

MANAGEMENT OF PATIENTS WITH PROSTATIC OBSTRUCTION

Review of 395 Cases

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In 1945 I reviewed a series of 214 patients with prostatic hypertrophy upon whom I had operated from January, 1943, to January, 1944.¹ The following series of 395 patients were operated upon from January, 1944, to December, 1945. This review will compare these series, especially from the standpoint of coexisting diseases, the type of surgical procedure employed, the end results, and the mortality.

In recent years marked progress has been observed in the management of patients with bladder neck obstruction. The introduction of new antibiotic agents, adequate preoperative and postoperative management, and refinements in surgical technic have been accompanied by a progressive lowering of the operative mortality and morbidity in patients suffering from urinary obstruction.

Usually the onset of obstruction is insidious. Many men of the older age group believe nocturia, diminution in the force of the urinary stream, and dribbling to be only an indication of advancing age and fail to seek medical advice until complete obstruction occurs. Occasionally a sudden attack of urinary retention may be precipitated by exposure to cold, overindulgence in alcoholic beverages, other surgical procedures requiring confinement to bed, or other factors irritating to the bladder mucosa.

Examination

A complete physical examination is essential to ascertain the general vitality of the patient. As will be observed in the following statistics, cardiovascular and renal complications comprise the major complicating diseases in these elderly men.

A careful rectal examination is also essential to determine the extent of any proposed surgical procedure. The size of the prostate may be misinterpreted upon rectal examination, as the median lobe and sub-cervical enlargements protruding into the bladder cannot be palpated. Benign hypertrophy of the prostate usually involves the median and lateral lobes, while carcinoma of the prostate more frequently arises in the posterior lobe.

The size of the prostate, as determined by rectal examination, according to Lowsley,² has nothing to do with its tendency to cause ob-

struction. As I reported previously,¹ the symptoms produced by prostatic hypertrophy are not proportional to the degree of enlargement. Thus a large gland that does not encroach on the bladder outlet produces less pronounced obstructive symptoms than those produced by a smaller gland that does encroach on the bladder outlet. Generally after rectal examination the patient voids, and a small catheter is introduced into the bladder to determine the amount of residual urine.

Catheterization, cystoscopy, or other instrumentation must be undertaken with caution in patients with prostatic obstruction. Not only may such measures precipitate an attack of acute retention, but they may provoke an exacerbation of a urinary tract infection with accompanying chills and fever. Cystoscopy is never an emergency procedure although invaluable in determining the type of hypertrophy, the condition of the bladder, and in imparting information as to indications for the proper surgical procedure.

In elderly men with long-standing obstructive symptoms I never recommend cystoscopic study prior to the investigation of renal function. Intravenous urography is utilized in all cases to elicit information concerning renal damage and function, to note whether dilatation of the ureters or hydronephrosis is present, and to detect the presence of vesical diverticula or calculi in the urinary tract. To neglect such studies may result in incipient uremia.

Diagnosis

Little difficulty is encountered in establishing an accurate diagnosis. A careful history and a careful urologic survey suffice to establish the diagnosis of prostatic obstruction.

Carcinoma of the prostate may occur simultaneously. This can usually be ruled out by rectal examination, x-ray studies for metastasis, and acid and alkaline phosphatase determinations. Prostatic abscess and calculi are usually recognized by rectal palpation and roentgenographic investigation. Chronic prostatitis may be diagnosed by examination of the expressed secretion. A stricture of the urethra is diagnosed by the passage of a catheter. Syphilis may produce the characteristic condition of the bladder found in cord lesions with accompanying residual urine. These symptoms respond well to transurethral resection of the bladder neck. The Wassermann test, spinal fluid studies, and cystometric investigations establish the diagnosis.

Treatment

Many patients with enlargement of the prostate, with negligible obstructive symptoms, and with little or no residual urine do not require surgical intervention. Conservative treatment such as sitz baths, gentle

prostatic massage, and hormonal therapy should be recommended. Prophylactic transurethral resection in such cases is unwarranted and should be condemned.

Preoperative management is influenced by the general condition of the patient, renal function, and urinary tract infection.

If blood studies reveal nitrogen retention, intermittent or continuous catheter drainage is advocated. In instances in which prolonged urethral catheter drainage seems necessary I prefer suprapubic puncture. This is attended by no operative risk and may be performed under local anesthesia. The patient is more comfortable, and urethritis and the incidence of epididymitis is minimized.

Three procedures are available for the surgical relief of prostatic obstruction: transurethral resection of the prostate, suprapubic prostatectomy, and perineal prostatectomy. No single operative procedure is suitable for all cases of prostatic hypertrophy. I believe further that 85 to 90 per cent of patients with prostatic obstruction may be completely relieved by transurethral resection, which is in reality a transurethral prostatectomy, if recurrences are to be avoided. Suprapubic prostatectomy is recommended if the gland is extremely large, or lesions on the urethra, such as false passages or multiple strictures, prevent the introduction of the resectoscope.

Perineal prostatectomy is confined to early cases of carcinoma, when the disease is localized in the gland, metastases are absent, and it is technically possible to remove completely the entire gland and seminal vesicles.

Anesthesia

In the majority of cases spinal anesthesia was employed. In some instances pentothal or a combination of pentothal and curare was employed when the medical consultant advised against the use of spinal anesthesia. The same anesthesia may be recommended for the transurethral removal of median lobes, resection of a contracted bladder neck, and excision of a small fibrous prostate.

When the patient leaves the hospital the obstructive symptoms should be completely relieved and control of urination normal. If present, pyuria may be eradicated during the postoperative period or treatment continued under the supervision of the family physician. Postoperative observation is essential, and I require the patient to return in one month for routine observation.

At Cleveland Clinic from January, 1944, to December, 1945, I operated upon 395 patients with benign prostatic hypertrophy. An analysis of the findings follow.

Age

The average age was 65.9 years. The oldest patient was 84 and the youngest 34 years of age. The latter patient had a contracted bladder neck and 310 cc. of residual urine.

General Complications

Involvement of cardiovascular system

1. Generalized arteriosclerosis	36
2. Hypertensive arteriosclerotic heart disease	58
3. Hypertensive arteriosclerotic heart disease with angina pectoris and heart block	1
4. Hypertensive arteriosclerotic heart disease with valvular disease	4
5. Hypertensive arteriosclerotic heart disease with coronary disease	8
6. Hypertensive arteriosclerotic heart disease with auricular fibrillation	4
7. Hypertensive arteriosclerotic heart disease with auricular fibrillation and coronary disease	2
8. Hypertensive arteriosclerotic heart disease with congestive failure	1
9. Arteriosclerotic heart disease 30; valvular lesions	2
10. Arteriosclerotic heart disease with coronary disease	4
11. Arteriosclerotic heart disease with congestive failure	1
12. Arteriosclerotic heart disease with heart block	1
13. Arteriosclerotic heart disease with angina pectoris	1
14. Coronary disease	3
15. Hypertensive heart disease	2
16. Essential hypertension	6
17. Hypertensive heart disease with congestive failure	1
18. Rheumatic heart disease	2
19. Arteriosclerotic hypertension	59
Total	226

Other Complications

1. Diabetes mellitus	18
2. Osteoarthritis	32
3. Hypertrophic arthritis	24
4. Vesical calculi	25
5. Hernia-inguinal, unilateral	40

6. Hernia-inguinal, bilateral	19
7. Secondary anemia	9
8. Hydronephrosis, unilateral	9
9. Hydronephrosis, bilateral	8
10. Urethral stricture	10
11. Emphysema	3
12. Parkinson's disease	3
13. Duodenal ulcer	2
14. Gastric ulcer	2
15. Pyelonephritis	4
16. Pernicious anemia	2
17. Vesical diverticulum	16
18. Hemorrhoids	13
19. Vesical papillomata	3
20. Carcinoma of bladder	4
21. Carcinoma of cecum	1
22. Carcinoma of rectum	3
23. Previous nephrectomy	2
24. Nonfunctioning kidney	3
25. Renal calculus	3
26. Ureteral calculus	2
27. Prostatic calculi	2
28. Chronic epididymitis	4
29. Thrombophlebitis	9

In this series, as in those reported in 1945, heart disease and hypertension were the major complicating factors. For this reason every patient was examined by the cardiologist prior to operation.

Seventy-two patients in this series of 395 had complete urinary retention. The residual urine averaged 273 cc., the largest residue being 1350 cc.

I prefer to avoid sudden decompression when the bladder has been overdistended for a long period of time. Rather than resorting to prolonged urethral catheter drainage, a suprapubic puncture was performed on 36 patients. An indwelling catheter was used in 274 patients and intermittent catheter drainage in 8. Suprapubic cystotomy was performed in 12, suprapubic cystolithotomy and first stage prostatectomy in 7.

Operations performed:

1. Suprapubic prostatectomy
 - a. One-stage operation44
 - b. Two-stage operation15

2. Suprapubic prostatectomy and cystolithotomy.....	6
3. Suprapubic prostatectomy following transurethral resection.....	2
4. First stage prostatectomy	3
5. Transurethral resection	
a. One-stage operation	263
b. Transurethral resection and litholapaxy.....	10
c. Transurethral resection and fulguration of bladder tumor	4
Total.....	395

In this series the surgical procedure instituted was approximately the same as the operative procedures employed in the previous series of 214 cases.

1. Suprapubic prostatectomy	
a. One-stage operation	10
b. Two-stage operation	6
2. Perineal prostatectomy	1
3. Transurethral resection	
a. One-stage operation	183
b. Two-stage operation	14
Total.....	214 cases

The amount of tissue resected is governed by the size and type of the prostatic hypertrophy. As a general rule, for contracted bladder neck, median lobe hypertrophy, and transurethral resection for bladder conditions associated with syphilis and the cord lesions accompanied by incomplete emptying of the bladder, smaller amounts of tissue are removed. An average of 22.9 Gm. was removed by transurethral resections, and the largest amount removed was 98 Gm. An average of 64.1 Gm. was removed by suprapubic prostatectomy. The largest gland weighed 197 Gm. Sixteen patients had had a transurethral resection performed previously. I had operated on 2 eight years ago, and 14 had had a transurethral resection performed elsewhere.

Postoperative bleeding occurred in 22 cases. In 1 patient bleeding occurred on the day of operation but stopped upon introducing the resectoscope and fulgurating the bleeding points. In 21 patients some bleeding occurred from the second to the twenty-sixth day and was easily controlled by the introduction of an indwelling catheter. A blood transfusion was administered before, during, or after operation in 63 cases.

The postoperative complications were:

1. Bronchopneumonia	1
2. Pulmonary embolus	2
3. Extravasation of urine	1
4. Pyelonephritis exacerbation	12
5. Thrombophlebitis	6
6. Cardiac arrhythmia	2
7. Congestive failure	1
8. Pleurisy	1
9. Acute urinary tract infection (exacerbation).....	18
10. Shock	1
11. Toxic hepatitis.....	1

Mortality and Morbidity

Nine patients died following operation, a mortality of 2.02 per cent. The remainder were discharged from the hospital in satisfactory condition.

Cause of Death

1. Coronary occlusion.....2	Terminal pneumonia	1
2. Septicemia }	Uremia	2
Endocarditis }	Cerebral accident	1
Pneumonia }	Pulmonary embolus	1
3. Pulmonary atelectasis1		

Temporary incontinence occurred in 2 cases but cleared up within three weeks.

Conclusions

1. Medical consultation is essential to maintain a low operative mortality and should be directed chiefly toward the cardiovascular system.

2. Eighty-five to 90 per cent of patients with prostatic obstruction may be completely relieved of symptoms by transurethral resection.

3. In a series of 214 patients operated upon from January, 1943, to January, 1944, for prostatic obstruction the operative mortality was 2.52 per cent. In a similar series from January, 1945, to December, 1946, of 395 cases the mortality was 2.02 per cent, a combined mortality for 609 cases of 2.28 per cent.

References

- Higgins, C. C.: Management of patients with prostatic hypertrophy; review of 214 cases. *Ohio State M. J.* **41**:618-620 (July) 1945.
- Lowsley, O. S., and Kirwin, T. J.: *Clinical Urology*, ed. 2 (Chicago: The Year Book Publishers, 1944).