Bladder Outlet Obstruction: Diagnosis and Medical Management

ABSTRACT: Consider the possibility of bladder outlet obstruction in any man over the age of 50, but also keep an open mind with younger men. Remember, however, that not all voiding problems result from benign prostate disorders and that bladder or prostate cancer might be the underlying cause. Various questionnaires have been developed to assist in the identification of patients with symptoms of bladder outlet obstruction. The first line of treatment for mild to moderate symptoms usually consists of alpha-blocking agents because of the rapid onset of their therapeutic effect. Consider 5-alpha-reductase inhibitors, which shrink the prostate, for patients who have predominantly irritative symptoms (urgency and frequency). If medications fail to provide satisfactory symptomatic relief, then minimally invasive or even more aggressive surgical interventions may be necessary.

Key words: bladder outlet obstruction, benign prostatic hypertrophy

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Prostate surgery is no longer the expected destination for men with lower urinary tract symptoms. The ascendency of medical therapy for symptoms of bladder outlet obstruction has greatly reduced our dependency on the operating room for relief of these symptoms. Transurethral resection of prostate tissue, by some means, remains a valid intervention, but medical interventions are now a practical way to correct moderate voiding disturbances.

The obstruction of the bladder outlet is generally assumed to be a result of benign prostatic hypertrophy (BPH), which will be the focus of this review. I will provide you with my observations as a practicing urologist and a summary of some of the recommendations included in the American Urological Association (AUA) Clinical Guideline on Management of BPH. This excellent guideline was originally produced in 1994 by the Agency for Health Care and Policy Research and has most recently been updated by the AUA in 2010.1

HISTORICAL PERSPECTIVE

Hippocrates recognized that “diseases of the kidneys and of the bladder are cured with difficulty in old men,”2 but the participation of an enlarged prostate in this scenario was not recognized in the western world until the 18th century. John Hunter noted in his article “A Treatise on Venereal Disease” published in 1788 that as a result of prostate enlargement, “The sides of the canal are compressed together producing obstruction of the passage of urine,”3 but his observations were not applied clinically by his medical contemporaries, and the removal of obstructing prostate tissue would not be practical for another century. Catheters of high quality were available, however, and many patients depended on catheter drainage of their bladder for comfort and even survival. It should be noted that catheters remain a valid resource in the management of bladder outlet obstruction.

DIAGNOSIS

Voiding problems are subjective: What bothers one patient a great deal may not be a problem for another patient with similar symptoms. If a voiding pattern does not disrupt life activities and does not create illness, then it may not matter very much.

What does affect quality of life more than almost anything else is interrupted sleep. Imagine taking four or five trips to the bathroom every night for years on end. Nocturia exhausts men and their families and may contribute to other problems. Consider how some of your patients with mobility problems barely navigate a well-lit examining room. The thought of their somnolent 3 AM trip to the bathroom is worrisome. At the very least, suggest a urinal or bedside commode.

Consider the possibility of bladder outlet obstruction in any man over the age of 50, but also keep an open mind with younger men. The 50 and over rule for BPH treatment was a fairly hard and fast guide when
surgery was our only option. Now that medicinal interventions are available, I am much more liberal with treatment and consider medication for men in their 40s if they have voiding problems. Just remember that not all symptoms of bladder outlet obstruction are the result of benign prostate disorders and that bladder or prostate cancer might be the underlying cause.

**Prostate symptom score.** A variety of questionnaires have been developed to assist in the identification of patients with symptoms of bladder outlet obstruction. Two good ones (identical content) are the International Prostate Symptom Score (Figure) and the AUA Symptom Score. The patients in my clinic answer these questions as part of their registration process, and I then review the answers with them during my interview. Because you have a variety of issues to attend to during the primary care visit, I would suggest that a “cut to the chase” approach might include selected inquiries about frequency, urgency, and nocturia.

If the questionnaire or your abbreviated version suggests a problem, you may want to further refine the details of urination by taking them through one day of bathroom visits. By dividing the day into common intervals, I can usually achieve succinct responses and avoid the answer “it depends”:

- **What time do you go to bed and when do you get up to start the day?** During those hours do you get up to go to the bathroom? (Nocturia)
- **Between the time you get up in the morning and midday how often do you urinate?** Midday to evening meal? Evening meal to bedtime? (Frequency)
- **Do you ever wet your pants?** (Incontinence)
- **If you leak urine, do you wear an absorptive pad?** How often do you need to change it? (Severity of incontinence and an opportunity to suggest the use of pads if they are needed)

Patients should be able to sleep through the night, and they usually urinate 4 or 5 times a day. You do need to take into consideration fluid consumption regimens that a patient may be following for various reasons. A report of a little urine leakage is not unusual, but what constitutes tolerable wetness is subjective.

This assessment allows you to perform a complete review of voiding disturbances in men, and it should only take a few minutes.

**Residual urine determination.** It is helpful to know whether a patient with voiding problems is emptying his bladder completely, but it is hard to justify measuring post-void residual volume in a primary care office unless there is compelling evidence of urinary retention. Knowing the residual volume also begs a question you may not feel comfortable answering. On the basis of a given residual volume, I may or may not do anything. Sometimes I insert a Foley catheter when a patient has a significantly elevated residual volume, and sometimes I do not. If you do measure the residual volume and find what seems like a large amount of urine in the bladder, here are some suggested responses:

- **If the patient cannot urinate and is in pain, insert and leave a catheter in the bladder.** Let all the urine drain out without interruption. The urine may become slightly bloody after the bladder empties, but this will usually resolve spontaneously.
- **If the patient has a urinary tract infection and fever and is also having trouble urinating, insert a Foley catheter and leave it in.** Send a urine culture, and start antibiotics empirically.
- **If the patient is struggling to urinate and has renal insufficiency, insertion of a Foley catheter might help diagnose the source of the renal failure (pre- or post-renal) and also relieve the voiding discomfort.**
- **Dementia and catheters are not a good combination.** If you must insert a Foley catheter in a demented patient, fill the catheter balloon minimally (1 to 2 cc) or just secure the catheter to the clothing. This will minimize the damage when the patient pulls out the catheter.

**Examination.** The physical examination of a patient with symptoms of bladder outlet obstruction is highly focused. Check for evidence of neurological disease because a stroke can produce virtually any combination of voiding dysfunction symptoms. Examine the abdomen for bladder distension, although this maneuver is less useful in patients with a higher body mass index.

The genitalia and the rectum should also be examined. The rectal examination looks for prostate cancer that might be producing voiding symptoms. Advanced prostate cancer can induce considerable bladder inflammation that may manifest itself as urinary urgency and obstruction. The examination of the genitals primarily helps me discover further evidence of incontinence.

**Laboratory studies.** These are usually limited to a urinalysis. Urinary tract infection is a sign of bladder obstruction in adult men. Hema-turia, without evidence of infection, needs to be investigated because bladder cancer may be the cause. Both hematuria and infection should probably prompt a urology consultation, and the results of a urine culture or cytology will help hasten the consultation process.

The prostate-specific antigen (PSA) test is primarily for cancer screening. I have not found it particularly helpful in selecting bladder outlet obstruction therapy but would suggest you determine the PSA level if it is not known. Renal function studies are not a routine part of voiding dysfunction studies, but the results may have prompted the evaluation. Chronic retention will alter renal function and is sometimes the
first clue to voiding dysfunction in a reticent elderly man.

**TREATMENT**

As I pointed out earlier, some men with bladder outlet obstruction need no treatment at all. If the condition does not bother them, it may not be a problem. On the other hand, I occasionally encounter situations in which an institutionalized patient is perfectly content with how he urinates but may lose his place at the institution if he cannot be made continent. I also encounter situations in which the patient may be mildly confused but is still living at home. The patient thinks everything is fine, but the wife or caregiver disagrees and signals by some means that something needs to be done about the urination.

**Drug therapy.** The intervention that has considerably lightened my

### Figure – International Prostate Symptom Score (IPSS)

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Less than 1 time in 5</th>
<th>Less than half the time</th>
<th>About half the time</th>
<th>More than half the time</th>
<th>Almost always</th>
<th>Your score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Incomplete emptying</strong></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Over the past month, how often have you had a sensation of not emptying your bladder completely after you finish urinating?</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Frequency</strong></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Over the past month, how often have you had to urinate again less than 2 hours after you finished urinating?</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Intermittency</strong></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Over the past month, how often have you found you stopped and started again several times when you urinated?</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Urgency</strong></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
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<tr>
<td>Over the last month, how difficult have you found it to postpone urination?</td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Weak stream</strong></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Over the past month, how often have you had a weak urinary stream?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Straining</strong></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Over the past month, how often have you had to push or strain to begin urination?</td>
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<td></td>
<td></td>
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<td></td>
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<tr>
<td><strong>Nocturia</strong></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Over the past month, how many times did you most typically get up to urinate from the time you went to bed until the time you got up in the morning?</td>
<td></td>
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<td></td>
<td></td>
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**Total IPSS score**

<table>
<thead>
<tr>
<th>Delighted</th>
<th>Pleased</th>
<th>Mostly satisfied</th>
<th>Mixed: about equally satisfied and dissatisfied</th>
<th>Mostly dissatisfied</th>
<th>Unhappy</th>
<th>Terrible</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

If you were to spend the rest of your life with your urinary condition the way it is now, how would you feel about that?

Total score: 0-7, mildly symptomatic; 8-19, moderately symptomatic; 20-35, severely symptomatic.

prostate surgery schedule is the use of alpha-blocking agents and 5-alpha-reductase inhibitors to correct symptoms of bladder outlet obstruction. These medications present a low-risk and relatively low-cost opportunity to enhance the quality of a patient’s life. These medications also allow you to establish a rational approach to mild or moderate lower urinary tract symptoms without the need to involve a consultant. This saves both time and expense.

I almost always start with an alpha-blocking agent to relieve symptoms of bladder outlet obstruction. Doxazosin, terazosin, tamsulosin, and alfuzosin are all effective. The latter two are slightly easier to dose because they are taken once daily. Doxazosin and terazosin need to be titrated, although 2 to 5 mg is usually adequate. The alpha-blockade appears to relax muscle fibers in the urinary tract facilitating the passage of urine from the bladder. I warn patients about postural hypotension, but the side effects of alpha-blocking agents are usually not a major problem. However, if cataract surgery is planned, the ophthalmologist should be aware that the patient is taking an alpha-blocking agent.

One of the most attractive aspects of alpha-blocking agents is how quickly they start to work. Usually, patients notice a change within a day or two. I do, however, ask patients to try these medications for at least a couple of weeks before discontinuing them because it may take a while for bladder function to improve after the blockage has been relieved. Patients should also be warned that some cold medications and decongestants have the opposite effect of alpha-blocking agents and can make urination much more difficult.

Finasteride and dutasteride are the two currently available 5-alpha-reductase inhibitors used to control bladder outlet obstruction symptoms. Unlike the alpha-blocking agents, these medications relieve bladder outlet obstruction by shrinking the prostate to allow the passage of urine. Finasteride and dutasteride inhibit the production of a modified form of testosterone that is associated with prostatic hypertrophy. This method of prostate shrinkage takes weeks to months to have a noticeable effect. The delay of therapeutic onset and the possibility of hormonally mediated sexual dysfunction militate against these products as a first choice for relief of voiding problems, especially in younger patients. Some evidence, however, suggests that the shrinkage of the prostate may reduce irritative symptoms, which makes 5-alpha-reductase inhibitors an attractive choice when these symptoms (urgency and frequency) predominate. I also prefer this class of medications for patients who have a history of postural hypotension, dizziness, or fainting. Recently, a concern has been raised about the possible increased probability of high-grade prostate cancer as a result of the use of 5-alpha-reductase inhibitors. The risk, if it is real, is very low and I continue to use these medications to control BPH symptoms.

Here is what the FDA had to say: “The US Food and Drug Administration (FDA) is informing healthcare professionals that the Warnings and Precautions section of the labels for the 5-alpha reductase inhibitor (5-ARI) class of drugs has been revised to include new safety information about the increased risk of being diagnosed with a more serious form of prostate cancer (high-grade prostate cancer). This risk appears to be low, but healthcare professionals should be aware of this safety information, and weigh the known benefits against the potential risks when deciding to start or continue treatment with 5-ARIs in men.”

I combine a 5-alpha-reductase inhibitor with an alpha-blocking agent when a single agent fails to provide adequate relief of voiding symptoms. There is some evidence of synergy when the two classes of agents are used together. I even add anticholinergic medications to the regimen, but this is another point at which I might suggest that you obtain a urology consultation.

Alternative therapies. Saw palmetto and soy might be effective. Many of my patients are taking them, and I cannot tell if they are doing them any good. Acupuncture is also intriguing, especially for the management of irritative voiding symptoms. These are interesting alternatives once significant pathology has been excluded.

Treatment of voiding problems in women. Although this article primarily addresses lower urinary tract dysfunction in men, I have evaluated women who have voiding symptoms that are very reminiscent of prostatism. These transgender voiding symptoms suggest to me that some voiding dysfunction is the product of bladder senescence rather than actual outlet (prostate) blockage. To that end, I have a small but growing cadre of female patients who have been treated with alpha-blocking agents to improve bladder function through the relaxation of their bladder outlet. These women had complained of nocturia or other voiding disturbances, which prompted a urology consultation. They have obtained some symptomatic relief with alpha-blocking agents. Probably my most common application of these agents in women has been as an adjunct to the short-term management of urinary retention following orthopedic procedures.

Catheters. As the last program director of Frederic Foley’s urology training program before it merged with the University of Minnesota, I feel a duty to remind everyone that the eponymous Foley catheter should remain a valid choice for the management of voiding problems in
selected circumstances. An exhausted elderly man or woman who voids many times each night may finally get enough sleep if the bladder is drained with a catheter. They also may once again be able to leave their home during the day without fear of incontinence.

Sometimes the bladder dysfunction medications are ineffective, and surgical alternatives are not practical. When properly managed, a catheter may be all that is needed to correct the problem to the patient’s satisfaction or the catheter may allow the bladder to regain strength while giving the medications a chance to take effect. This can be especially useful for buying time until the 5-alpha-reductase inhibitors produce a noticeable effect.

**CONSULTING UROLOGY**

Finally, I will briefly discuss the next steps when more needs to be done to relieve symptoms of bladder outlet obstruction. These additional methods are in the domain of urology, but a basic understanding may assist with patient preparation while a urology consultation is being arranged.

If medications do not succeed in achieving a satisfactory level of patient comfort, then minimally invasive or even more aggressive surgical interventions may be necessary. There are office-based minimally invasive procedures that use various methods to dilate or thermally ablate prostate tissue in order to relieve obstruction. These procedures usually provide a degree of relief equivalent to that expected with medication alone, but they may produce results even when medications have previously failed. Some form of urethral instrumentation under local anesthesia is necessary, and patients may or may not go home with a temporary catheter. An alpha-blocking agent or a 5-alpha-reductase inhibitor may be reinstituted to greater effect after one of these office procedures is completed.

More aggressive measures are available, such as transurethral resection of the prostate (TURP), which remains an excellent, safe procedure for the relief of bladder outlet obstruction in men. The hospital stay is brief (1 or 2 days), and the morbidity is low. The heated curette that shaves away the prostate tissue has been joined by other technologies that are sometimes employed instead of the curette to remove prostate tissue. With these newer technologies, some patients are even sent home the day of the surgery. The almost bewildering availability of surgical options has complicated the decision process somewhat, but the outcomes are dependably favorable with almost any method chosen. It takes longer to explain the reasoning for some of these surgical decisions than it takes to do the procedure.

Ultimately, what I am trying to convey is that there are rational, appropriate nonsurgical methods for ameliorating voiding disturbances. Many of the therapies can be initiated in the primary care office, thus allowing patients to achieve relief without the need for a urology consultation. Those who fail to respond to these fundamental approaches will have completed an initial evaluation that facilitates any subsequent urologic intervention, thus promoting a more rapid and efficient resolution to the patient’s voiding problem.

**REFERENCES:**