سامية محمد مصطفى

شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

سامية محمد مصطفى

شبكة المعلومات الجامعية

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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سامية محمد مصطفى

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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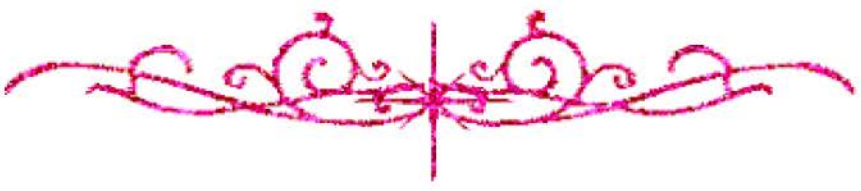

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بالرسالة صفحات لم ترد بالأصل

EVALUATION OF DIFFERENT ENDOUROLOGICAL TECHNIQUIES FOR MANAGEMENT OF PATIENTS WITH BENIGN URETERAL STRICTURE

THESIS

SUBMITTED FOR PARTIAL FULFILLMENT OF

MASTER DEGREE IN UROLOGY

BY

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Review of Literature

LIST OF CONTENTS

EMBRYOLOGY OF THE URETER

In the fourth fetal week an outpouching arises from the distal mesonephric duct in the area where the duct curves medially to enter the ventral cloaca. This outpouching is the ureteric bud which is located at the level of the fourth lumber segment. This ureteric bud interacts with a mass of mesenchyme that is the metanephric blastema. This interaction results in the ureteric bud's branching and developing into calyces, renal pelvis and ureter. The metanephric blastema is induced to form all the elements of the nephron. The segment of the mesonephric duct distal to the ureteric bud is the common excretory duct. This duct eventually is absorbed into the developing bladder and become part of the trigone. The point of origin of the ureteric bud is the ureteric orifice which migrate in the bladder in a cranial and lateral direction when the excretory duct is absorbed into the bladder.[1]

The ureter begins as a simple cuboidal epithelial tube, surrounded by loose mesenchymal cells, which acquires a complete lumen at 28 days of gestation in human. It was suggested that the developing ureter undergoes a transient luminal obstruction between 37 and 40 days and subsequently recanalization. It appears that this recanalization process begins in the midureter and extends in a bidirectional manner both cranially and caudally. In addition, another source of physiologic ureteral obstruction may exist as Chwalla's membrane, a two-cell-thick layer over the ureteric orifice that is seen between 37 and 39 days of gestation.[2]

In humans, urine production is followed by proliferative changes in the ureteral epithelium (bilaminar by 10 weeks of gestation). The

epithelium attains a transitional configuration by 14 weeks. The first signs of ureteral muscularization and development of elastic fibers are seen at 12 weeks of gestation. In both rats and humans, the ureteral smooth muscle phenotype appears later than that of the bladder. Smooth muscle differentiation is first detected in the subserosal region of the bladder dome and extends toward the bladder neck and urethra, whereas smooth muscle differentiation of the ureter occurs later within the subepithelial region in the ureterovesical junction, ascending toward the intrarenal collecting system.[1] In the embryonic ureter and bladder it is likely that epithelial-mesenchymal interactions are important in the development of urothelium, lamina propria, and muscular compartments; but the exact nature of this induction process is unknown. Before 10 weeks, elastic fibers are few in number, poorly developed and randomly arranged. After 12 weeks, these fibers become more numerous throughout the ureter and are seen with specific orientation. [3]

ANATOMY OF THE URETER

The ureters are a pair of mucosal-lined muscular tubes for urine transport. Each ureter begins where the renal pelvis narrows just above or opposite the level of the inferior pole of the kidney. For its entire length, the ureter is retroperitoneal, adhering closely to the peritoneum. It ends with insertion into the posterior wall of the urinary bladder. [4]

The length of the ureter varies with the person height as well as the position of the kidney. The length, in adults, ranges from 25-30 cm. The abdominal portion is 14 to 15 cm in lengths and the pelvic portion is approximately 14-16 cm in length. The left ureter is usually 1 cm longer

than the right, again due to the lower location of the right kidney. Both ureters tend to be longer in males. [5]

Each ureter varies in diameter from 2 to 8 mm, starts small at the beginning, arid generally increasing in size in the lower lumbar area. As it crosses the pelvic rim, it may again decrease in diameter. However the ureter is narrowest during its course through the bladder wall, a distance of about 12 mm. As such three constrictions are found in a normal ureter; at the uretero-pelvic junction, at the crossing over the iliac vessels; and in the intramural part. The mucous membrane of the ureter is continuous with that of the urinary bladder, and because of the oblique entrance of the ureter into the bladder a fold of mucous membrane is formed. [4]

Abdominal Portion:

Each ureter courses anterior to the psoas muscle and the genitofemoral nerve which it crosses. On the right side, the proximal 5 to 7 cm of the ureter is covered anteriorly by second part of the duodenum. More caudally, the right colic and ileocolic blood vessels and the root of the mesentery (containing the terminal portion of the superior mesenteric vessels) lie anterior to the ureter. Near the entry into the false (major) pelvis, each ureter is crossed anteriorly at an angle, by the gonadal (testicular or ovarian) blood vessels. The gonadal artery and vein thus enter the false pelvis slightly and lateral to the ureter. As each ureter enters the true pelvis, it is anterior to the sacroiliac joint and medial to the common iliac vessels. The left ureter is crossed anteriorly by the left colic vessels and, near the rim of the true (minor) pelvis, by the sigmoid vessels. Here it is just deep to the peritoneum of the intersigmoid recess. [4]

Pelvic Portion:

After crossing into the pelvis, the ureters diverge along the lateral walls, and subsequently converge toward the bladder trigone within an inch of each other. As the ureters course downward they describe a curved course the most convex portion being at the greater sciatic notch. Prior to turning medially to enter the tissues of the sacrogenital fold, they lie quite superficially and immediately adjacent to the peritoneum. [6]

Male The ureter descends into the true pelvis anterior to the internal iliac artery. It crosses anterior to the obturator vessels and nerve and to the superior vesical (umbilical) artery. Thus, it also lies medial to these structures. At the level of the ischial spine, the ureter turns medially and descends in the endopelvic connective tissue with branches of the hypogastric bundle of nerve. Just before the ureter enters the bladder, it is crossed anteriorly by the ductus deferens, which is on a lateral-to-medial courses. At this point the ureter is superior and anterior to the top of the seminal vesicle. The ureter enters the bladder about 2.5 cm from the midline, in an anteromedial direction. [4]

Female The ovarian vessels are located in the suspensory (infundibulopelvic) ligament and so leave the outer wall of the pelvis and run medially. As a result, the ureter crosses these vessels posteriorly and comes to lie lateral to them. The ureter then crosses the linea terminalis and descends along the lateral pelvic wall. As in the male, it traverses the obturator artery and nerve, the superior vesical (umbilical) artery, and in addition the uterine artery. The ureter lies closely posterior to the ovary and as, it runs medially, it is in the base of the broad ligament. About 1.5 to 2

cm lateral to the uterine cervix, the uterine artery again crosses the ureter but this time the ureter lies posteriorly. In this region the ureter is also surrounded by a large number of veins. [4,5]

ANATOMY OF THE URETROVESCIAL JUNCTION AND TRIGONE

As the ureter reach the bladder, its spirally mural smooth muscle fibers become longitudinal. Two to three cm from the bladder a Waldeyer sheath begins, which is a fibromuscular sheath extends longitudinally over the ureter and follows it to the trigone. The ureter pierce the bladder wall obliquely near the tip of the seminal vesicle and travels 1.5 to 2 cm and terminates at the ureteric orifice as it passes through a hiatus in the detrusor (intramural ureter) it is compressed and narrows considerably so the intravesical portion of the ureter lies beneath the bladder urothelium and it is backed by a strong plate of detrusor muscle. This arrangement is thought to result in passive occlusion of the ureter "like a flap valve" with the bladder filling. [7,8]

The trigone is identified endoscopically as the triangle of smooth urothelium between the two ureteral orifices and the internal urethral meatus. The fibers from each ureter meet to form a triangle sheet of muscle that extends from the two ureteral orifices to the internal urethral meatus. Between the ureteral orifices these muscle sheets thickened to from the interureteric crest "Mercier Bar" and between the ureters and the internal urethral meatus to form "Bell's muscle". The muscle of the trigone form three layers: the first is a superficial layer of longitudinal muscle derived from the ureter and descends to the urethra to be inserted in the verumontanum in male and proximal third of urethra in female. The second layer is a continuation of the Waldayer's sheath and is inserted in the

bladder neck. The third which is a detrusor layer formed by the outer longitudinal and the inner circular smooth muscle layers of the bladder wall. This anatomic arrangement helps prevention of reflux during bladder filling. [7,9]

NORMAL VARIATION IN URETERAL CALIBER:

The normal ureter is not of uniform caliber, with three distinct narrowing classically described along its course. The first of these is the ureteropelvic junction, where the renal pelvis tapers into the proximal ureter. In many cases, this perceived narrowing at the ureteropelvic junction may be more apparent than real, owing to the discrepancy in size between the renal pelvis and the proximal ureter. When present, any constriction at this site is most likely due to locally increased ureteral muscle tone. In the normal ureter, this is thus a physiologic or functional rather than a fixed narrowing. In the normal ureter, the ureteropelvic junction is not found to restrict either retrograde or antegrade passage of appropriately sized catheters or endoscopes.

The second perceived region of narrowing occurs as the ureter crosses the iliac vessels. This narrowing is due to the combination of extrinsic compression of the ureter by the iliac vessels and the necessary anterior angulation of the ureter as it crosses the iliac vessels to enter into the pelvis. There is no intrinsic change in the ureteral caliber at this location. The third site of narrowing observed in the normal ureter is at the ureterovesical junction. There is a true physical restriction of the ureteral lumen at this point. The ureter is anatomically narrowest at this fixed point, and typically requires dilatation to allow retrograde passage of larger