RENAL CALCULI
AETIOLOGY; PATHOPHYSIOLOGY; DIAGNOSIS AND TREATMENT

AN ESSAY

Submitted For Partial Fulfilment of The

Master Degree of General Surgery

Presented By

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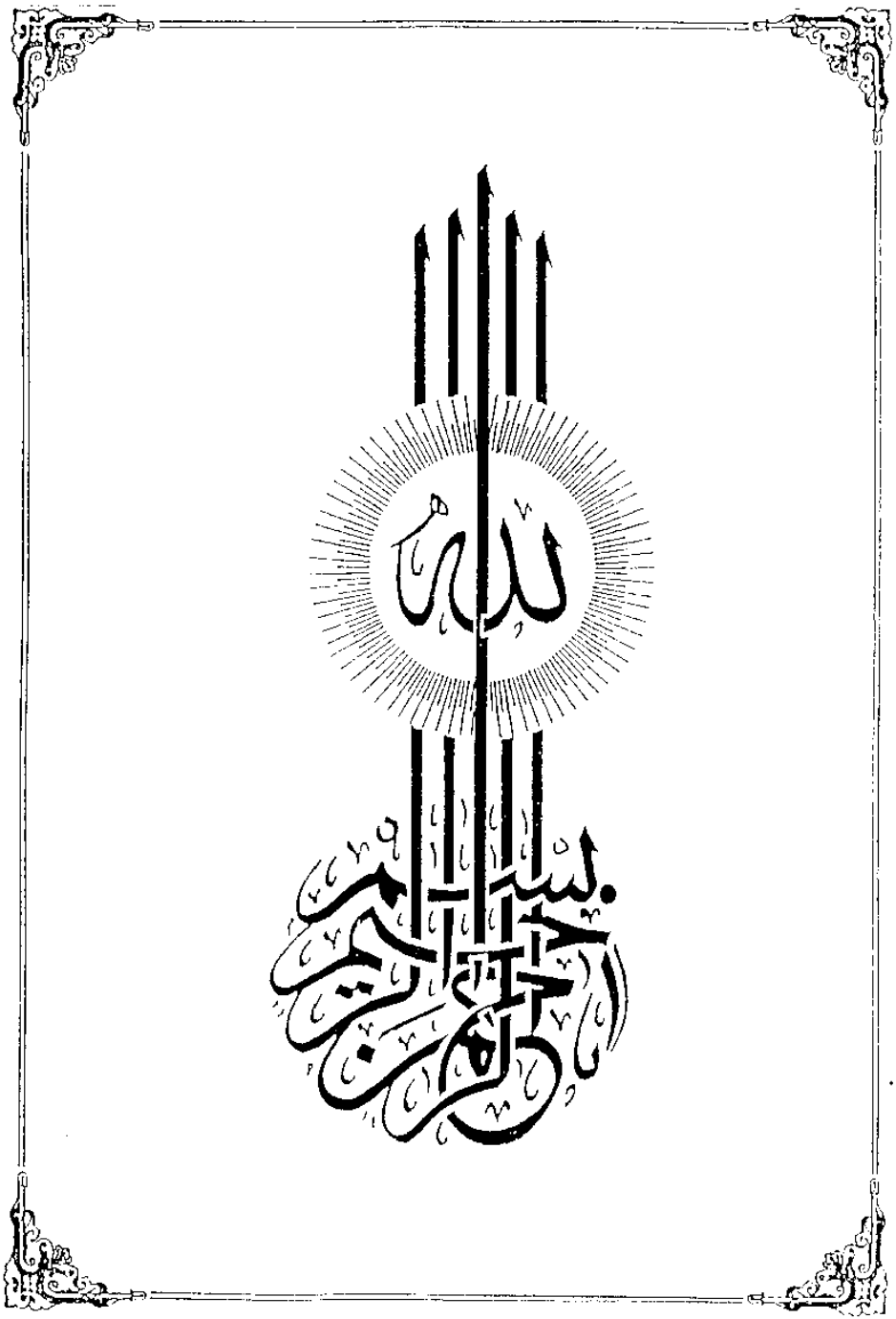
TO MY PARENTS. . . .



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Talaat Mohammed Eissa

C O N T E N T S

INTRODUCTION

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Anthropologic history provides that urinary calculi existed as long as 7000 years ago and perhaps more. The speciality of urologic surgery was even recognized by Hippocrates. (Drach, 1979). The historical panorama of calculus disease reveals a fundamental change in the characteristics of the disease from the earliest records to the present day; there has been an upsurge in the incidence of upper urinary tract stone since latter years to the ninth century. An interrupted but progressive rise in the incidence of nephrolithiasis from 1913 until 1958; termed the stone wave. (Blacklock, 1982). Ancient man was undoubtedly afflicted with stone just as man is now. Riches 1968 refers to a stone that was found in the pelvis of an Egyptian skeleton estimated to be over 7000 years old.

Galen for example treated stone disease with wine, honey, parsley and Caraway seed. Howship recommended adminstration of alkalis or acids to arrest calculi. By the early 1900's, an increased occurrance of renal calculi seemed to be parallel to increased industry.

By 1950; factors contributing the formation of calculi were reported. The importance of diet, hyper-

calciuria either idiopathic or due to hyperparathyroidism; nucleation of stones in the kidney was studied intensively by Randall 1937 (Drach, 1979).

REVIEW
OF
LITERATURE

SURGICAL ANATOMY OF THE KIDNEY

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Kidneys are paired reteroperitoneal organs lying in close proximity to the spinal column immediatly below the thoracic diaphragm in the Shallow trough like renal niche with the upper poles are nearly approach each other (Lich. et al. 1979); with the long axes parallel with the lateral border of the psoas major, the hilum faces somewhat forewards as well as medially (Last, 1981).

Surface anatomy: The lower poles of the kidneys lie an inch or less above the transumbalical plane which is at the level of the thired-fourth intervertebral disc. The upper poles lie about 5½ inches above the transumbalical plane at the level of the 12th thoracic vertebra and therefore beyond the 12th rib. Its medial border lies about two or two and half inches from the median plane. The transpyloric plane crosses the upper part of the hilum.

At the back, the kidney extends from a point one or two fingers above the highest part of the iliac crest which is on a level with the spine of the 4th lumbar vertebra upward to or almost to eleventh rib (Basmajian 1972).

Relations of the Kidney:

Posteriorly these are similar on both sides and consists of the diaphragm (superiorly), psoas major (medialy), quadratus lumborum and transversus abdominis (laterally).

The subcostal vessels and nerve and iliohypogastric and ilio-inguinal nerves lie posterior to the kidney and anterior to the quadratus lumborum and anterior layer of thoraco-lumbar fascia.

The diaphragm seperates the upper part of the kidney from the pleura and 12th rib.

Occasionally the kidney may be in direct contact with the pleura and the last rib.

The right kidney is wedged between the posterior abdominal wall and the visceral surface of the liver. It is seperated from the liver by the suprarenal gland supero-medially, the descending part of the doudenum medially and the right flexure of the colon inferiorly, inferior to the later, it may be in contact with a loop of jejunum.

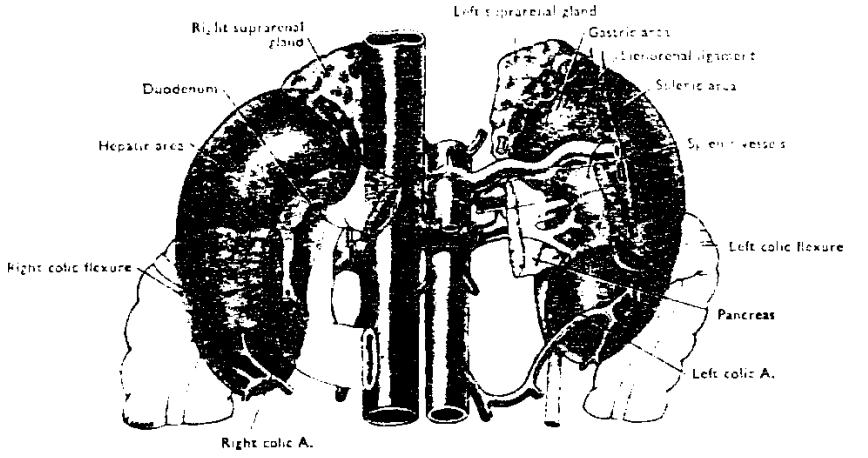

Fig. (1):- A diagram to show the structures in contact with the anterior surfaces of the kidneys.

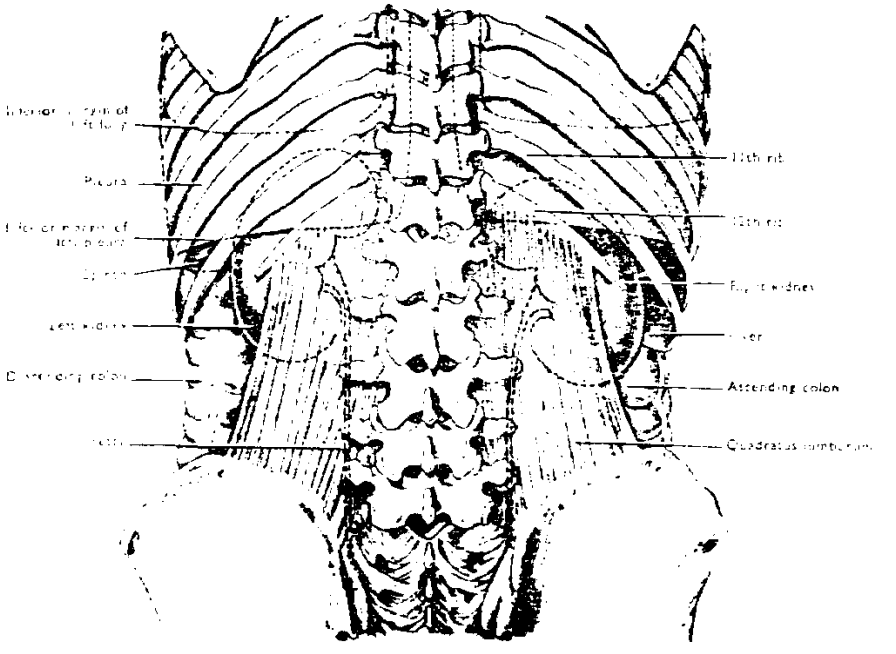

Fig. (2):- A dissection from behind to show the relation of the two pleural sacs to the kidneys.

The upper part of the left kidney lies posterior to the stomach and the omental bursa but is seperated from them by the supra-renal gland superomedially, the spleen, lienorenal ligament superolaterally and by the body of pancreas at the level of the hilus, with the pancreas are the associated blood vessels and the attachment of the transverse mesocolon. Inferior to the pancreas, the kidney lies in the infra-colic compartment with the descending colon along its lateral border, the jejunum anterior and the doudeno jejunal flexure medial to the kidney. Only the descending colon, pancreas and supra-renal gland are not seperated from it by peritoneum. (Romans, 1972).

Renal Coverings:

The true renal capsule is a fibrous structure that is closely applied to the surface but it is not adherent.

The kidney is surrounded particularly posterolaterally by the perinephric fat which is in turn is confined by a relatively dense anteroposterior fibrous cap extending from the diaphragm for avariable distance down the ureter, this is known as renal fascia of