Updates in Management of Mid Ureteric Stricture

Essay

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Ahmed Osama El-Awam

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List of Abbreviations

Abb.	Full term
3D ..... :	Three dimentional.
APR ..... :	Abdominal perineal resection.
ATT ..... :	Antituberculous drugs.
CA ..... :	Cancer antigen.
CDC ..... :	The Centers for Disease Control and Prevention .
CEA ..... :	Carcino Embrionic Antigen.
CK ..... :	Cytokeratins.
CKD ..... :	Chronic kidney disease.
CT ..... :	Computed tomography.
DTPA ..... :	Diethylenetriamine pentaacetic acid.
EGFR ..... :	Epidermal growth factor receptor.
ESR ..... :	Erythrocyte sedimentation rate.
GFR ..... :	Glomerular filtration rate.
GUTB ..... :	Genito-urinary tuberculosis.
HU ..... :	Hounsfield unit.
IFN ..... :	Serum interferon.
IVP/U ..... :	Intravenous pyelography/ urography.
KTP Nd:YAG . :	Potassium titanyl-phosphate neodymium:yttrium–aluminum-garnet .
KUB ..... :	A plain radiograph of the kidney, ureter and bladder.
LAR ..... :	Low anterior resection.
MAG ..... :	Mercaptoacetyltriglycine.
MIP ..... :	Maximum intensity projection.
MRU..... :	Magnetic resonance urography.
MSI ..... :	Microsatellite instability.
NCCT..... :	Non-contrast helical computed tomography.
Nd:YAG ..... :	Neodymium : yttrium–aluminum-garnet .

List of Abbreviations (Cont…)

Abb.	Full term
Ng/dL ..... :	Nanogram per deciliter.
PCR ..... :	Polymerase chain reaction.
PUJ ..... :	Pelviureteric junction.
RI ..... :	Resistive index.
RP ..... :	Retrograde pyelography
TB ..... :	Tuberculosis.
Tc 99 ..... :	Technetium.
TCC ..... :	Transitional cell carcinoma.
TUU ..... :	Transureterourereterostomy .
UPJ ..... :	Ureteropelvic junction .
US ..... :	Ultrasound.
UTI ..... :	Urinary tract infections .
VUJ ..... :	Vesicouretric junction.
VUR ..... :	Vesico-ureteic reflux.

INTRODUCTION

Ureteral stricture is defined as a narrowing of the lumen of the ureter which causes functional obstruction. Strictures of the upper urinary tract are either congenital or acquired. Ureteral strictures may be subdivided into extrinsic or intrinsic, benign or malignant, and iatrogenic or noniatrogenic ***(Hafez and Wolf, 2003).***

Benign ureteral strictures can be intrinsic or extrinsic. Intrinsic strictures, which may be congenital (eg, congenital mid ureteral fibrosis), iatrogenic follows ureteroscopy, open or laparoscopic procedures, radiation therapy & urinary diversions, or non-iatrogenic (eg, those that follow passage of calculi or idiopathic retroperitoneal fibrosis, chronic inflammatory ureteral involvement [eg, tuberculous and schistosomiasis, malignant ureteral strictures that are caused by recurrence of primary malignancy transitional cell carcinoma (TCC) or extrinsic mechanical compression e.g lymphoma, testicular, breast, or prostate cancer, may cause mid ureteral obstruction]) ***(Hafez and Wolf, 2003)***.

Ureteral strictures typically arise from ischemia, resulting in fibrosis & collagen deposition, whereas the stricture is considered nonischemic if it is caused by spontaneous stone passage or congenital abnormality. Less commonly, the etiology may be mechanical, such as from a poorly placed permanent suture or surgical clip ***(Andonian et al., 2005).***

The resulting ureteral obstruction may vary widely from mild, causing no symptoms, to severe, causing complete obstruction and subsequent loss of renal function; recovery depends on the time interval of ureteral obstruction. Obtain a detailed patient history of prior malignancy, surgery, or radiation therapy. Most patients with significant strictures are symptomatic. They present with flank pain, flank fullness, or abdominal fullness. Important physical examination findings include abdominal pain, fullness associated with fever if there is co-existing infection (pyelonephritis) ***(Pantuck et al., 2000)***.

Indications for intervention include pain, infection, or obstruction, which may threaten a patient's renal function. Less common indications may be stone formation proximal to an obstruction or hematuria. The most common initial management of benign ureteral strictures is balloon dilation, followed by stent placement for 4-6 weeks. It is best suited for very short, nonischemic strictures ***(Kwak et al., 2005).***

Under endoscopic vision a full thickness of stricture is cut through the ureteral wall until the periureteral fat can be seen. Visualization is possible with retrograde (ureteroscope) or antegrade (nephroscope) techniques. Different technical solutions exist for the ureterotomy: cold knife (without cauterization), laser fibers (holmium or Neodym:YAG) ***(Chung, 2004).***

Open surgical management for midureteral strictures, includes various treatment options such as ureteroureterostomy, transureteroureterostomy (TUU) & intestine interposition (part of ilium or appendix). All open procedures carry an increased risk of morbidity, increased recovery time, and increased hospitalization when compared with endoscopic approaches. A primary ureteroureterostomy may be appropriate for short benign strictures with minimal tension. TUU may be used if the donor ureter is of adequate length and the recipient ureter is not diseased. All these techniques could be done laparoscopically or Robotics assisted ***(Meng et al., 2003).***

A current controversy involves the usefulness of intralesional injection of steroids to inhibit stricture recurrence. The future of ureteral stricture management may involve extraurinary tissue used as grafts or vascular pedicle flaps to replace damaged portions of ureter. Recently, it is reported that the successful use of buccal mucosal grafts with omental wrap. An artificial ureter crafted from silicone-polyester was used .Innovative tissue engineering technology may produce ureteral tissue that closely mimics native ureteral tissue for ureteral replacement. Currently, some groups have used xenogenic acellular collagen membranes such as porcine small intestine submucosa for ureteral reconstruction ***(Naude, 1999)***.

AIM OF THE WORK

To highlight an update knowledge on the incidence, etiology, diagnosis of mid ureteric strictures. Also, to shedlight clinical outcomes of different techniques used in management of these cases.

Chapter One
ANATOMY & PHYSIOLOGY OF THE URETER

Introduction:

Injury to the urinary tract can be caused by any surgeon operating in or around the pelvis and the retroperitoneal abdominal space, with a general incidence of 0.3–1.5%. This includes gynaecologists, general surgeons, urologists, vascular surgeons, neurosurgeons and orthopaedic surgeons. In addition, the impact of technological advances within the surgical field, such as the use of laparoscopy for general surgical and gynaecological procedures, and the application of endoscopic approaches to urological disease ***(Hairstone et al., 2003).***

The urinary tract is extremely vulnerable to intraoperative injury for a variety of reasons. Operating in a hostile environment, such as that encountered with repeat surgery, significant inflammation and a large neoplasm, puts the urinary tract at even greater risk. Injuries to the ureter are the most common, because the ureter is similar in appearance to vascular structures, is difficult to identify as a result of its close adherence to the posterior peritoneum, and can be encountered at virtually any level in the retroperitoneum and upper pelvis. When these points are considered it is easy to understand how the ureter can be vulnerable to injury ***(Anderson et al., 2007).***