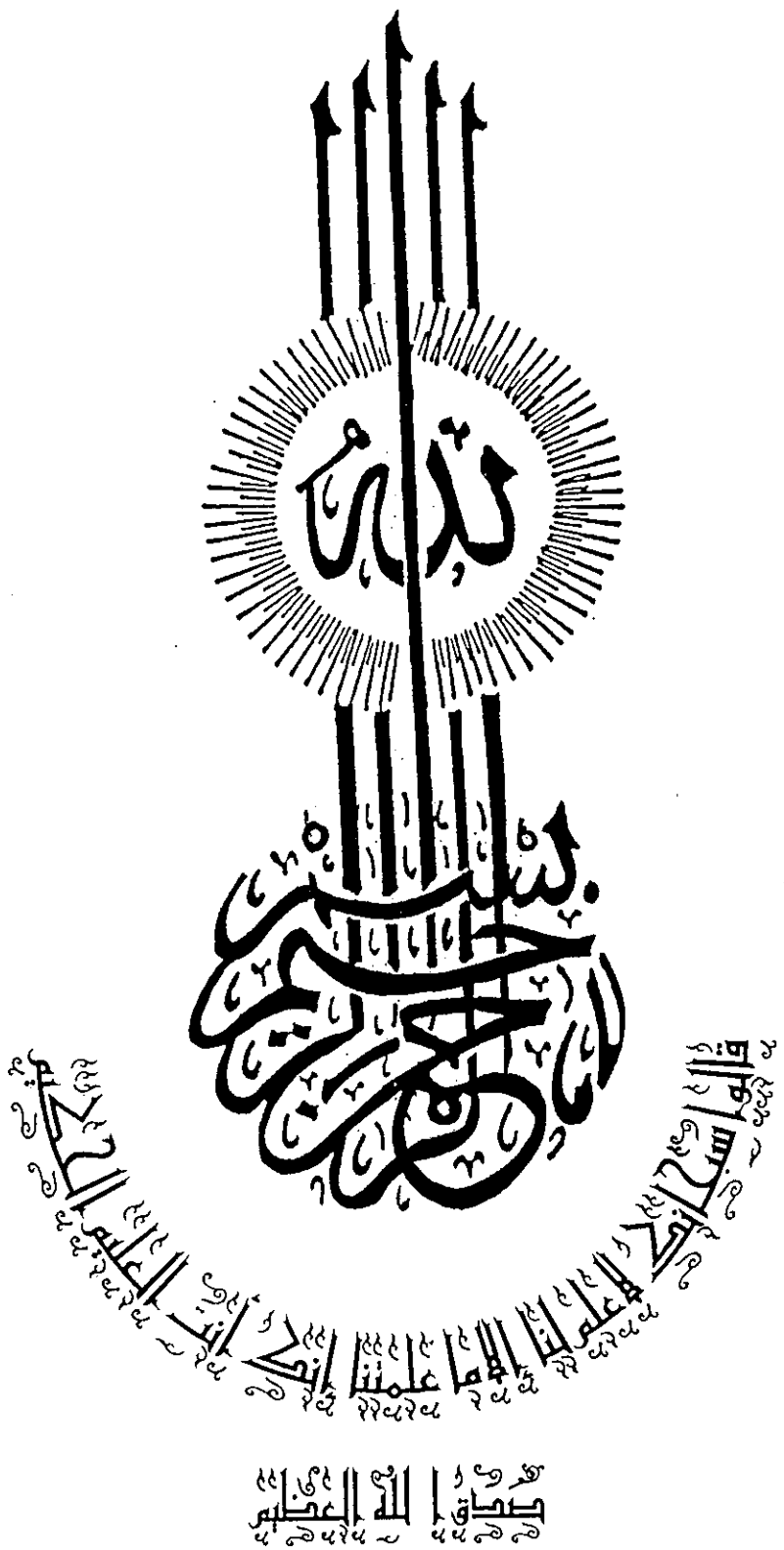
1998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MY FAMILY

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&
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Surgical resections of both primary and secondary liver tumors have provided significant benefits with acceptable levels of operative morbidity and mortality in recent years.

Concurrently, the development of serum tumor markers for both primary and metastatic disease, and the evolution of radiological imaging studies had led to the detection and delineation of these hepatic tumors at a less advanced stage than was previously possible ***(Parker et al.,1989)***.

Despite this progress in the management of these hepatic tumors, it is still difficult before surgery to provide the topographic precision necessary for the planning and execution of anatomic liver resections, which can be adapted to the size and location of the lesion and the condition of the underlying liver parenchyma.

Operative ultrasound promises to be a useful tool for the liver surgeon because the external landmarks of the liver provide only an incomplete guide to the internal structures of the liver ***(Castaing et al., 1986)***. Safe and accurate resection of a tumor existing in deep portions of the liver is impossible without a device to visualize its location ***(Soyer et al., 1993)***.

Systematic hepatic resection based on hepatic anatomy can be carried out with intrahepatic vascular structure visualization, which can be achieved only using intraoperative ultrasonic guidance ***(Miyagawa and Makuuchi, 1995)***. Small tumors which are overlooked by preoperative imaging modalities or invisible and impalpable during laparotomy make a successful partial resection difficult or even impossible. Because of the feasibility of putting the real time transducer directly on the liver and because of the multidimensional anatomy it shows, hepatic ultrasound during operation seems to be a good approach to solve this problem and to have a significant effect on the intraoperative decision process during hepatic resection, ***(Solomon et al., 1994; Eguchi et al., 1995)***.

The aim of this work is to assess the utility of operative ultrasound in the surgical management of liver tumors and its influence on surgical decision making.

ANATOMY

GROSS ANATOMY OF THE LIVER

The liver, the largest glandular organ in the body, occupies the right hypochondrium, and most of the epigastrium, and often extends into the left hypochondrium as far as the left mammary line. The adult liver weighs from 1.2 to 1.6 Kilograms. The liver is irregular hemispherical in shape, with a relatively smooth convex diaphragmatic surface, and a more irregular concave visceral surface. The human liver has four anatomical lobes: a large right lobe, a smaller left lobe, and much smaller caudate and quadrate lobes. The liver has four surfaces (Fig. 1).

1) Anterior surface:

The anterior surface is separated by the diaphragm from the sixth to the tenth ribs, and their costal cartilages on the right side, and from the seventh and eighth cartilages on the left. In the median region it lies posterior to the xyphoid process and that part of the muscular abdominal wall between the diverging costal margins. It is completely covered by peritoneum except along the line of the falciform ligament.

2) The superior surface:

The superior surface is separated by the domes of the diaphragm from the pleura and lungs on the right, and by the pericardium and heart on the left. The area near the heart is marked by a shallow concavity, the