

treatment is, on an average, necessary. If the patient and the physician have the perseverance to carry through the treatment, a cure is certain, subject to two conditions: (1) that the source of infection is removed, and (2) that the tuberculosis is confined to the mucous membrane and has not spread through the walls of the bladder. It is only subject to these conditions that the adoption of this treatment can be at all recommended. The first patient treated in this way, and in whose case the tuberculosis was of an unusually vicious nature and extending over the whole of the bladder, has now been well for five years.

I have of late gone still further in my attempts to save apparently hopeless patients, as, for instance, in the case I have already mentioned while speaking about the diagnosis, in which the double lumbar incision showed me that the tuberculosis had proceeded from the completely destroyed left kidney, traveled through the ureter to the bladder, the mucous membrane of which was completely ulcerated, and from there had again ascended to the right ureter and there produced stricture and distention. In this case I performed extirpation of the left kidney and lumbar ureterostomy on the right side; by doing this I prevented the tuberculosis from ascending to the other kidney, which was still sound. I kept the fistula open until I had cured the bladder tuberculosis by phenol treatment and dilated the ureter stricture. The passage through the ureter was then reestablished, and the patient is still, six years after the operation, living and free from pains of the bladder, the right kidney officiating satisfactorily.

As a palliative operation I use and strongly recommend ureterostomy in cases of double-sided ascending kidney tuberculosis in which stricture with distention of the ureter and pelvis causes great pain. In such cases we not only relieve the patient completely from pain, but, by establishing a free outlet, arrest the upward progress of the tuberculosis, and prolong the patient's life. Neither is it probably altogether out of the question that, at an early stage, an ascending kidney tuberculosis can be cured in this manner. Formerly I used a catheter or drain introduced into and fixed in the ureter, which through the bandaging was carried to a concave-convex bottle which was tied to the lumbar region by a belt, but the frequent escape of the urine by the side of the catheter and the drawbacks resulting therefrom led me to construct a bandage consisting of a small silver capsule fitted with a rubber ring, which, by means of an elastic girdle round the abdomen, is kept tight round the ureter fistula, and from which a small silver tube through a drain leads the urine into a urinal.

I have already mentioned that the group of cases in which tuberculosis is primary in the prostate and from there directly attacks the urogenital organs invading the urethra and the bladder gives an exceedingly bad prognosis, on account of extravasation of urine and the formation of abscess and fistula in the connective tissues of the pelvis. Yet in some cases it is possible to obtain partly curative, partly palliative, results through operative methods.

Where tuberculosis of the prostate has as yet only attacked the urethra, while the bladder is sound, I perform suprapubic cystostomy with insertion of a Pezzer catheter and then extirpate the prostate, removing in connection with the latter the diseased portion of the urethra.

As a palliative measure, I have seen excellent results from suprapubic cystostomy in cases in which a radical operation has no longer been possible.

## THE USE OF TUBERCULIN IN THE TREATMENT OF SURGICAL UROGENITAL TUBERCULOSIS \*

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My paper is not a didactic or an authoritative scientific exposition of the subject from the point of view of the tuberculin therapist but rather a synopsis of personal experience and opinion from the point of view of the genito-urinary surgeon.

It is sometimes stated that the modern surgeon is so filled with scientific enthusiasm that he loses sight of the human side of his work and only thinks of his patients as cases. I do not believe this is true except in very exceptional instances. I want to emphasize this fact because in tuberculosis, to an extent that is equaled in scarcely any other disease, the social, economic and human factors are of very great importance. This is so because tuberculous patients are, as a rule, young persons who are, or should be, doing each his or her share of the active work of the world. Also because of the often wide-spread destruction of tissues or organs and yet, unlike in cancer, the disease is not necessarily fatal even though total extirpation be proved impossible.

There have recently come to my notice two excellent papers; one by Dr. Paul Thorndike of Boston on renal tuberculosis, and one by Dr. J. D. Barney of Boston on tubercle of the epididymis. Both of these papers are entirely from the point of view of operative surgery. In both the use of tuberculin is mentioned. Dr. Thorndike believes renal tuberculosis should never be temporized with and Dr. Barney only briefly mentions any other than operative treatment. In every other way I entirely agree with the sound, conservative opinions expressed in these papers. It seems ridiculous to believe that tuberculin therapy can heal advanced lesions with considerable breaking down of tissue, nor can it ever be expected to absorb considerable collections of pus. Where there is an abscess or much necrotic material surgical intervention is essential. Where a kidney is a mere sac full of pus it would be a foolish waste of time to do anything but remove it. Where the epididymis or seminal vesicle or prostate is a broken-down mass of purulent necrotic material the knife is the most conservative remedy. Any other course puts the patient's life in jeopardy and is expecting too much resistance to infection of the general organism. On the other hand, there are frequent conditions in which either all the operative surgery has been done which it seems wise to do or in which, for other reasons, operation should be either postponed for a time or is contra-indicated altogether. Perhaps I can best illustrate this by specific instances.

CASE 1.—R. B., male, aged 20, in February, 1911, began to have frequency of micturition while at college in Berkeley, Cal. The patient was examined by Dr. E. McConnell, of San Francisco, who found evidence of tuberculosis of the right kidney and bladder. Bacilli were found in the urine. In May, 1911, the patient consulted me in Portland and I began treatment with tuberculin. Immediate and very marked improvement resulted. Koch's Old Tuberculin, as put up by Mulford, serial dilution No. 1, was the preparation used. Very minute doses were administered without any attempt to reach the limit of tolerance. In fact, every effort was directed to give so small a dose that there should never be any specific

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reaction. I believe this to be of great importance. In August, 1911, the patient returned to college. As it was important for him not to have his course of study interrupted, this was the justification for not at once taking out the offending kidney. Also we were encouraged to continue the tuberculin on account of the extremely favorable result of a few weeks' treatment in the spring and early summer of 1911. On his return to Berkeley he consulted a specialist in pulmonary tuberculosis. I believe that, in the light of later developments in the case, this was a mistake. The patient, however, seemed to have great faith in this specialist and for a time did fairly well. Then the specialist tried the plan of giving him tuberculin in increasing doses up to the limit of tolerance. Occasionally this limit was passed and the boy had fever, chills and other evidences of an overdose. However this method may succeed in pulmonary cases I do not know, but I am convinced it will always make surgical patients worse. I believe the safest guide, as I have repeatedly said before in discussing this subject, is the irritability of the bladder. An overdose is shown by increased pain, frequency and bladder irritability far sooner than the point of the production of constitutional symptoms. Of course, bladder symptoms are not invariably present in renal cases. It soon became evident that the boy was getting worse. In November, 1911, he returned to Portland and I removed the right kidney. Since then his general health has gradually improved. Just after Christmas, 1911, he went to visit his relatives and I have not seen him since. He writes that his condition is good.

I report this case not as evidence of the triumph of the use of tuberculin but because I believe, though I may be mistaken, that the unwise administration of tuberculin by the method of dosage almost or quite up to the limit of tolerance actually precipitated an early nephrectomy which might have been deferred until a more convenient time or possibly avoided altogether.

There is another class of cases which are very troublesome to both physician and patient. In women we frequently see cases of painful and frequent micturition. In those cases in which gonorrhea can be absolutely excluded and in which there is no colon bacillus infection we must seriously consider tuberculosis. We must also exclude traumatism of the urethra from excessive coitus. Modern investigation has led to the conviction that primary bladder tuberculosis is very rare. Many of these cases are undoubtedly dependent on renal tuberculosis, although there are apparently a few exceptions.

CASE 2.—In April, 1910, Miss S., aged 30, single, school teacher, consulted me. She said that for years she had had attacks of painful frequency of urination. Latterly they had been of longer duration and much more troublesome. Examination showed a normal urethra except for some injection and great sensitiveness at the inner meatus and this seemed continuous with a neck of the bladder irritation. There was absolutely no evidence of gonorrhea in the past or present history. Cystoscopy showed a normal bladder except for the injection of the vessels at the bladder neck. The ureter orifices were normal. Ureter catheterization brought normal urine from both kidneys. There were no subjective symptoms of kidney disease. The bladder urine, on the contrary, contained a slight amount of pus and tuberculosis was suspected but the bacilli could not be demonstrated. The application of nitrate of silver and dilatation of the urethra proved effective in giving relief for a time. This patient's work is exacting. She teaches the youngest children in a large public school. Her urinary frequency increased daily from Monday to Friday. The Saturday-Sunday holiday gave a chance for slight betterment of symptoms. She is absolutely dependent on her work. She is unfitted for other employment. It is therefore imperative that she continue her work. As I said, no evidence has been brought forward of kidney disease. In January, 1911, tubercle bacilli were demonstrated in the urine. Tuberculin treatment was begun and persisted in since. There has been marked benefit apparently attributable to

this treatment. She is very susceptible to an overdose and only 0.005 c.c. of Old Tuberculin No. 1 can be given without bladder reaction. This means, in my opinion, delay. The good results of tuberculin are undoubtedly more quickly apparent in a patient who can take a somewhat larger dose than this. In the course of time, however, her improvement has been quite marked. In what way could operative surgery have been of benefit in this case? Possibly, as Dr. Thorndike says in his monograph above referred to, the condition will remain about the same for years and later a renal disease will show itself and eventually nephrectomy will have to be done. Time alone will tell.

CASE 3.—I have previously reported the case of a nurse with a very extensive generalized tuberculosis of the abdominal viscera including the bladder and intestines. After two years treatment with tuberculin (Koch's Old Tuberculin) in very small doses she entirely recovered and now, four years after beginning treatment, she is well, back at her work and showing no discoverable evidence of disease.

CASE 4.—The patient, with tuberculosis of the genital tract, was first seen in 1908. At that time he showed very advanced disease and was operated on to eradicate as much disease as possible. Afterwards he was treated for a few weeks with tuberculin. He reported to me in February, 1912. He was apparently perfectly well. There was no evidence of any disease. He felt strong and well and had gained weight.

Another class of cases are those with bilateral renal disease of an advanced type or those showing pulmonary infection in addition to the urinary tuberculosis. These cases are hopeless. Neither operation nor tuberculin nor a combination of the two will cure. If any such patient gets well it is in spite of and not because of treatment. I have never seen such a patient recover. Sometimes one will seem to do well for a time but eventually, in my experience, some fatal lesion develops.

I do not think treatment of any case, in any stage, by tuberculin, is as satisfactory as one could wish it to be. It is just about on a par with bacterin treatment of any other condition. Eventually someone will discover a better method but in the meantime a great deal may be accomplished by using the various preparations of tuberculin. I have tried to show that they are mainly aids to surgical or other treatment and that, even in competent hands, they may be very disappointing. If tuberculins are used without good judgment as to dosage much harm can be done; in fact, often irreparable harm. The exact preparation chosen I believe largely a personal matter. One surgeon will get good results with C. T., another with B. E., and still another with some other preparation. It depends on which the surgeon is most used to working with, because, at all times, in every case, it is necessary to be cautious, patient and watchful and to be guided by the results of personal experience. I have tried the opsonic index as a guide but believe that it merely introduces another element of uncertainty and error without rendering compensating advantages. The symptoms of the patient, carefully observed and properly interpreted, are guide enough. There are almost as many ways of handling tuberculin as there are physicians who use it. It would waste your time if I should tell you any of my tricks of technic because, although they suit me, your own doubtless fit you better and accomplish the same result in the end.

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#### ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. ROVSING AND WHITESIDE

DR. WILLIAM T. BELFIELD, Chicago: At a clinic given to the American Urological Association in Chicago, in September, 1911, I presented six cases of genital tuberculosis in the male treated with tuberculin, as instances of the experience which

during the past six years has convinced me that in genital tuberculosis the knife has no place, except to evacuate débris. Following is a report of one of the six cases I showed at that time:

A man, aged 27, had had one testis removed for tuberculosis. The remaining epididymis was three times as large as the testis; the urine was thick, containing pus, blood and tubercle bacilli, and he urinated every half hour day and night. He had lost 18 or 20 pounds in weight. The advice which he had received from excellent surgeons was to have the remaining testicle, the prostate and the seminal vesicles removed. He received simply tuberculin as treatment, being unable even to secure the benefit of outdoor life. When I showed him to the American Urological Association a year later the man was apparently as well as any who inspected him; the urine clear, the fistulas had healed and his weight had increased. The other cases were not so advanced, but the effects of treatment were equally good. These are illustrations of the experience which has convinced me that the knife has no place in the treatment of genital tuberculosis in the male, except for the removal of débris. I would not, with my present experience, substitute tuberculin for the knife in the treatment of tuberculous kidney.

DR. HUGH H. YOUNG, Baltimore: Dr. Rovsing's method of treating the ureter is somewhat unique. I would like to ask whether he treats the ureter internally at all after the operation, whether it is necessary to treat the ureter while treating the bladder, and whether he attempts to have the fluid from that ureter come out through the wound rather than through the bladder while he is treating the bladder with the phenol (carbolic acid) solution. It seems to me that after excision of a tuberculous epididymis it is extremely important to bring the vas out through the groin, to inject it with phenol or iodoform, and to leave it to drain as long as possible. We have followed Dr. Rovsing's work in regard to the phenol treatment and have not obtained the results he has; I think this is because we have not persisted and done it as frequently as he has. We are perhaps frightened by the pain caused the patient. I do not believe I can report any remarkable results in renal tuberculosis. Certainly in other forms of genito-urinary tuberculosis, particularly if localized, we may sometimes get brilliant results.

DR. GUY L. HUNTER, Baltimore: If we could get the profession at large to appreciate that, if there are a few leukocytes in the urine of a patient with bladder symptoms, and no culture can be grown from the urine, we can almost safely assume that that is a case of tuberculous kidney, it would go a long way toward simplifying the treatment of this disease.

There are a few cases in which there is thickening of both ureters, and with care and patience, we can usually determine which of the ureters is actually tuberculous and which is suffering from interstitial thickening from absorption upward from the bladder. I have had three cases in which I could not catheterize the supposedly good side because of this interstitial ureteritis. I was fortunate enough, however, to be able to catheterize the bad side, and by washing out the bladder thoroughly and collecting the urine I got a fairly good idea of what the supposedly good side was doing, operated in spite of this thickening at the lower end of the ureter, and in each of the cases had a perfect healing of the ureteritis and a disappearance of the cystitis.

DR. THORKILD ROVSING, Copenhagen: I ought to have said in my paper that I treat the ureter very often by injecting phenol solution through the ureter. In most cases it is astonishing to see how it closes up without any treatment, the walls growing together and the tuberculosis healing with building of fibrous tissue.

I keep the ureter open until the bladder is cured to save the patient the pain involved in voiding urine. The urine would irritate, and it is an enormous relief for the patient to be free from that until the bladder is healed. Therefore, I recommend in hopeless cases in which the patient has dreadful pain from the ulcerations in the bladder a ureterostomy, because it does away with all the pain. There is no more need to pass the water through the bladder, and therefore there are no more pains.

## DECAPSULATION OF THE KIDNEY\*

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During the past few years a great number of decapsulating operations have been performed on the kidneys for the relief of diseases of these organs. The limited resources of medical treatment have called the attention of surgeons to these organs in a special way and have led to surgical procedures which have very little scientific foundation for the undertaking. It therefore follows that the merits of the operation can be determined only by the study of a large number of cases and not by any process of abstract reasoning.

It would not be fair to say that the work has been altogether empirical. The pathologic considerations which have led to decapsulation and incision of the capsule and of the kidney itself have rested on the assumption that freeing the capsule or incising the kidney has a modifying influence on the circulation of the organ and thus brings about an improved nutritive process leading to an ultimate restoration of the kidney to the normal or to relief of the organ from a pressure to the delicate kidney structures whereby its function is resumed and recovery follows, or in less severe and in more chronic conditions the structure of the kidney is saved from damage. It may easily be assumed that considerations like these have influenced surgeons in undertaking decapsulating or decompression operations.

Reginald Harrison of London appears to have been the first to undertake to relieve the intracapsular pressure of the kidneys by a simple incision in albuminuria, hematuria, anuria, pains, etc., of the inflamed kidneys. This was in 1878. His favorable results induced other clinicians to attempt to improve the disturbed functions of the kidneys, improving urination by nephropexy, loosening adhesions, and by ureteroplastic operations.

Le Dentu in 1881 performed a splitting of the capsule of the kidneys to allow the parenchyma of the kidney more expansion.

Following the deliberate clinical work of Harrison and of Le Dentu, other workers undertook to show experimentally what changes actually occurred so far as the kidneys themselves were concerned. N. H. Gifford,<sup>1</sup> in experimental work on decapsulation of normal rabbits and dogs, of dogs with induced nephritis and of dogs with infarcted kidneys but with additional work thrown on them, found the following conditions: In all of his cases the entire thickness of capsule over two-thirds of surface, a certain amount of intracapsular tension in undecapsulated kidneys—normal or nephritic—shown by immediate increase in decapsulated kidneys up to one month after; a decrease to normal complete at six months, congestion of intertubular vessels of cortex, casts three to five days after the operation; no change in renal epithelium after decapsulation, a new capsule very vascular at first two to four times the thickness of the old marked at end of eight days. In six months return to normal new capsule, in part from retroperitoneal connective tissue, also intertubular connective tissue, no new blood-vessels anastomosing with those of the kidney.

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\* Because of lack of space this article is somewhat abbreviated in THE JOURNAL. It appears in full in the Transactions of the Section and in the author's reprints.

1. Gifford, N. H.: Experimental Decapsulation of the Kidneys, Div. Surg., Med. School Harvard Univ., Boston, 1903-04; Experimental Decapsulation of the Kidneys, Boston Med. and Surg. Jour., 1904, cli, 5.