

Diagnostic Cystoscopy

The Cystoscopist Reference

Bradley C. Tenny
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Springer

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Remember to take pride in developing mastery over an important urologic procedure. Endoscopy has been performed since the 1800s; with each novel adaptation providing better visualization and the ability to better people's lives. Remember that we stand on the shoulders of giants who came before us.

Preface

Diagnostic cystoscopy is the gold standard procedure in assessing anatomical variations and/or bladder pathologies. For example, for a clinician to adequately rule out urothelial cancer of the bladder the clinician must directly visualize the whole bladder. Mastering this skill is thus incredibly important for training MD and advanced practice provider (Nurse Practitioner or Physician Assistant), and once mastered a readily available reference would serve to benefit the said clinician in differentiating benign and malignant pathologies.

This textbook is written as a comprehensive review by experts in the field of Urology on cystoscope, including both the flexible and rigid instrument, technical use, and certainly bladder pathologies. Thus, being remarkably familiar with these instruments is vital in being a great cystoscopist.

Lastly and most significantly, this book covers numerous topics in normal anatomy, benign and malignant urethral pathology, and benign and malignant bladder pathology. Dialog on each presented topic includes a brief pathological discussion, associated clinical significance such as common signs or symptoms, the suggested treatment for said topic, additional references for further reading, and importantly photographs. Photographs are included on every topic, with a minimum of one image and a maximum of five for reference. If this book is well received, possible future editions will serve to add additional photos and discuss pediatric topics in more refined detail.

Availability of a comprehensive reference on diagnostic cystoscopy has been needed for quite some time, and this book satisfies this need, both for the developing and experienced cystoscopist.

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Chapter 1

Introduction to Cystoscopy



1.1 Parts of the Cystoscope

1.1.1 Rigid Cystourethroscope

A rigid cystoscope is made up of three parts: The outer sheath, the lens/scope, and lastly the bridge otherwise explained as the working channel (see Fig. 1.1). There are a few manufactures that make the rigid cystoscope including Olympus, Karl Storz, Gyus/ACMI, and Wolf. The picture of the rigid cystoscope in this book pertains to the Olympus cystoscope. Sheath sizes vary in French size and have accommodating obturators for blind introduction into the bladder. Bridges can be either single-channel or multi-channel.

Fig. 1.1 Rigid cystoscope broken up



Photos of the rigid cystoscope are few given that this book's purpose is to educate the clinician on diagnostic cystoscopy, typically performed with a flexible scope in the office. Again, diagnostic cystoscopy is performed whenever a camera is placed within the bladder, thus understanding of the rigid instrument is additionally important.

1.1.2 Flexible Cystourethroscope

Flexible scopes allow for complete assessment of the bladder's superficial lining, the mucosa. Flexible cameras are what is commonly employed for diagnostic cystoscopies. These cameras range in size between 16 and 17 French and are additionally manufactured by the aforementioned companies. The scopes have a single working chamber for both irrigation and the passage of instruments (see Fig. 1.2). When performing a task, such as a biopsy, irrigation should also be running to allow for adequate visualization. The use of a three-way valve allows for continued flow while passage of an instrument through a diaphragm to ensure no leakage of irrigation (see Figs. 1.3 and 1.4).

Flexible cystourethrosopes come in a few options. Scopes can be either be fiber-optic/analog or digital. Digital scopes can come in both standard and high definition (See Figs. 1.5 and 1.6). Digital scopes do not require focusing or white balancing prior to instrumentation. In short, digital scopes typically have a higher degree of resolution.

Fig. 1.2 Digital flexible cystoscope



Fig. 1.3 Three-way valve with stopper diaphragm



Fig. 1.4 Flexible grasper for the rigid cystoscope



Fig. 1.5 Light cord for analog cystoscope



Fig. 1.6 Digital flexible cystourethroscope with irrigation and three valve port connected



1.2 Operative Technique

1.2.1 Positioning

First, it is imperative to position the patient so that he or she is comfortable and to allow for ease of performance/scope passage by the clinician. The preferred positions are supine for a flexible cystoscope or lithotomy for a rigid cystoscope. After the patient has been adequately positioned the clinician should prep the patient using either betadine or chlorhexidine-soaked gauze or swabs.

1.2.2 Physical Exam

Next, prior to the introduction of any scope within the urethra the clinician must perform a physical exam. It is important to pay close attention for any cutaneous lesions or anatomic abnormalities that may make the procedure difficult. For instance, the recognition of meatal stenosis would require meatal dilation prior to the introduction of a 16 French flexible scope.

1.2.3 Passage of the Scope

In men, the penis should be placed on complete traction or stretch at the angulation of 90 to 45 degrees towards the patient's feet. If performing cystoscopy using the rigid scope, it is best to hold the penis at the 90 degrees for introduction with lowering of the penis and the scope simultaneously as the scope reaches the membranous urethra prior to the prostatic urethra. With the flexible scope again, the penis is held on stretch with clinician's nondominant hand between the ring and middle finger. With the dominant hand, the scope is brought closer to the patient's penis and the tip of the scope is guided into the urethral meatus using the index and thumb finger. The

scope is only inserted after adequate lubrication and after the irrigation has been turned on. If an assistant is present, he or she may hold the scope while the clinician directs the flexible cystoscope into the urethral meatus using both hands. This is very helpful in patients who may have a large body habitus. Once the scope has been inserted in the urethra, the clinician should grab the scope with the dominant hand ensuring that the scope does not retract out of the penis requiring the procedure to be repeated; introduction of the instrument is often the most reported anxiety producing part, it is important to only to have to do this once.

After having passed the scope through the anterior urethra, with the penis remaining on stretch, the clinician will reach the membranous urethra. The scope is then directed anteriorly using a small degree of flexion in order to transverse the external genitourinary diaphragm. With further advancement of the scope, the clinician readily reaches the prostatic urethra. At this point the scope should nearly be fully flexed, in similar fashion to the tip of a coudé catheter, in order to gain access to the bladder neck and the bladder.

In women, the clinician retracts both the labia majora and minora exposing the vulvar vestibule. With advancement of the scope using the contralateral hand the index and thumb guide the scope into the urethral meatus (see Fig. 1.7). The female urethra is on average only 2–3 cm and access grants near immediate entrance into the bladder (see Figs. 1.8 and 1.9). In certain situations, it may be easier having an assistant hold the scope with passage into the urethra for either female or male.

Fig. 1.7 Passage of the cystoscope into the female urethra meatus

