COMPLICATIONS OF ENDOSCOPIC URETERIC MANIPULATIONS

Essay

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By

Khaled Hassan Abdalla
M.B, B.Ch

Supervised by

Prof. Dr. Abdalla Ahmed Abdel Aal
Professor of Urology
Faculty of Medicine - Ain Shams University

Dr. Khaled Mokhtar Kamal
Lecturer of Urology
Faculty of Medicine - Ain shams University

Faculty of Medicine - Ain Shams University
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الدكتور / خالد مختار كمال

مدرس جراحة المسالك البولية

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جامعة عين شمس - كلية الطب

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SUMMARY AND CONCLUSION

Ureteroscopy developed as an extention of cystoscopy and cystoscopic techniques and has gradually become a major technique for the diagnosis and treatment of lesions of the upper urinary tract,both within the ureter and intrarenal collecting systems.this progression has been based on the development of appropriate instrument with rigid and flexible ureteroscopes and effective working instruments. The development of these instruments was the key in the development of ureteroscopy, yet not the sole advancement in techniques.

When the field of endoscopy expanded, urologists had a desire to view the ureter and upper collecting system. The first ureteroscopic procedure was performed by Young in 1912.

Durable rigid and semirigid ureteroscopes have been developed that weigh less and have new features. Some small caliber, semirigid ureteroscopes have been developed with a continuous irrigation feature that optimizes the view and prevents proximal migration of stone fragments. Digital video semirigid ureteroscopes have been introduced.

Ureteroscopy has become a standard urologic technique and is used in a wide variety of situations. The current generation of flexible, actively deflectable fiberoptic endoscopes makes virtually every part of the kidney, including the lower pole, accessible for the treatment of calculi. Retrograde access to the proximal

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Khaled Hassan Abdalla

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List of Abbreviations

CCD	*Charged coupled device*
CT	*Computed tomography*
DL	*Dual lumen*
EHL	*Electrohydrulic lithotripsy*
ESWL	*Extracorporeal shock wave lithotripsy*
FREDDY YAG	*Frequency doubled, double pulse neodymium YAG*
HDTV	*High definition television*
Ho:YAG	*Laser Holimum Yag Lasser*
Nd:YAG	*Neodymium Yag Lasser*
PTFE	*Polytetrafluorethylene*
TCC	*Transitional cell carcinoma*
UPJ	*Ureteropelvic junction*

INTRODUCTION

Ureteroscopy was initially developed in the late 1970s to diagnose and treat conditions in the distal ureter. The technique has improved dramatically over the past 2 decades, and has evolved into a minimally invasive procedure for the diagnosis and treatment of pathology within the upper urinary tract ***(Monga et al., 2007).***

Certain features are important to the success of a flexible endoscope. Key features to a successful endoscope include a small external caliber that maintains an adequate working channel and an active deflecting mechanism. In the 1980s, design improvements in ureteroscope deflection, fiberoptics, caliber, and working channel increased the usefulness of the flexible ureteroscope ***(Pietrow et al., 2002)***.

There are currently four major manufacturers of flexible ureteroscopes: ACMI (Southborough, Massachusetts), Olympus (Lake Success, New York), Karl Storz (Tuttlingen, Germany) and Henke-Sass Wolf (Tuttlingen, Germany) all produce flexible ureteroscopes. The Storz, ACMI, and Wolf flexible ureteroscopes have intuitive active deflection, which means the tip of the ureteroscope moves in the same direction as the deflector lever. The Olympus ureteroscope is counterintuitive and deflects in the opposite direction as the lever ***(Delvecchio et al., 2001).***

Recently, prototype flexible ureteroscopes with active secondary deflection have been described and may revolutionize complex access to the lower pole of the collecting system Flexible endoscopic technology has extended ***(Johnson et al., 2004).***

Rigid and flexible instruments are important for complete visualization of the upper urinary tract. Ureteroscopy allows visual recognition of pathology within the lumen of the ureter or kidney. Upper tract filling defects represent the most common diagnostic application of ureteroscopy. ureteroscope has revolutionized the diagnosis and treatment of the entire upper urinary tract ***(Pietrow et al., 2002).***

Endoscopic tools have evolved, providing the surgeon with the armamentarium necessary to treat many different pathologic processes. Almost all renal calculi can be treated with retrograde ureteroscopy. The fragility of these new endoscopes is a concern, and great care must be taken when using them. With good technique and proper use of instruments, their working life can be extended ***(Johnson et al., 2004).***

Most complications of ureteroscopy are minor, necessitating only close observation or minimal intervention. Major complications of ureteroscopy, however, may have severe and lasting consequences. Although no formal classification system for ureteroscopic injuries has been established, most investigators segregate complications either by chronologic order or by severity. Although most complications occur intraoperatively, the sequelae of these complications often occur in the early or late postoperative period ***(Kristensen et al., 2005).***

A few complications arise primarily postoperatively, such as infection or urinary retention, which are not foreseen by any intraoperative actions. Complications are considered major if operative intervention is required for resolution or if the complication is life-threatening. Minor complications are those that are adequately managed with nonoperative measures ***(Weizer et al., 2002).***

AIM OF THE WORK

Aim of this essay is to review the complications of endoscopic ureteric manipulations, its' management and how to avoid these complications.

URETERAL ANATOMY

Microscopic Anatomy

As seen by light microscopy, the ureter consists of three distinct layers: the mucosa, muscularis, and adventitia. The mucosal lining consists of transitional epithelium, which has four to six layers of cells when the ureter is contracted. There are a large number of junctional complexes between these cells. This, together with the low but consistent level of keratin precursors within them, is probably responsible for the waterproof property of this layer. This mucosal layer also contains many longitudinal folds, or rugae, that give the nondistended ureter a characteristic stellar outline. The epithelium rests on a lamina propria of connective tissue that contains many blood vessels and unmyelinated nerve fibers. However, these nerve fibers seem to be absent from the inner third of the lamina propria ***(Daniel and Shackman, 2006).***

The muscular wall of the ureter is traditionally described as two longitudinal layers separated by a middle circular layer. However, a number of more recent studies seem to indicate that the muscle layers are actually arranged spirally. In the pelvic portion of the ureter, the inner spirals are steep and the outer spirals are horizontal, thus appearing in cross section as inner longitudinal and outer circular layers ***(Daniel and Shackman, 2006)***.