

RECENT ADVANCES IN THE MANAGEMENT OF BENIGN PROSTATIC HYPERPLASIA

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Benign prostatic hyperplasia (B. P. H.) is a non malignant enlargement of the prostate that is due to excessive cellular growth of both glandular and the stromal elements of the gland¹. Most men over the age of 50 years may have some symptoms from benign prostatic hyperplasia. This is one of the most common surgical conditions in patients of this age-group. Transurethral resection of the prostate is an effective treatment for most men. Approximately 20 to 25 percent of patients who undergo the operation do not have satisfactory long-term outcomes². The complications include retrograde ejaculation in 70-75% of men and impotence in 5-10%. There is an increasing demand by patients for non-operative treatment of this condition because of their fear of an operation and the possibility of complications.

The major questions facing the surgeon are who should be treated, and when. In the past these questions were relatively simple to answer because there were no non-surgical or less invasive surgical procedures available. But recently these have been employed in the management. In this article, I am discussing the important medical and minimally invasive treatments for men with symptomatic benign prostatic hyperplasia.

MEDICAL TREATMENTS

Obstruction at the bladder outlet from benign prostatic hyperplasia has two components.

(i) Dynamic

Dynamic component is related to the tone of the smooth muscle fibers in the bladder neck, prostatic urethra, surgical capsule and fibromuscular stroma of the prostate. The tone is

maintained by alpha adrenergic sympathetic receptors. The drugs blocking these receptors relax these muscles and relieve the dynamic obstruction.

(ii) Static Component

It is related to the enlarged hyper-plastic tissue. Its growth is initiated and maintained by dihydro-testosterone (D. H. T.) which is produced in the prostatic cells by conversion from testosterone.

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The enzyme necessary for this conversion is 5 α -reductase. Inhibition of the enzyme causes reduction in the intracellular concentration of DHT. This results in preventing future growth of the hyperplastic tissue and also some reduction in the size of the existing adenoma.

A. Alpha-Adrenergic Antagonist Drugs

1. Non-selective Drugs
 - Phenoxybenzamine
 - Thymoxamine
2. Selective Drugs
 - i. Short acting
 - Alfuzosin
 - Indoramin
 - Prazosin
 - ii. Long acting
 - Doxazosin
 - Tamsulosin
 - Terazosin

These drugs have proved useful in the treatment of benign prostatic hyperplasia. The major side effect is postural hypotension. Others are dizziness, syncope, tiredness, asthenia, headache, flu like syndrome, nasal congestion and light headedness. Terazosin has been shown to be very safe and effective in clinical practice in single dose of 5-10 mg daily⁴.

B. 5-alpha-reductase inhibitors

Finasteride in oral dose of 5 mg daily is a potent inhibitor of 5-alpha-reductase. It has very few side effects and prostatic volume is reduced by an average of 27% and peak urinary flow rate is increased by an average of 2-3 ml/second^{5,6,7}. Patients may have decreased libido, ejaculatory dysfunction, or impotence⁸.

MINIMALLY INVASIVE PROCEDURES

(i) Transurethral Incision of the Prostate (TUI-P)

In this procedure, using electro-surgical diathermy and a cutting knife two deep incisions are made at 5 and 7 o'clock positions starting

from just distal to the inter-ureteric ridge and extending across the bladder neck and prostatic urethra to the verumontanum⁹. This procedure requires either regional or general anesthesia and is ideal procedure for any patient with bladder out-let obstruction and enlarged prostate gland weighing 30 gm or less¹⁰. Complication rates are lower than those with resection. The surgical time, hospitalization and convalescence are also shorter.

(ii) Microwave Therapy

Microwave therapy can be delivered to the prostate gland transrectally and transurethrally. There are three forms of microwave treatment: hyperthermia, thermotherapy, and thermoablation. In hyperthermia, the prostatic tissue is heated to 42° C to 45° C in multiple sessions, with the microwave antenna placed in either the rectum or the urethra. In thermotherapy, the prostatic tissue is heated to between 45° C – 60° C in a single session, with a transurethral microwave antenna located inside a cooling catheter to protect the urethral lining. In thermoablation, the tissue is heated to a temperature between 60° C and 75° C¹¹. Combining heating with surface cooling is particularly important for producing high intraprostatic temperatures without injury to the urethra or rectum.

Transurethral microwave thermotherapy has not been compared directly with transrectal or transurethral microwave hyperthermia in the treatment of men with symptomatic benign prostatic hyperplasia, but the former is probably superior. It is a single-session treatment that can be performed on an outpatient basis. Most men require no anesthesia or analgesia, and the complications are few. The improvement in symptom scores and peak urinary-flow rates are substantial and similar to the improvement with alpha-adrenergic antagonist therapy. One disadvantage of transurethral microwave thermotherapy is postoperative urinary retention in approximately 35 percent of men, which may persist for up to 10 days.

(iii) Balloon Dilatation

In this technique the special balloon catheter is accurately placed in the prostatic urethra and is inflated to 3–4 atmospheric pressures and the pressure is maintained for 10–15 minutes. This procedure is done under anesthesia, is easy to perform, is safe and requires minimal hospitalization. The special balloon catheter is expensive and disposable. The dilatation probably acts by disrupting the alpha-adrenergic receptors and fracturing the prostatic commissure. The beneficial results are short lived.

This procedure is contraindicated in patients with decompensated bladder, active urinary tract infection, large gland and prominent middle lobe.

(iv) Prostatic Stents

Bio-compatible inert, flexible endoprostatic stents are placed in the prostatic urethra with specially designed deployment tools under direct vision. This can be done under local anaesthesia and is primarily useful in very old males with retention who are unfit for any anaesthesia and surgery.

(v) Laser Prostatectomy

This procedure is gaining great attention. The procedure is easy to perform and learn. The Nd-Yag laser has received the maximum acceptance for prostatic ablation. These laser-delivery systems include trans urethral ultrasound guided, laser-induced prostatectomy¹². Visual laser ablation of the prostate with 90-degree-firing free beam fibers¹³, and contact laser ablation of the prostate with contact fibers. Laser ablation is safe and effective. Bleeding is minimal and electrolyte imbalance due to absorption of irrigating fluid does not occur. In lateral firing ablation, the tissue gradually sloughs and patients require catheter drainage for a longer time (usually eight to ten days). Since there is no bleeding, the patient can be sent home with the catheter after 24 hours. The maximum therapeutic effect is appreciated only after six to eight weeks. In contact laser ablation adequate urinary passage is established during the procedure and this allows removal of the catheter

after 24–48 hours. In laser prostatectomy no tissue is obtained for histopathological examination and hence an unsuspected carcinoma may be missed.

(vi) Trans-urethral Needle Ablation (TUNA)

With a specially devised catheter, two needles are deployed in the prostatic tissue under vision endoscopically. Radio-frequency energy is delivered interstitially through these needles, so that the prostatic tissue temperature around the needle reaches up to 100° C. This results in coagulative necrosis and retraction of the tissue. The procedure is repeated at different sites along the prostatic urethra. Insulation at the base of the needles prevents the urethral temperature from reaching more than 42° C., thus protecting the urethral mucous. The procedure can be done under local anesthesia. It is safe but more data needs to be evaluated to determine its efficacy.

SELECTION OF TREATMENT

With various modalities of treatment available today selection of the right treatment for the particular patient is not always easy. So, age, health, degree of symptomatology, and disability are the major factors that must be taken into account. Except for few clear-cut indications for operative interference, in the majority of circumstances, the surgeon must rely on clinical judgement and patient's preference.

In patients with mild symptoms of prostatism, reassurance, adjustment in fluid intake in reducing nocturia and follow-up are preferred. In patients with moderate symptoms, alpha-blockers should be tried. Patients with moderate sized adenoma should be offered the benefit of finastetide+alpha adrenergic blocker therapy. Surgical interference is indicated in patients with evidence of obstruction but who have failed to respond to medical therapy. It is offered as the first choice in patients who have significant pathological changes due to obstruction such as bladder diverticulum, dilated upper urinary tracts, significant post-void residue, repeated infections etc. Median lobe with intravesical enlargement doesn't respond well to medical therapy. Among

the surgical procedures, TUP-P may be considered in bladder neck obstruction and fibrous prostate. Small adenomas are easily resected with insignificant mortality. TUR-P is still the gold standard of treatment for moderate and large adenomas. Very large adenomas will require open prostatectomy. Laser prostatectomy is slowly trying to get established.

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