

A comparative examination of the urines during convalescence was of some interest as indication of the functional activity of the hydronephrotic kidney. The urine drawn from the sac at operation showed a specific gravity of 1,006, no albumin and a rare granular cast. Two days later the specific gravity of the urine from the nephrotomy tube had risen to 1,012, while the urine from the bladder had specific gravity of 1,019. Three days later they were, from nephrotomy, 1,009; from bladder, 1,011. Four days later, from nephrotomy, 1,008; from bladder, 1,010. The quantity of urine from the hydronephrotic kidney was very nearly the same as from the other, showing that its functional activity was but little impaired.

The patient made a good recovery. One year later she wrote me that she had had since the operation four attacks of epigastric pain similar to those before. She said, however, that the tumor in the side had not reappeared in connection with these attacks. She expressed herself as feeling well and said that she had gained twenty pounds in weight during the year.

This patient was seen eighteen months after operation. She had at this time been more than six months free from any discomfort whatever. There was no sign of any enlargement of the kidney and she weighed thirty pounds more than at the time of operation.

#### THE SURGICAL TREATMENT OF RENAL TUBERCULOSIS.\*

BY F. S. WATSON, M.D., BOSTON.

The question of the surgical treatment of renal tuberculosis may be summarized thus:

1. *Nephrotomy* is of service as a palliative measure for the purpose of evacuating pus retained in the kidney and for the relief of pain and fever due to such pus retention when it occurs in cases in which nephrectomy is contra-indicated. Other than this, nephrotomy has no place in the surgical treatment of this condition.

2. *Nephrectomy, when performed under proper conditions*, is the *only* form of treatment of whatever kind by which we can hope to *cure* any important number of patients with this malady.

What are these proper conditions? They are as follows: (a) That the tuberculous infection does not involve both of the kidneys. (b) That there are no tuberculous lesions elsewhere in the body of such extent or involving such organs or structures as to render the performance of nephrectomy useless, because of their existence. (c) That the functional capability of the kidney to remain, after the performance of the nephrectomy, shall have been established beforehand.

When these conditions are present, nephrectomy will result in the *cure* of from 25% to 30% of the patients, and at an operative risk of from 7% to 10%.

This statement is made upon the strength of the series of more than 300 cases reported by Casper, Rafin, Albarran, Fenwick, Kummel, Kuster, Kelley and Israel, in which about this percentage of cure was obtained, as shown by the fact that there was no evidence of tuberculous infection in the remaining kidneys of this

proportion of the patients, examined at intervals of from one to ten years after operation.

How often is tuberculous infection confined to one of the two kidneys, and can we demonstrate with reasonable certainty its presence in one and its absence in the other of them?

Tuberculous infection of the kidney at the outset, is confined to one of the two organs in the large majority of female patients and in probably more than one half of the males.

The evidence upon which this assertion rests is as follows: In 37.6% of all the cases of renal tuberculosis found in a series of 13,000 *autopsies* made at Kiel in Germany, the infection was unilateral.

Surgeons having the widest experience in the treatment of this condition are substantially agreed in estimating the proportion in which the infection is confined to one of the two kidneys in from 60% to 80% of the patients examined early in the disease.

The means employed to determine the presence of the disease in one kidney and its absence in the other consist in testing the urine drawn from each kidney separately with ureteral catheters. These tests being to determine the presence of tubercle bacilli, of pus and blood, and by inoculations.

One other diagnostic evidence of the presence of the infection in the kidneys deserves special mention. I refer to the cystoscopic appearances of the orifice of the ureter of the infected kidney and of the part of the bladder immediately adjacent to it, which appearances are so characteristic to those surgeons who are thoroughly familiar with them -- Hurry Fenwick, Willy Meyer and some others -- that they are all that is needed for them in order to make an absolutely positive diagnosis of tuberculosis of the corresponding kidney.

A striking opportunity was offered to Mr. Fenwick for proving the correctness of this assertion and is published by him recently in the form of a clinical lecture which he delivered to students and medical men.

In the course of this lecture, he showed a woman who presented none of the usual evidences of the existence of renal tuberculosis; that is to say, she had no fever, loss of weight or strength, neither kidney was enlarged or tender. The urine contained no pus or renal elements, and repeated expert examinations failed to discover tubercle bacilli. Cystoscopic examination, however, revealed the conditions shown in the two figures which I pass around for your inspection, and which are taken from the article of Fenwick.

Upon these appearances solely and only, Fenwick not only positively asserted the existence of tuberculous infection of the corresponding kidney, but also stated that he was equally confident of the exact location and extent of the process in the kidney and ureter. He next demonstrated the cystoscopic appearances to a number of his audience, and then showed them a sketch of what he expected to find in the kidney upon its removal, which sketch he had made

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several days before and which I will also pass around. Finally he removed the kidney without opening it, and upon doing so after the operation, his prediction with regard to the extent and location of the disease as shown by the sketch previously made by him, was verified in every respect.

*Cystoscopic fallacies.*—I may here appropriately speak a word of warning with respect to reports of the findings with the cystoscope made by those who have not had a very extensive and long experience of such examinations, for the fallacies and errors of cystoscopy are numerous, and no better testimony of the truth of this can be furnished than that of Fenwick himself. In the course of a chapter devoted to these fallacies and errors in his very interesting volume published in 1904, and entitled "Clinical Cystoscopy," Fenwick refers among other cases to three of his own, in which he opened the bladder for the purpose of removing tumors which he was positive of having seen with the cystoscope, but in none of which was the slightest trace of the tumor to be found.

Elsewhere in reporting the cystoscopic examinations in a series of 150 cases of tumors of the bladder, he remarks that he throws out the first fifty of these as useless because of their having been made at a time previous to that at which he had learned to interpret correctly what he saw or to see all that there was to be seen.

If one of the first if not the first cystoscopist of our time in point of skill and experience says this of his own examinations, it is evident that the results of such examinations made by those who are less experienced should be taken with some reserve.

With regard to the influence exercised upon our decision as to whether nephrectomy should or should not be done, by the presence of tuberculous lesions elsewhere in the body than in the kidneys, it will depend, as has been said, upon the structures involved by them and upon their extent. We should not, for example, do a nephrectomy upon a patient with widespread tubercular infection of the lung, nor again in a case in which the prostate and bladder were involved; but on the other hand nephrectomy is the best treatment for tuberculosis of the bladder in the case of women, when both these organs are involved in the process provided one kidney only is involved.

Moderate lesions of bone or lungs do not constitute contra-indications to the performance of nephrectomy.

With regard to establishing the functional sufficiency of the kidney that is to remain after nephrectomy, the means for so doing are too well known to need more than a passing reference. I will only say with regard to this part of the subject, that of the more recent tests by which functional capability of each kidney individually is ascertained, that of cryoscopy is, I believe, the most reliable, and is of real value. None of the ways of segregating the urine in the bladder thus far devised seem to me to be reliable or to compare in value with ureteral catheterization.

The value of the cryoscopic, phloridzin and other recently devised tests is well shown by the comparison of two series of 362 and 292 nephrectomies, in the former of which the tests of the functional capability of the other kidney were not applied, and in which the operative mortality was 35%, and the latter of which the tests were applied, and the operative mortality of which was 7.8%.

To recapitulate we may say this:

1. The kidneys are the first of the genito-urinary organs to be involved in the infection in a considerable proportion of male patients, and in a majority of females.

2. That the infection at the outset and for variable periods afterwards involves but one kidney.

3. That we are almost always capable of determining the presence of the infection in one kidney and its absence in the other, when such is the case.

4. That we can determine the functional capability of the other kidney in almost all cases.

5. That nephrectomy performed in cases in which the infection is confined to one of the kidneys, and in which the functional capability of the other one has been demonstrated, yields from 25% to 30% of cures.

6. That the operative mortality when nephrectomy is done under the proper conditions is about 8%.

It is true that this is not a very brilliant showing, but it becomes so in view of the fact that no other form of treatment gives more than 4% or so of cures, which I say upon the strength of an inquiry made by me personally a few years ago, in which I addressed questions with reference to this point to members of the American Climatological Association and some other general practitioners, and upon the fact that pathologists tell us that they rarely if ever see examples of spontaneous healing of tuberculous lesions in the kidney other than in the comparatively small number in which the process has been terminated by total destruction of the organ through extensive suppuration or occlusion of its ureter, which is not healing in the proper sense of the word.

Whether or no we shall discover an antitoxin which shall be as beneficent in cases of tuberculosis as that which has robbed diphtheria of its dangers, we do not know. Until such discovery has been made, we must turn to nephrectomy as the only means by which cure can be obtained in a considerable proportion of the patients. The measure of success obtained will depend upon the operation being done at an early period of the malady. One of the most important objects to be sought is therefore to make the physician realize the necessity of early diagnosis and early delivery of the patient to the surgeon for operation.

As it was with appendicitis and in a measure still is, as it is with cases of prostatic hypertrophy, of gallstones and cholecystitis, or renal calculus and other maladies, the tendency of many minds

in the profession is to temporize, and under the soothing narcotic belief and self-commendation of being conservative and safe, to treat the patients with palliative measures so long as they are not in immediate danger or are not actually suffering. In the presence of danger and of pain or at the final insistence of the patients themselves, they are at length brought to the surgeon at a time at which their malady has long since passed the stage at which surgical intervention could have saved or greatly benefited or cured them. Renal tuberculosis is another example of the cases which surgery cannot be expected to benefit in any important degree when it is in its later phases; it can be looked to to cure at least 20% of those who are brought at or near its inception, and will prolong life and spare suffering of a still larger proportion under those circumstances. Moreover, up to the present time it is the only treatment which can accomplish anything worth mentioning in the way of cure, and though its results are not brilliant, we may say that they are at least twenty times better than can be hoped for from any other course known to us.

I have purposely spoken with reference only to the essential features which concern the application of nephrotomy and nephrectomy in cases of renal tuberculosis, and of the latter operations, only in so far as its curative power is concerned, thinking that to enter into any other parts of this most interesting subject would lead me too far afield. Just one other point I should like to touch upon; it is with reference to what nephrectomy may do to benefit patients in the cases in which we do not look for cure because of the fact that both kidneys are already involved. Nephrectomy is not positively contra-indicated in all of these, and in some of the cases in which I have done the operation myself under these circumstances, and in some in which I have had the opportunity to see something of the results of the operation when done by others, I have found great temporary benefits result from it.

The indications for taking out one kidney when the other is slightly affected are when the seriously damaged kidney is the seat of extensive suppuration, is causing a great deal of pain and high temperature and when, for any reason, it is better to run the greater danger to life from the performance of a nephrectomy than to have a fistula to care for after doing a nephrotomy.

#### A FEW NOTES ON A FEW CASES OF RENAL TUBERCULOSIS.\*

BY PAUL THORNDIKE, M.D., BOSTON.

YOUR secretary has asked me to present this evening a short paper on renal tuberculosis. It is an important subject, interesting alike to the physician and to the surgeon; to the former, because of the difficulties and importance of diagnosis in the early stages of the disease, and because

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of the gradually growing realization that some such early cases may be properly and successfully treated by non-surgical means; to the latter, because of the brilliant surgical results to be obtained in properly selected cases, and because of the dependence of these results upon such proper selection.

Up to 1880, although the disease was well-known, pathologically speaking, it was not included in the schedules of those diseases which are well recognized clinically as subject to accurate diagnosis. Since that date, its clinical picture, during the various stages of its development, has been made more familiar to us, its frequency of occurrence has been recognized more completely, and its accurate treatment has been a gradual evolution of the last ten or a dozen years.

It would not be possible, nor is it the writer's intention, this evening, to make a complete *résumé* of our present knowledge of this disease, but rather is it his desire to emphasize a few points which have arisen in his personal experience with such cases.

It has come to be known during the last few years that genito-urinary tuberculosis is a common disease, and that it occurs in the kidney, epididymis and in the Fallopian tubes with about equal frequency. It starts not uncommonly in the prostate but, so far as we know, less frequently there than in the kidney or epididymis. The disease is not usually primary in the genito-urinary system, but has a focus in some other part of the body, from which the infecting material is carried to the kidney or other genito-urinary starting point, in the blood stream; so that no matter how early in the progress of the renal or other lesion we are fortunate enough to make a diagnosis, we must always remember that we are not dealing with the only focus of disease which the body contains. There are, of course, exceptions to this, as to most other rules. In the writer's experience, a prostate, which was removed for other reasons, was found to be tuberculous, and upon the patient's death some time later, from other causes, this tuberculous prostate was found to have been the only tuberculous focus in the body, and was, therefore, the primary disease not only for the genito-urinary system but for the whole body. Renal tuberculosis, then, is a fairly common disease, and Bevan states,<sup>1</sup> in an admirably practical article recently published in the *Journal of the American Medical Association*, that "in surgical clinics, in which kidney fixations are limited to suitable cases, tuberculosis of the kidney usually furnishes the largest percentage of any single pathologic process, being more frequent than stone or tumor." Of the fifty operative renal cases in the writer's personal records, seven were tuberculous.

After the renal infection takes place, it has been found that, for a considerable period of time, in most cases the process is limited to this one kidney, and with the cystoscope and other modern aids it is possible in many cases to make

<sup>1</sup> *Jour. Am. Med. Assn.*, Oct. 6, 1906.