DYNAMIC EVALUATION OF NON-ORGANIC VESICO-URETHRAL DYSFUNCTION

(DIAGNOSTIC AND PHARMACO-THERAPEUTIC)

Thesis

submitted for the partial fulfilment for the M.D. degree in UROLOGY

Presented by

MOHAMED ASHRAF ALI ABDEL-HADI AL-ZAHABY

M.B;B.CH / M.S. Urology.

Under Supervision Of

Prof. Dr. MOHAMED HATEM EL-BIALY

Professor & Chairman of Urology Departement

Ain Shams University

Prof. Dr. ISMAIL OSMAN ABDEL-HAFEEZ

Professor of Urology

Ain Shams University

Prof. Dr. YOUSSEF HAMED ZAKI

Professor of Radiology

Ain Shams University

Prof. Dr. SHEREEN IBRAHIM RAGI

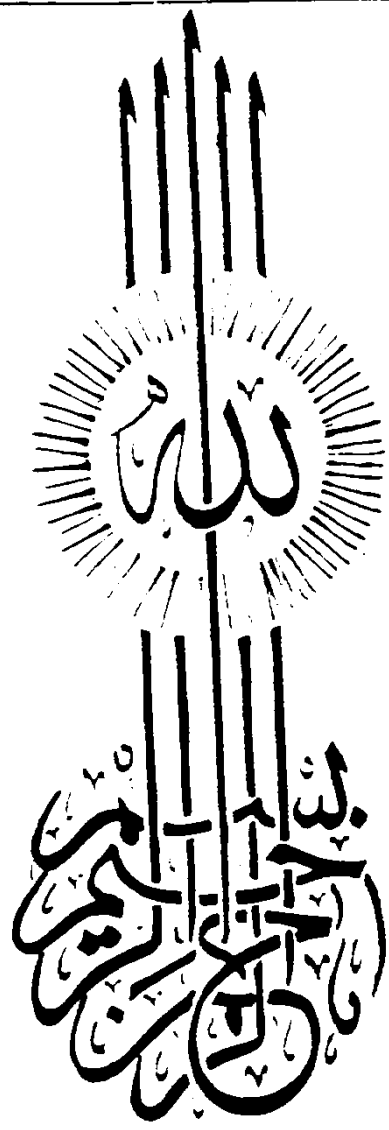
Ass. Professor of Urology

Ain Shams University

Faculty of Medicine

Ain Shams University

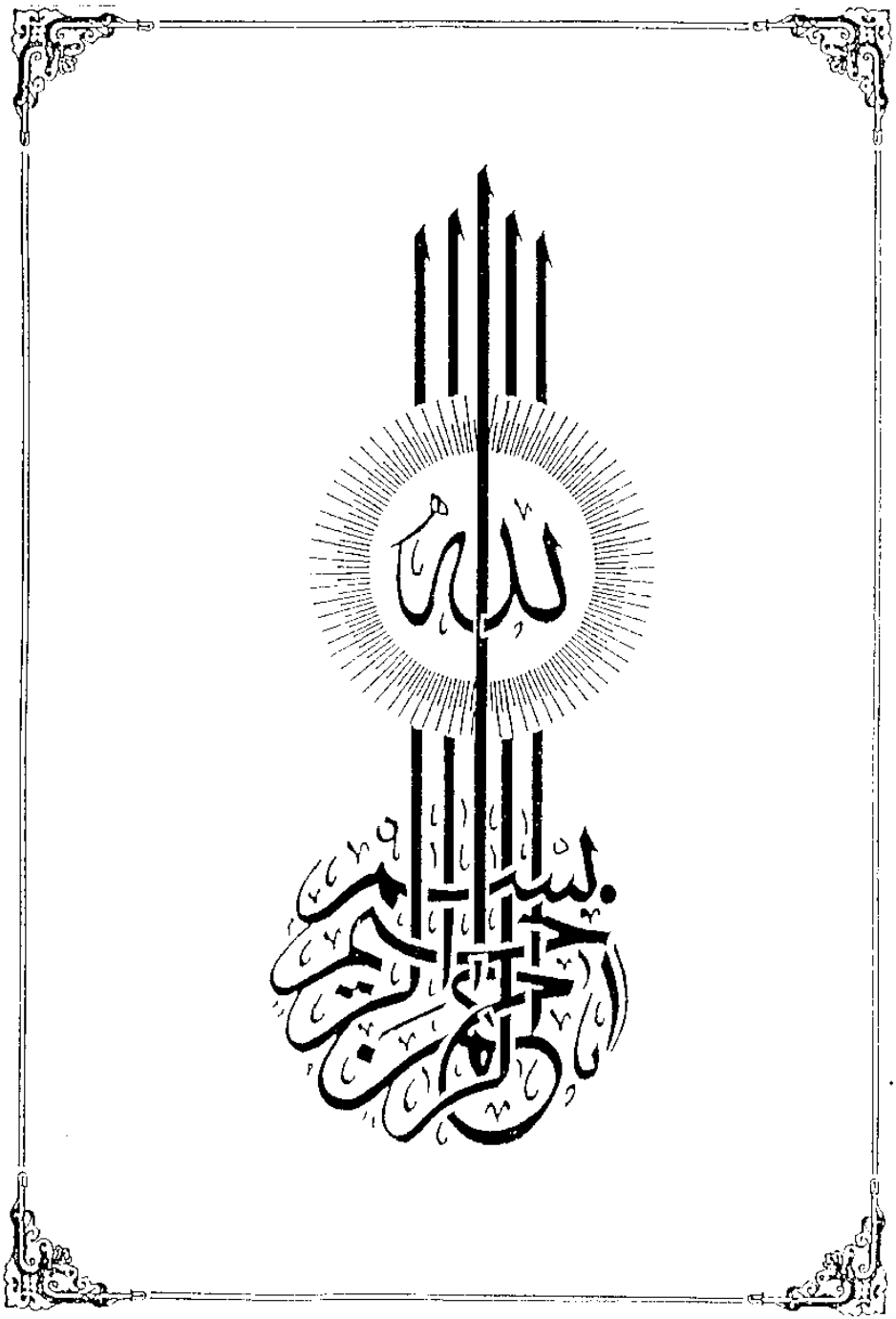
1994



وما أوتيتم من العلم إلا

قليلا

﴿صدق الله العظيم﴾



Acknowledgement

" First of all, thanks to ALLAH,
Most Gracious and Most Merciful ".

I wish to express my sincere gratitude & thanks to professor Dr. M. Hatem El-Bialy, for his valuable experienced supervision, kind help and fruitful advices which have made this thesis in a fine manner.

My deepest gratitude and indebtedness are due to professor Dr. Ismail O. Abdel-Hafeez for his valuable supervision, fruitful guidance and kind support, either during the practical part or during writing this thesis,I am very grateful to him for his vital concern and continuous encouragement throughout the whole work.

I am very grateful to professor Dr. Shereen I. Ragi for his valuable advices and kind cooperation.

Sincere thanks are due to professor Dr. Youssef H. Zaki for his valuable supervision.

Many thanks are due to my wife who furnished a good medium to complete this thesis.

Also, I am thankful to my brother, Dr. Ayman El-Zahaby for his valuable help and cooperation.

M. Ashraf A. El-Zahaby
1994.

Contents

INTRODUCTION

INTRODUCTION

The lower urinary tract functions as a group of inter-related structures whose joint functions in the adult is to bring about efficient and low-pressure bladder filling, low-pressure urine storage with perfect continence, and periodic voluntary urine expulsion again at low pressure.[113]

Bladder filling and urine storage require : accomodation of increasing volumes of urine at a low intravesical pressure and with appropriate sensation ; a bladder outlet that is closed at rest and remains so during increases in intraabdominal pressure ; and absence of involuntary bladder contractions.[113]

Bladder emptying requires : a coordinated contraction of the bladder smooth musculature of adequate magnitude ; a concomitant lowering of resistance at the level of the smooth and striated sphincter ; and absence of anatomic obstruction.[113]

The pathophysiology of the lower urinary tract's failure to fill or store urine adequately may be secondary to reasons related to the bladder, the outlet or both. similarly, these reasons can be responsible for absolute or relative failure to empty the urine.[113]

Normal voiding is characterised by pre-voiding pelvic floor and urethral sphincter relaxation, a well sustained increase in intravesical pressure that can be inhibited at will and maintenance of striated sphincter relaxation untill voiding is complete.[175]

Neurologic lesions of the brain and spinal cord frequently disrupt this orderly sequence of events resulting in dysfunction, which may range from mild detrusor hyperreflexia to severe vesicosphincter dyssynergia.[175]

Failure of coordination of the striated or smooth sphincter during bladder contraction is generally seen in men and is a common cause of functional obstruction in patients with neurologic disease or injury.[113]

AIM OF THE WORK

AIM OF THE WORK

The aim of our work was to study and evaluate various voiding dysfunctions that have no organic cause, to evaluate the effeciency of various urodynamic tests in diagnosing the type of dysfunction, to evaluate the effeciency of dynamic rectal ultrasonography in diagnosing cases of dyssynergia with its two forms, and to put light on different observations and try to make reasonable explanations and discuss them with conclusions previously shown by several authors who investigated dyssynergia before.

REVIEW OF THE LITERATURE

DYNAMICS OF CONTINENCE & MICTURITION

RELEVANT ANATOMY

The Bladder

The urinary bladder wall consists of three layers (1) an outer adventitium of connective tissue; (2) a smooth muscle layer; (3) an inner mucous membrane.

The main smooth muscle layer is classically divided into detrusor and trigone. Anatomically, the trigonal area is defined as that region of the posterior bladder wall between the ureteral orifices and the vesicourethral junction. This area is best divided into a superficial and a deep trigone.[1]

The deep trigone is actually continuous with and an integral part of the detrusor smooth muscle.[2,3,4]

The superficial layer of the trigone is wholly ureteral in origin and as such is mesodermal in origin while the origin of the remainder of the bladder is endodermal.[5]

Tanagho (1982) considered the actual trigone to be divided into superficial and deep layers, both of ureteral origin (the former from the longitudinal musculature of the intravesical ureter and the latter from Waldeyer's sheath) with a separate layer of detrusor muscle below this.[3]

The detrusor can best be described as a mesh of smooth muscle bundles that are to a greater [6] or lesser extent [4] loosely organized in the area of the bladder base into an outer longitudinal, a middle circular and an inner longitudinal layer.[4,6]

The Urethra

The Female urethra

The adult female urethra is approximately 4 cm in length and 6 mm in diameter. It extends from the vesicourethral junction behind the symphysis pubis and is embedded in the anterior wall of the vagina. The wall of the female urethra comprises an outer muscular layer and inner epithelium, which is generally thrown into longitudinal folds and opposed to itself except during the act of voiding. The smooth muscle portion of the female urethra extends throughout its length.[1]

There is a general agreement on the existence of an inner longitudinal layer[4,7], but disagreement over the extent of an outer circular or semicircular layer.[1] Tanagho (1978) feels that the outer semicircular coat is substantial and a direct continuation of the detrusor outer longitudinal layer,[7] but Gosling and Chilton (1984) described only a few circularly arranged muscle fibers in the outer aspect of the smooth muscle layer[4].

This distinction is important when considering whether or not an active urethral smooth muscle sphincteric mechanism is involved in maintaining continence.[1]

The Male Urethra

The anterior urethra (distal to the membranous portion) in the male seems to function purely as a conduit and has no role in either maintaining continence or in facilitating micturition.[1] Gosling and Chilton (1984) described