

RADICAL PERINEAL PROSTATECTOMY FOR EARLY CANCER

FOLLOW-UP STUDY OF ONE HUNDRED EIGHT PERSONAL CASES

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Accurate follow-up studies are essential in the evaluation of the ultimate results of any surgical procedure. The subsequent course of every patient subjected to a particular operation should be followed as accurately as possible by means of check-up examinations at regular intervals, if possible, or, if this is not practical, regular reports from the patient's personal physician and the results of post-mortem examinations in such patients who later die. It is always impossible to fulfill all these ideals, but in any event every attempt should be made at least to approximate them as accurately as possible.

In no field of surgery is an accurate knowledge of the postoperative course of patients subjected to operative procedures more valuable than in the field of malignant disease. The well-known biological variation in the growth of neoplasms and the vagaries of host resistance offer many difficulties in understanding the life history of these diseases, and many blind spots indeed are present in our knowledge to date. Definite progress in our understanding of these diseases and an accurate evaluation of the ultimate results of surgical procedures can be attained only by studies, as thorough as possible, of the subsequent course of patients subjected to operation. In these studies attempts should be made to correlate the life of the individual after surgical procedures with the type of tumor and its biological characteristics, although we know little about this latter phase.

It is well recognized today, after many years of doubt on the part of some surgeons, that in cancer of the prostate, if the clinical findings suggest that complete eradication of the neoplasm can be accomplished by a surgical operation, such a procedure should be carried out. Unfortunately, the progress of prostatic carcinoma is a slow and insidious one, as is well known, and symptoms from a neoplasm usually do not occur until the growth has progressed beyond the capsule of the gland, making a complete eradication of the disease impossible. However, the attention of the medical profession recently has been directed to early detection of this disease. In the early stages, of course, the diagnosis depends entirely on rectal palpation and on the detection of a nodule or an area of third degree induration. If other factors which might lead to such a finding, such as prostatic calculi, infarction, or an area of chronic prostatitis, can be definitely eliminated, then active steps to insure the diagnosis and to complete eradication of the neoplasm should be instituted.

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The course of patients who underwent radical operations for prostatic carcinoma was followed for at least 10 years in 108 cases. In this series there was no operative mortality, but the operation is not free from danger, and there were 10 cases of lasting post-operative incontinence. Of 15 patients who underwent radical perineal prostatectomy before 1947, 7 were living and well 10 years later. Their expectancy of life after operation was therefore little different from that of normal men at age 70.

Methods for Detection of Prostatic Carcinoma

In the literature it is usually stated that only 5% of prostatic carcinomas are recognized in such an early stage that the radical operation is technically feasible. However, in a series of patients studied at the Brady Urological Institute over a two-year period, it was found that 22% of all those given a diagnosis of prostatic cancer were found suitable for the radical operation.¹ This higher figure is undoubtedly due to the fact that many cases of suspected nodules in the prostate have been referred for the express purpose of radical extirpation. In Kimbrough's statistics at the Walter Reed Hospital, this figure is approximately 50%, which can be explained by the fact that all Army personnel over the age of 40 are annually subjected to a rectal examination.²

Numerous studies for the evaluation of the Papanicolaou stain of expressed prostatic secretion have been reported, but the consensus of findings would indicate that on account of the difficulties of interpretation, this procedure is of no value. In addition, the active manipulation of a suspected malignant area, as is necessary to obtain secretion for examination, would certainly be a questionable procedure, as numerous experiments on animal tumors in the past have proved that by massage of these experimental tumors activity in metastatic deposits is greatly accelerated.³

Examination of specimens obtained by transurethral resection is often of conclusive value, but it must be remembered that in early cases of prostatic cancer the lesion is often located in the posterior capsule, and unless very deep cuts of the tissue have been made the presence of the lesion would be missed. Perineal biopsy, usually with the Silverman needle, has many advocates, but here again the small size of the specimen obtained for microscopic examination and the possibility that the particular

area which is under suspicion might be missed by the needle counts against the accuracy of this procedure. In the recent literature several reports of implantation of tumor tissue after needle biopsy in various organs have been recorded, and Clarke and associates⁴ have recorded a case in which tumor cells were seeded along the needle tract in the perineum.

Transrectal biopsy, in which a sizable piece of tissue can be obtained from any suspected area in the posterior capsule of the prostate by exposure through an incision in the rectal wall, has been recently proposed.⁵ If such a procedure is solely for diagnostic purposes, accurate information as to the nature of the suspected lesion should be obtained by this method; but, if the diagnostic procedure is to be followed by the radical operation, violation of the integrity of the rectal wall should certainly be severely criticized on account of the fact that the radical operation might easily lead to a rectourethral fistula through this weakened area.

It is our belief that the most accurate information can be obtained by perineal exposure of the gland and excision of the suspected area in the posterior capsule. Frozen-section examination of the excised tissue then gives us the most accurate method for the diagnosis of prostatic neoplasm. At the same time it has been our custom to obtain tissue from the opposite side of the capsule, and examination of this tissue is important in evaluating the extension of the neoplasm, should it be present. When a suspected nodule is present in the prostatic capsule, it is our belief that the prostate should be exposed perineally, frozen section biopsy specimen obtained and, if results are positive for carcinoma, the radical operation should be forthwith carried out. Culp⁶ has clearly stated the problem as follows:

It has been axiomatic that precise diagnosis is a prerequisite of rational therapeutics. Many ingenious techniques have been devised for histologic study of palpable nodules in the prostate, but only perineal exposure of the gland affords direct access to the entire posterior lamella. Biopsy via this route, therefore, should have the greatest potential for indicating unequivocally cases suitable for the radical operation. The combination of frozen section examination and perineal prostatectomy of appropriate type has no parallel in other diagnostic or therapeutic schemes.

The patient is, of course, informed of the procedure to be undertaken and also acquainted with the fact that if the radical operation is carried out sex function will in all probability be abolished. However, before the radical operation should be considered, certain criteria, which have been emphasized before,⁷ should be fulfilled. On palpation the lesion should be limited, as far as one can determine, to the gland itself, and no extension through the capsule should be present. There should be no evident infiltration of the base of the bladder, and the seminal vesicles and the gland should be freely movable. Of course, there should be no evidence, either clinically or roentgenologically, of metastasis, and the serum acid phosphatase level should be normal; but, in our opinion, the most important

point lies in the fact that the patient should be in excellent general condition and have a good life expectancy. It is my belief that radical operations carried out on early lesions in patients above the age of 70 are rarely justifiable, although dogmatic rules cannot be laid down on this point, because of the well-known fact that growth of prostatic carcinoma in the aged is a slow process. Every urologist is, of course, familiar with patients not subjected to operation who have lived for five or more years.

Postoperative Results—from the Literature

There are few studies of late postoperative results of radical operations for early carcinoma of the prostate in the literature. As Jewett⁸ has emphasized, 5-year follow-up studies are of little value on account of the well-known slow growth of the usual prostatic neoplasm, so that to determine accurately the ultimate results of radical procedures, a 10-year follow-up gives us the most important information that we can obtain as to the ultimate evaluation of the particular surgical procedure instituted. It has been only in the last decade that the retropubic radical operation has been used, so that no 10-year follow-up studies on this procedure are as yet available.

Flocks' studies will be awaited by urologists with great anticipation. He combines radical retropubic prostatectomy with the injection of radioactive gold along the lymph channels and the nodes which drain the prostate gland. In addition, he has been treating patients with inoperable cancer by injection of radioactive gold into the growth itself and into the lymph channels and nodes. When a 10-year evaluation of these studies is available, it may be that valuable information will be obtained as to the results of this therapy.

Jewett has analyzed the results of 401 radical operations for the eradication of early carcinoma of the prostate which have been carried out at the Johns Hopkins Hospital. The technique in all cases has been that proposed by Young⁹ in 1904, with a few minor modifications, principally in the placing of the sutures which anastomose the stump of the urethra to the defect in the bladder which occurs after the radical operation. He has emphasized the fact that when the neoplasm is microscopically contained within the prostatic capsule the prognosis as to longevity is far better than when examination of the operative specimen shows extension through the capsule or into the seminal vesicles. The 10-year survival rate of these patients with a favorable prognosis, that is, no extension into the capsule, is approximately 50%, which closely approximates the expected survival rate for men of the same age group in the general population.

Turner and Belt¹⁰ have reported a series of 274 patients subjected to radical perineal prostatectomy. In the pathological specimens of 39 of these patients, no evidence of malignancy could be found. The mortality in this series was 3.9%. Sixty of the patients subjected to operation were over the age

of 70 and 15 over the age of 80. The 10-year survival rate of these patients was 47%, which is approximately the same as that found in Jewett's studies.

Barnes¹¹ has made a very valuable contribution in the study of palliative treatment of early carcinoma of the prostate. Thirty-one patients with

TABLE 1.—Analysis of Results, on Yearly Basis, in 108 Patients Who Had Radical Perineal Prostatectomy for Cancer

Year of Operation	Living, No.		Died, No.	
	No Recurrence	Recurrence	Recurrence	Other Causes
1957.....	8	2	2	3
1956.....	3	3	3	5
1955.....	3	3	4	1
1954.....	0	2	3	1
1953.....	4	..	2	1
1952.....	4	3	2	2
1951.....	6	2	2	1
1950.....	5	2	2	2
1949.....	3	1	..	..
1948.....	1	..	1	..
1947.....	..	..	1	1
1946.....	3	1	1	..
1945.....	..	2	..	..
1944.....	1	1	..	..
1943.....	2	..	1	..
Total*.....	43	22	24	17

* Two of the 108 patients showed no evidence of carcinoma at operation.

early carcinoma of the gland were considered to be favorable for the radical operation. These patients were treated with estrogens, and a 5-year survival rate of 53% was noted (which is very close to the 5-year survival rate of patients subjected to the radical operation); but his 10-year survival rate was 22%. This series gives us an excellent study of the comparative results of estrogen therapy and radical perineal prostatectomy in early cases of prostatic cancer.

Analysis of Results in Present Study

In the hope that a study of a personal series of patients with radical perineal prostatectomy for early cancer of the prostate would add additional information, an analysis of 108 cases of my own has been carried out. The evaluation of the ultimate results has been carried out by two members of the house staff of the Brady Urological Institute in the hope that the factor of optimism, which is so liable to be present in the presentation of any personal series, might be excluded.

A total of 108 cases, with sufficient follow-up, have been analyzed. There has been no operative mortality in this series. Forty-three patients are living and well without known recurrence or metastases, 22 are living with recurrence and/or metastases, 24 have died with recurrence and/or metastases, and 17 have died from other causes. In two cases examination of the pathological specimen showed no evidence of carcinoma.

The operations on these patients were carried out over 10 years ago, before the practice of obtaining frozen section biopsy specimens in all cases was instituted. In one case the result of frozen section biopsy was reported negative for carcinoma, but when the permanent sections were studied evidences of malignant disease were demonstrated five days after the perineal exposure for biopsy. The wound

was then reopened and the radical operation carried out without incident. This patient has remained well to date, eight years after the operation.

Tables 1 and 2 show an analysis of the series on a yearly basis. It will be noted that 14 patients operated on in 1953 through 1957 died with recurrence and/or metastases. This high mortality probably means that in these particular cases the growth was biologically very active or the host resistance lowered. After the first 5 years the incidence of death from the disease progressively diminished, and if a patient has survived 10 years his chances of death from carcinoma are minimal.

Of the 40 patients operated on in the period 1948-1952, 19 (approximately 50%) are living with no known recurrence or metastases. These are patients who have survived five years or more since the operation, and, of course, not included in this series are the patients who died in the first five years after operation. As has been mentioned above, those patients who have harbored a biologically active neoplasm will usually die within the first few years.

Fifteen patients were subjected to radical perineal prostatectomy before 1947. Seven (about 50%) of these are living and well to date (one 10 years, three 12 years, one 14 years, and two 15 years) with no clinical evidence of recurrence or metastases. Four are living with recurrence and/or metastases, three have died with recurrence and/or metastases, and one has died of other causes. These statistics, it will be seen, are in close agreement with the 10-year survival statistics of Jewett and of Belt.

Comment

Some physicians, unfamiliar with the radical operation, undoubtedly have a false concept of its dangers. In this series there was no incidence of rectal injury or of rectourethral fistula; there were 10 instances of incontinence, 2 of extravasation after postoperative instrumentation, 1 of peritonitis necessitating laparotomy, 2 of suprapubic cystotomy for postoperative obstruction, and 1 of transurethral resection for postoperative stricture. Blood loss at the time of operation is usually less than during a

TABLE 2.—Summary, for Five-Year Intervals, of Data in Table 1

Year of Operation	Living* No.		Died,* No.		Total
	No Recurrence	Recurrence	Recurrence	Other Causes	
1953-1957.....	18	10	14	11	53
1948-1952.....	19	9†	7	5	40
1943-1947.....	7†	4	3	1	15
Total.....	44	23	24	17	108

* As of Dec. 31, 1957.

† Of the two patients showing no evidence of carcinoma at operation, one now shows evidence and one no evidence.

perineal prostatectomy for benign adenoma. This is due to the fact that when the lateral ligaments have been tied, the source of serious bleeding is controlled, and serious bleeding from the area in the bladder wall is always controlled by the sutures which are used to complete the anastomosis and to complete the defect in the bladder wall.

There have been no instances of serious operative or postoperative hemorrhage, and the irrigation through the catheter when the operation has been completed has usually been quite clear. As has been emphasized before, patients subjected to the radical operation are usually in good physical condition, which plays no small part in the usual simple operative and postoperative course, whereas many patients whose general health has been impaired by various causes are subjected to a perineal prostatectomy for benign hypertrophy. In fact, it has been our impression that perineal prostatectomy is the safest operation for poor risk patients with very large glands, so that in this particular group, usually well-advanced in years, postoperative complications are far more frequent than in the patients subjected to the radical operation.

The Foley catheter, which is introduced at the time of operation, is allowed to remain in the bladder for approximately 10 days, at which time the perineal incision is usually completely healed. Accidental removal of the catheter during this time is especially dangerous. In two patients the catheter was extruded as a result of accidental deflation of the bag. In attempts to reintroduce the catheter, extravasation occurred in two cases, in one of which peritonitis, necessitating laparotomy, developed. Therefore, to be sure that the catheter remains for the necessary time, it has been our custom not to rely entirely on the bag but to pass a small silk suture through the glans and tie it around the catheter. This gives an additional safeguard to prevent accidental removal. After the catheter had been removed, in two patients, postoperative retention developed. All efforts to reintroduce the catheter failed. In these patients suprapubic cystostomy was necessary, and the catheter was easily replaced, with no other complications.

It has been my custom, in completing the anastomosis of the stump of the urethra to the neck of the bladder, to use a modification of the Vest suture. In this method the ends of the suture are passed out through the perineal muscles and fat and tied there so that the stump of the urethra is brought up to the neck of the bladder snugly and no knots are tied through the urethral stump, which contains the muscles of the external sphincter. In my opinion this simple suture has been a potent factor in reducing our incidence of incontinence.

In this series we have defined as incontinent any individual who is forced to wear some form of apparatus. Some degree of incontinence always persists for varying intervals of time after the radical operation. In most cases, however, the control has been regained before the patient is discharged from the hospital, but in a few cases several weeks or even months elapse before the sphincter tone returns to normal. In 10 patients in this series, however, the necessity for wearing some protective device persisted for one year, and these patients were classified as being totally incontinent. Constriction at the site of the operation may occur sometime dur-

ing the postoperative course. This is usually manifested by difficult urination, a thin, weak stream, and dribbling. If these signs become apparent, dilatation of the operative site, carefully carried out, preferably with filiforms and followers, will often result not only in great improvement of the urinary stream but in disappearance of the incontinence.

During the first two or three months after operation, it has been my custom to give small doses of estrogens. This treatment is instituted entirely on an empirical basis in the belief that, if neoplastic cells remain behind after the operation, estrogen therapy might result in their necrosis. I have felt that there is no necessity for continuing estrogen therapy after a brief interval of time. When recurrence and/or metastasis is evident, estrogen therapy is commenced. When this treatment is no longer effective, a bilateral orchiectomy is carried out, and in the later stages of widespread disease cortisone therapy is often very effective in prolonging life and relieving pain.

Summary

The postoperative course and follow-up studies on 108 patients subjected to radical perineal prostatectomy have been analyzed. There has been no operative mortality in this series. Perineal exposure and frozen section biopsy were found to be superior to other methods of early diagnosis. The 10-year survival rate in this series is 47%, which closely approximates the life expectancy in normal individuals in this age group.

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Drs. John A. C. Colston Jr. and Frank D. Hill abstracted the histories and follow-up records of the patients in this series.

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