EVALUATION OF URINARY TRACT AFTER PROSTATECTOMY

By

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T H E S I S

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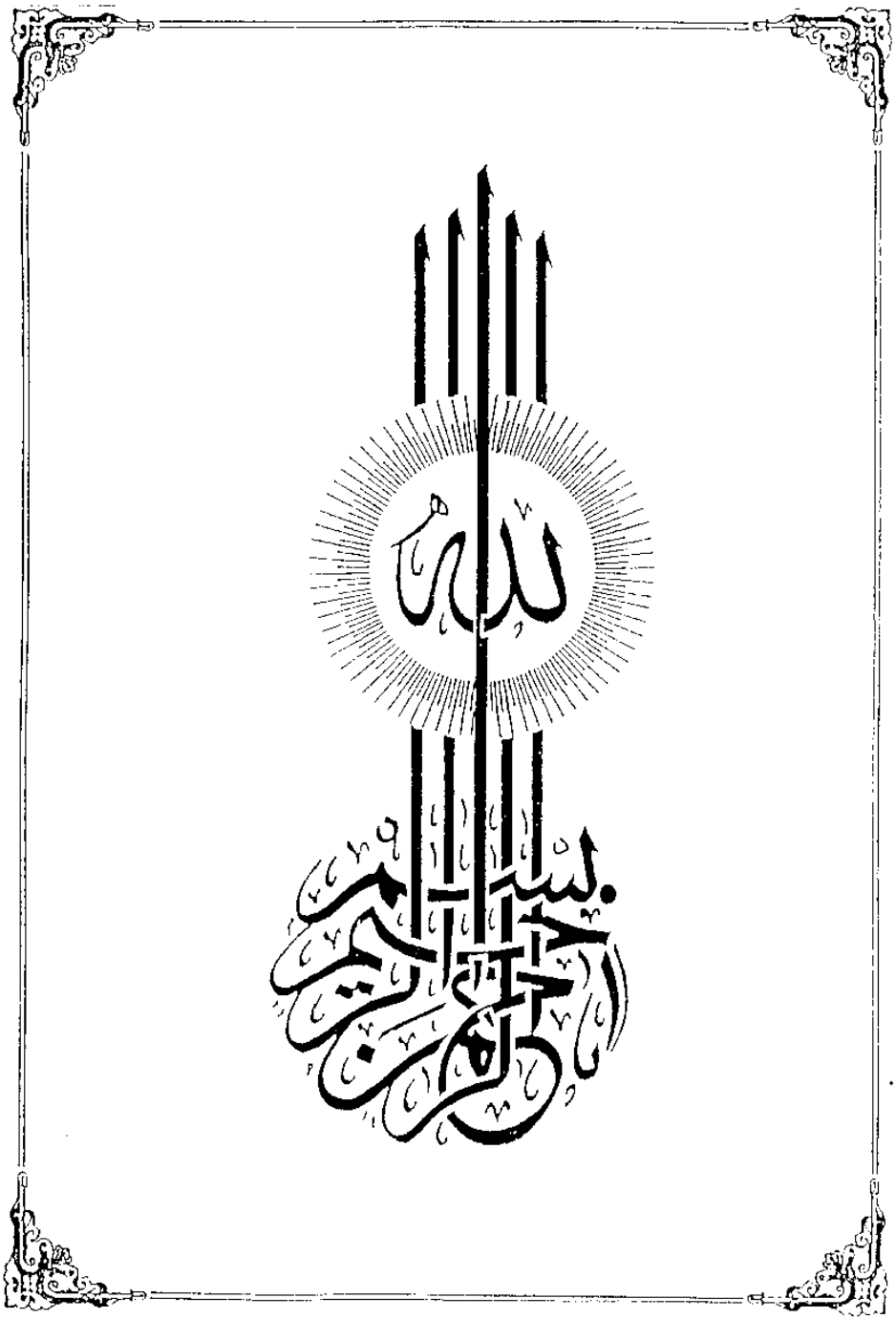
بِسْمِ اللَّهِ الرَّحْمَٰنِ الرَّحِيمِ

اقْرَأْ بِاسْمِ رَبِّكَ الَّذِي خَلَقَ ﴿١﴾ خَلَقَ الْإِنسَانَ مِنْ عَلَقٍ ﴿٢﴾ اقْرَأْ

وَرَبُّكَ الْأَكْرَمُ ﴿٣﴾ الَّذِي عَلَّمَ بِالْقَلَمِ ﴿٤﴾ عَلَّمَ الْإِنسَانَ مَا لَمْ يَعْلَمْ ﴿٥﴾

صَدَقَ اللَّهُ الْعَلِيُّ الْعَظِيمُ

سُورَةُ الْعَلَقِ



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C O N T E N T S

P A R T I

- INTRODUCTION.
- EMBRYOLOGY OF THE PROSTATE.
- ANATOMY OF THE PROSTATE.
- PHYSIOLOGY OF THE PROSTATE.
- PATHOLOGY OF BENIGN PROSTATIC HYPERPLASIA.
- MICTURATION IN NORMAL AND OBSTRUCTED CONDITIONS.

AND

- OBSTRUCTIVE UROPATHY :

A - PATHOLOGICAL CHANGES.

B - RECOVERABILITY AFTER RELIEF OF OBSTRUCTION.

I N T R O D U C T I O N

There is no doubt that the problem of prostatic obstruction and its management inspired a great number of researchers to perform several studies dealing with this fundamental topic.

Still, however, there are many problems that need more studies. We have found that the problems of prostatic obstruction was the subject of many studies especially concerning the methods of diagnosis, as well as on the surgical management and complications. Solid rules had been mentioned in text books on the management of prostatic patients. This rules-in many patients were not suitable to be followed.

The present work concentrates on the problem of prostatic obstruction. Although obstructive-uropathy was a current subject that was investigated thoroughly, most of these studies were directed to investigate the changes in the renal function in cases with obstructed ureter. Although obstruction in general has a common general fate, yet we believe that there is difference in the course of the 2 diseases.

This difference was noticed from the clinical observation that once chronic ureteric obstruction produced no dye excretion in the kidney on excretory urography the prognosis and expectancy of this kidney

was poor, but in prostatic obstruction even with no dye excretion on excretory urography, marked improvement was noticed in many cases after drainage.

Suprapubic cystostomy drainage was the ideal and common mode of drainage, it is now held by many urologists that an indwelling urethral catheter drainage can be as well safe and effective. Although the surgery has fundamental progress yet the prostatic patient usually an extremely aged and fragile one, who needs high experience if good results were aimed.

The present work dealt with the problem of prostatic obstruction and tried to stress on the following points :

- The recoverability of the renal function at different states of the disease and the prospected prognosis.
- The two methods of drainage were used in order to select the proper type of drainage with objective data.

E M B R Y O L O G Y

The prostate develops as multiple solid outgrowth of the urethral epithelium both above and below the enterance of the mesonephric duct. These simple tubular outgrowths begin to develop in 5 distinct groups at the end of the elventh week and are completed by the sixteen week (112 mm). They branch and rebranch , ending in a complex of ductal system that encounters the differentiating mesenchymal cells around this segment of the urogenital sinus.

These mesenchymel cells start to develop anterior tubules by the sixteen week and become denser at the periphery to form the prostatic capsule. By the twenty-second week, the muscular stroma is considerably developed and progressively increase until birth. From the 5 groups of epithelial buds, 5 lobes are eventually formed: anterior, posterior, median and 2 laterals. Initially they are widely separated but later they meet, with no definite septa dividing them. Tubules of each lobe do not intermingle with each other but simply lie side by side (5).

The anterior lobe tubules begin to develop simultaneously with these of the other lobes. Although in the early stages the anterior lobe tubules are large and show multiple branches, gradually they contract and

lose most of these. They show no lumen and appear as small embryonic epithelial outgrowth. In contrast, the tubules of the posterior lobe are lower in number yet relatively large, with extensive branches. These tubules as they grow, extend posterior to the developing median and lateral lobes and form the posterior aspect of the gland (40 - 46).

A N A T O M Y

The prostate is a male sex organ and composed of two components :

I. External = is the prostatic gland proper.
II. Internal = are the periurethral, or paraprostatic glands as they are sometimes termed.

I. THE PROSTATIC GLAND

It surrounds the first 1¼ inch of the male urethra and is composed of glandular tissue (compound tubulo-alveolar) in a fibromuscular stroma. It is broader than long and is flattened antero-posteriorly. An adult gland weighs from 16 to 22 gm.

Dimensions : 4.4 cm. -(transversely) X 3.4 cm. (vertically) X 2.6 cm.(antero-posteriorly)

It possesses five surfaces which are the following:

1. Base : is directed upward and is continuous with the bladder neck with a groove demarcating the junction between the two. It is traversed by the urethra, one third of the gland lies anterior and two thirds of the gland lies posterior to it.
2. Apex : is directed downward and rests on the upper surface of the triangular ligament.

3. Posterior : is triangular, flat from side to side and convex from above downwards. It contains a depression or sulcus termed the median furrow which extends longitudinally in the middle line, being more distinct in its upper two thirds. This surface is related to the anterior wall of the second part of the rectum being separated from it by fascia of Dennonvillier.

4. Anterior : is small and convex from above downwards. It lies two cms. behind the symphysis from which it is separated by a plexus of veins and loose areolar tissue. It provides an access for the urethra, a little above the apex of the gland.

5&6. Two infero-lateral surfaces : are prominent and rounded. They are related to and supported by that part of the levator ani called levator prostate.

The tough fibromuscular capsule of the prostate sends prolongations into the interior of the gland separating it into five lobes, whose apices converge towards the urethral surface(46).

Anterior lobe : Lies infront of the urethra and is rather free of glandular elements, being made of fibromuscular stroma mainly and is therefore better termed the anterior commissure.

Median Lobe : is the wedge of tissue situated behind the urethra and infront and above the ejaculatory ducts.

"2" Lateral Lobes : the right and left lateral lobes comprise the bulk of the adult gland. The anterior lobe separates them anteriorly.

Posterior Lobe : is bounded by the ejaculatory ducts above and forms the major portion of the apex of the gland. It presents the surface palpated on rectal examination. A firm lamella of connective tissue separates the posterior from the lateral lobes and envelops the ejaculatory ducts and fuses laterally with the fibrous capsule of the prostate(47).

The degree of distribution of the glandular and the stromal elements in the lobes varies widely.

This may be reflected on the degree of response to hormonal therapy. The following table gives a rough idea :

	Glandular	Stromal
Anterior lobe	-	+ + +
Lateral "	+	+ +
Median "	+ +	+
Posterior "	+ + +	-

Prostatic investments :

The normal prostate is invested in two layers of fascia : the true capsule and the prostatic sheath which is occasionally called the false capsule.

a. True Capsule :

Is a thin but firm layer and is of fibromuscular tissue with an abundance of elastic tissue and an unusual quantity of smooth muscle. It is continuous with the stroma of the gland and is so inseparable from it, that many authors doubt its existence. At either extremity of the gland, the fibres of this true capsule are continuous with those of the urethra.

b. False capsule = Prostatic sheath :

Is a condensation of the endopelvic fascia that completely covers the anterior and lateral surfaces of the gland and is replaced on the posterior surface by the fascia of Dennonvillier. It is composed of fibromuscular tissue : the muscle fibres being both plain and striated; the latter become more abundant as we go distally. Proximally, the capsule is firmly adherent to the bladder. The anterior and lateral surfaces are stripped easily from the gland, while postero-laterally, the sheath is firmly fused with the prostate (46, 67).

The lateral walls of the sheath are separated from the true capsule by a dense plexus of veins (paraprostatic venous plexus of Santorini). Above this sheath extends behind both seminal vesicles, base of the bladder and terminal portions of the vasa differential, hence, the first spread of prostatic cancer is to the seminal vesicles and the adjoining structures.

c. Surgical capsule :

Is not a normal anatomic finding, but a pathologic feature. It is described in B.P.H. to denote the compressed original prostatic tissue with its true and false capsules around a prostatic adenoma. It is loosely adherent to the adenoma and hence its easy enucleation[59-72].

Prostatectomy for B.P.H. entails enucleation of the hypertrophied protion only from within the surgical capsule. The true and false capsules which contain the plexus of veins in between, are left undisturbed.

VASCULAR SUPPLY

A. Arterial supply :

The blood supply of the prostate is rich and provided by a number of vessels [24].