Richardson (M. H.)

Four Successful Nephrectomies.

With Remarks.

BY

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FOUR SUCCESSFUL NEPHRECTOMIES: WITH REMARKS.[1]

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CASE I. Tuberculosis of right kidney; excision; recovery.
CASE II. Tuberculosis of left kidney; extensive infiltration in perinephritic tissues; sinus into pelvis; excision and drainage; recovery.
CASE III. Tumor of right kidney; probably adenoma; excision; recovery.
CASE IV. Hydronephrosis, calculus, and double ureter of left kidney; excision; recovery.

PREVIOUS to 1892 I had made but one attempt[2] to remove the kidney. The operation was abandoned on account of extensive adhesions caused by a perinephritic inflammation of many years' duration. The patient, J. R., at the age of sixteen, in 1874, had been operated upon by Dr. Porter at the Massachusetts General Hospital, and a small stone had been removed from the bladder by crushing. In 1880 he began to have pain in the left lumbar region, which in the course of a year was attended by a swelling occupying the whole space between the last rib and the crest of the ilium. July 5, 1881, at the Carney Hospital, I laid open the tumor, which contained a large amount of pus, and removed a phosphatic stone weighing thirty grains. The wound never ceased discharging, but the general health became so much improved that life was useful and enjoyable.

On August 9, 1886, this patient applied at the Massa-

[1] Read before the Surgical Section of the Suffolk District Medical Society, January 4, 1893.
[2] Boston Medical and Surgical Journal, May 25, 1882, vol. cvi, No. 21.

chusetts General Hospital for further treatment, there being still a free offensive discharge.

August 25, 1886, I made an incision in the left loin extending from the last rib to the crest of the ilium. There was no kidney-tissue to be found: in its place there was the thin-walled cavity of an extensive pyonephrosis. The wall of the abscess was more than adherent to the surrounding parts: it had become so intimately connected with adjacent structures by extension of the inflammatory process in all directions that it was impossible safely to attempt dissection. The descending colon was practically a part of the renal wall, and the pancreas, stomach and spleen were involved. Attempts to remove the kidney were given up; the abscess cavity was thoroughly explored, curetted and drained. A good recovery followed, but the sinus has existed ever since.[3]

This patient has been a baker at the Tewksbury Almshouse till very recently. A letter from Dr. Howard states that he has enjoyed good health except for the persistence of the fistula.

During my connection with the Massachusetts General and Carney Hospitals I have made several explorations in cases of renal tumor where the kidney and surrounding tissues were found to be so extensively involved that enucleation was impossible.

Case I. August 4, 1892, Mary B., aged twenty-five, from Nova Scotia, was admitted to the Massachusetts General Hospital. Eleven years before she had had a sinus over the olecranon, leading down to the bone, which healed after two years with a stiff elbow. The family history is decidedly phthisical. Last March she was taken with violent pain in the right side, which continued until the abdomen became distended and very sensitive. The pain was localized in the right renal region and a swelling appeared there. Since April of the present year she has been in bed more or

[3] Mass. Gen. Hosp. Surg. Records, vol. 226, p. 106.

less, and has had sharp pain in the right hypochondrium on any exertion; has had to pass water every hour, or oftener, both night and day.

This woman was pale, poorly nourished, and somewhat emaciated. Examination of the lungs and heart was negative. The urine was normal in color, specific gravity 1,016, and contained one-eighth of one per cent. of albumen. The sediment contained pus, free and in clumps, with masses of epithelium. The right elbow was anchylosed at a right angle. The abdomen was not distended. In the right hypochondrium there was a solid tumor the size of the closed fist, which could be grasped between the fingers, was movable, and could be displaced downward and inward half the distance to the median line. There was no evidence found of tuberculosis. The amount of urine ranged between twenty and forty ounces.

On August 17th, I made an incision five inches long on the outer side of the right rectus muscle through the linea semilunaris. An enlarged, irregular, and movable kidney was found in the usual position, covered with peritoneum, over which lay the collapsed ascending colon. An incision was made through the peritoneum on the outer side of the margin of the ascending colon, and the kidney was uncovered and delivered with the greatest ease. The ureter was cut about an inch from the kidney between two ligatures. A further separation was then easily accomplished until the organ remained attached only by its main vessels. These were tied separately with the greatest care, and the organ was then cut away with scissors. There was no bleeding whatever from the pedicle. The abdomen in the neighborhood of the kidney was then carefully irrigated, and dried with dry sterilized gauze. The distal end of the ureter was sewed into the lower angle of the wound, and a small gauze drain left at the bottom of the renal space. The abdominal walls were united by interrupted silver-wire and silk sutures.

During the operation, before removal of the right kidney, the hand was passed to the other kidney. This was apparently normal in shape and size, and there was no evidence of tubercular infiltration. The upper part of the excised kidney was occupied by an abscess connected directly with the ureter. Considerably more than half of the organ was involved. Before cutting the kidney open, however, it was impossible to say that there was very much disease. The time of this operation was twenty minutes.

On the following day she passed twenty ounces of urine. The temperature rose the next night to 100.4°, but after that came down to normal. Four days after the operation the bowels were moving well, the temperature was normal, and the gauze drain had been removed. The amount of urine was about twenty ounces. The stitches were taken out at the end of one week; the appetite was good, the urine had risen to fifty ounces, and the temperature was normal.

On the 30th of August, thirteen days after the operation, the wound was entirely healed. On the 10th of September she insisted on going home, and was discharged. The urine at that time was normal in color, acid, specific gravity 1,014, and contained a slight trace of albumen. There was a small amount of pus in clumps, with fatty degenerated epithelial cells and mucus; no casts.

Case II. Sarah D., a patient of Dr. Barss of Malden, thirty-one years of age, was born in England. There was no tubercular history. The present trouble came on after the birth of her second child, five years ago. Then every six weeks she would have spasms of very severe pain in the left renal region running down to the groin and thighs. These would last for about a day and then pass away, leaving her very weak for a day or two. Three years ago she fainted in one of these spasms and went to a hospital in Liverpool, England, where a lump was found in the left

side. For a month or two before this she had noticed that her urine was thick and cloudy and deposited much white sediment and that micturition was more frequent. She was told that she had an abscess of the kidney, which was opened. Ever since there has existed a sinus in the left lumbar region. For the first year the discharge of pus was very great, and for the last six months about half a cupful a day. Urine has come through the sinus. Since the operation she has been able to work and has felt pretty well. Sometimes her legs would swell. The urine has been quite clear. During the last three months she has felt poorly, has lost flesh and had chills.

Physical examination shows a poorly nourished and anæmic woman; temperature 100°; pulse 82; no œdema. In the left lumbar region there was a tender tumor the size of a child's head, well defined below, indefinite above and flat on percussion, which extended down into the left groin. In the left lumbar region were scars of old incisions and a sinus from which a small amount of puriform discharge was oozing. The urine was normal in color, acid, 1,028, with a trace of albumen, much pus, some blood, squamous epithelium, excess of urates and mucus. Examination of heart and lungs was negative.

This case seemed very much like the one referred to of operation for renal stone, but the woman was in such condition that it seemed to me wise to provide better drainage, if it was found impossible to remove the cause of the suppuration. A long incision was made in the left linea semilunaris directly over the tumor and extending as high as the margin of the last rib. When the peritoneum was opened a mass of adhesions was found filling the whole left hypochondrium. The intestines lay on the inner side of the tumor, somewhat adherent; these were separated and pushed towards the median line and kept there. The tumor contained numerous pockets which extended in all di-

rections, the most distant through the mesentery of the descending colon to the right side of the bodies of the vertebræ. These were all thoroughly curetted and packed. The kidney was found at the centre of the inflammatory mass, directly through the middle of which extended the sinus which had been discharging for so many years through the back. This evidently was a pyo-nephrosis which had resulted in perforation of the kidney and an abscess requiring external drainage. The kidney tissue was shelled out without much difficulty, and there was no hæmorrhage from the pedicle. The whole left side of this woman's abdomen at the close of the operation was packed with gauze which extended in all directions through the sinuses. The few renal vessels were secured with silk. The ureter was tied, cauterized, and dropped back. The whole cavity was thoroughly flushed before packing. An incision an inch and a half in length was made across the old sinus in the left flank and a long rubber tube was carried through the cavity downward and to the right into the opening in the mesentery of the descending colon.

The patient stood the operation, which did not last more than half an hour, very well indeed. There was no nausea. There was a good deal of serous ooze during the evening and night. August 28th, the following day, she was very comfortable. Passed twelve ounces of urine from the bladder.

On the third day there was some nausea and the abdomen was slightly distended. On the fourth the gauze was removed from the abdomen. The wound was very clean and beginning to granulate; it was loosely packed with iodoform gauze. The bowels moved this day.

On the 6th of September the urine was found to be normal, acid, 1,012, with a slight trace of albumen, very little pus, squamous epithelium, mucus, and no casts. After the 13th of September the wound was

dressed daily for a while, and then every second day. The cavity became closed almost entirely by granulations and the drainage through the flank was free.

On the 14th of September she was feeling perfectly well. The temperature was normal on the 25th, and there was no pain; she had gained in weight; the cavity was filling up rapidly — now the size of an orange — and the sinus was very small. She was then up and about in a wheel-chair, and passing fifty ounces of urine.

On October 6th she was discharged to Waverley, having gained about ten pounds.

This woman made a complete recovery.

Case III. Lucinda W., age fifty-nine, born in Maine, entered the medical side of the hospital on August 9, 1892.[4]

One sister died of consumption. She has had more or less dyspepsia since 1882; she has had five children; one miscarriage.

During the last ten years she has had frequent attacks of dyspepsia with intense pain, and occasional spitting of blood. Vomiting has been infrequent. Blood came up without cough, bright red. At each attack noticed increase in size of a lump in the right side which she first observed eight years ago. Her attention was first called to the tumor by its slipping under the ribs when she stooped over. Its size then was about that of a teacup. She had clay-colored stools after attacks of pain and at times had chills with them. Of late has had pain more frequently, the last ten days ago, when she vomited half a cupful of bile. Ten years ago weighed 146, now 101 pounds.

A tumor of the abdomen was found occupying the right lumbar region extending as far as the navel. It descended with respiration, and was globular in shape, slightly tender and elastic. Nothing suggestive of the right kidney could be felt in the loin. The

[4] East Med. Records, Vol. 443, p. 61.

mass could not be dissociated from the liver, except in the knee-elbow posture. On inflating the rectum with air and water, the tumor was crowded upward and backward. The urine contained pus, bladder cells, and a little blood without casts."

During the next few days the case was seen by all the staff in consultation, and the tumor was thought to be a kidney. It was tapped with a hypodermic needle several times, the needle apparently entering a solid body. The first time a clear fluid was withdrawn, highly albuminous, that did not give mucine reaction. Under the microscope this fluid was found to contain blood corpuscles and some square crystalline bodies, probably not cholesterine. At the second and third tapping the fluid was bloody and contained similar bodies.

On August 23d I saw the patient for the first time, and advised operation.[5]

On August 26th an incision four inches long was made in the right linea semilunaris. The edge of the omentum presented through the healthy peritoneum, and was pushed toward the median line. The left kidney was felt and found to be normal. The right kidney was much enlarged and covered by a thin layer of adhesions and by a net-work of large veins. The peritoneum was cut through and the tumor carefully dissected out with the fingers. Gauze strips were packed into the cavity left by the kidney. A large silk ligature was passed through the pedicle with an aneurism needle and tied in two parts; then the renal vessels were separated and severally tied with pedicle silk. The kidney was removed together with the supra-renal capsule. The wound was thoroughly dried with dry sterilized gauze. There was no irrigation. The peritoneum was stitched to the edges of the wound with continuous silk sutures. A small iodoform gauze drain was put in the upper part, running to the bottom

[5] See East Surg. Records, Vol. 272, p. 153.

of the cavity. The edges of the wound were brought together with silk sutures, and the whole protected with gauze dressing and swathe. A large flax-seed poultice was placed over the left kidney. In the afternoon there was a slight chill, pulse became feeble, irregular, and intermittent, and the breathing rapid and superficial. Enemas of brandy, black coffee, hot water, digitalis, etc., were given. In the evening the general condition was much improved; no nausea.

August 27th passed a fair night. Complains of very little pain. Passed ten ounces of urine in twenty-four hours; pulse irregular but stronger. The chief difficulty was respiratory. On the following day she was stronger; the gauze drain was partly removed. On August 29th the improvement continued. The amount of urine this day was twenty-one ounces, dark, acid, specific gravity 1.024, with granular casts, renal cells, pus, and squamous epithelium. The pulse at times was intermittent.

On September 6th all the stitches were taken out and the union found to be firm. On the 11th the gauze drain was entirely removed.

On the 29th of September she was discharged. She had gained very much in strength, and felt well in every way. An abdominal supporter was applied previous to her discharge.

The tumor which I show was pronounced by Dr. Whitney to be an adenoma, though there was some doubt as to the exact histological character. The greater part of the kidney was involved.

Case IV. Miss Mary M., South Boston, aged thirty-three, was kindly referred to me on October 15, 1892, by Drs. Devine and Cutler. This young woman, of sedentary occupation, always had been well until a year ago. At first she complained of indigestion and was treated by Dr. Devine for dyspepsia. She suffered from a good deal of pain immediately after eating and had occasional attacks of vomiting. At

times there was a little blood in the vomitus. She was naturally inclined to constipation, and at one time noticed a small amount of blood in the stools. For the last two weeks has been troubled with fainting-spells, though not subject to them. These were probably due to the general weakness from which she was suffering. The vomiting stopped under liquid diet, although the nausea remained. Her only occupation was housework. Her temperature has been a little elevated, generally about 100°. Three days ago she had a chill, after which the temperature went up to 101°. The pain of late has been in the left lumbar region. Examination of the urine was negative, and the heart and lungs were normal. For the past year has been gradually running down. There was a well-marked cachexia; the pulse was rapid, but of fair quality. In the left half of the abdomen there was a large, smooth tumor, tense and fluctuating, extending from the umbilicus into the left lumbar region. In front of the tumor the outlines of the ascending colon could be made out. A well-marked depression existed directly under the umbilicus, evidently corresponding to the pelvis of the kidney. The diagnosis was tumor of the kidney containing fluid, of doubtful origin, probably malignant. The effect of this upon her general health was so marked that there was little doubt in our minds as to the advisability of an attempt at removal.

On Saturday, October 15, 1892, with the assistance of Drs. Mumford and Brooks and in the presence of Drs. Cutler and Devine, I made the same incision as in the previous cases, — a long vertical cut in the linea semilunaris. I came down immediately upon the ascending colon, the mesentery of which formed the covering of the anterior right half of the tumor. The peritoneum and the attachments to the kidney were separated by an incision external to the descending colon. The tumor was then tapped with a trocar and

a large amount of clear, light-colored fluid was withdrawn. Another cyst was found, which was also tapped. This collapsed the mass so much that it was easily delivered through the wound and the pedicle isolated and tied. The operation was very rapid and successful, without any complications or any apparent dangers. The ureter was tied and the wound was united by interrupted silver-wire sutures. There were no unfavorable symptoms whatever following the operation. The amount of urine continued about the same as before.

Dr. Whitney's report on this specimen is as follows:

HARVARD MEDICAL SCHOOL, October 21, 1892.

DEAR DOCTOR: The kidney removed by you on October 15, 1892, case of Mary M., measured twenty-five centimetres by ten centimetres, was partly sacculated and partly solid.

The latter portion, which was about a quarter of the whole, was normal in appearance and microscopic structure, and opened into a small ureter, distinct and separate from that into which the sacculated portion emptied. This latter part was separated into three large primary sacs with secondary partial divisions, all which opened into a common pelvis communicating with a small perfectly normal piece of ureter. The kidney substance covering these sacs was firm, very fibrous, and with but little active renal substance in it. The walls of the sacs were smooth and fibrous looking. Blocking up the pelvis was a large, dark, firm, single calculus, which prevented fluid escaping by the ureter, and also from passing from one sac to the other freely.

The case is one of a kidney with a double ureter with calculus-formation in one pelvis and subsequent hydronephrosis of the corresponding part of the kidney.

Yours very truly, W. F. WHITNEY.

There was a double ureter, one branch of which was plugged by a large stone, as was seen in the specimen. The result of the plugging was an enormous dilatation of the pelvis drained by this ureter, and a very extensive hydronephrosis. The rest of the kidney drained by the other ureter was normal in appearance. The whole specimen was a most unique and beautiful one.

The indications for removal of the kidney are not always clear. Benign and locally malignant tumors of this organ are most favorable for interference, or cases of cancer in the early stages, before the surrounding parts become infiltrated. For temporary benefit a local tuberculosis makes the operation justifiable. Like tuberculosis elsewhere, however, the ultimate result must be greatly in doubt.

The removal of a kidney for extensive disease of a benign character, like the fourth nephrectomy, with the impaction of a stone, or cases of simple pyelitis, non-tubercular, or of pyelitis of a calculous origin — for such conditions it seems to me that the indications are usually quite clear. At times nephrectomy is indicated even in cases of movable kidney. Many such cases have been reported, where the operation of nephrorrhaphy was not possible.

The results in the four nephrectomies which I have reported would seem to indicate that in the absence of serious constitutional or local complications the immediate mortality is quite small. I am aware, of course, that it is impossible to make any general statements based upon so small a number of cases, or to draw any conclusions as to the prognosis from four cases, but I feel very much encouraged in considering the indications for nephrectomy by the favorable results which have followed the methods which I have used in these operations, some of which were certainly very hazardous and formidable.

In the absence of malignant or tubercular disease the prognosis is certainly much more favorable, both as to immediate and permanent results.

The method which I have taken to remove the kidney is one which it seems to me would appeal to an anatomist. The most deplorable accidents which have occurred in this operation have been caused by hæmorrhage. I therefore selected this method of anterior incision in the linea semilunaris in order to be where

I could tie without delay the renal branches of the abdominal aorta and vena cava. This incision permits also the easy exposure of the affected kidney and a clear understanding of its relations; it moreover enables the operator, by going directly into the peritoneal cavity, to ascertain the state of the other kidney or other organs where it is important to know their condition.

If my experience has been small — and the experience of every surgeon thus far certainly must be small — in this operation on the living, my experience in the removal of kidneys in the dead has been very great. I should never seriously think of attempting the removal of a kidney through the loin. What I have seen of this operation in the hands of others convinces me that it is a very difficult and a very dangerous procedure. In the lumbar operation I believe that the hazard from hæmorrhage alone would exceed the immediate and the remote dangers of the whole operation by the anterior route; it is impossible to deliver a kidney satisfactorily without the greatest danger of tearing the renal vein; and again it is very difficult indeed to tie the pedicle. It should be borne in mind that in quite numerous cases there are several branches of the abdominal aorta going to the kidney, instead of one. This makes a broad, flat pedicle, which, when tied by the lumbar incision, must necessarily be very tense. The moment the tumor is cut away from such a pedicle the ligatures may become loosened. The hæmorrhage in such a calamity is fearful, while to find and secure the bleeding-vessels is practically impossible. I therefore should not consider seriously the lumbar operation upon the kidney where any question of its removal is involved. For the operation of nephrectomy, the lumbar is the better method.

By the anterior incision we open at once the peritoneal cavity. On the right side we find the ascending colon, which may be easily turned one side, and come

down directly upon the kidney. On the left side the descending colon passes in front, and at times its mesentery is spread over the anterior surface of the tumor. Separation is very easy, however, and may be accomplished without danger to the large vessels of the meso-colon, especially if the kidney is not much enlarged. By first separating the attachments of the colon on either side at the outer edge, and pushing the whole toward the median line, we avoid all danger of injury both to the bowel and its vessels. By this route the kidney may easily be isolated and its attachments secured, the important structures meantime being easily accessible in a well-lighted field.

On separating the kidney, the pedicle should be tied in sections, with the greatest care, not using too large silk. One disadvantage in the use of silk ligatures sterilized with corrosive sublimate is the difficulty of completing the knot — of pulling it "home" — on account of friction. Having tied the pedicle in sections with small silk, and being sure that each knot is firm, it is a good plan to apply a ligature of larger silk around the whole, fastening it with the greatest care. In this manner the danger of hæmorrhage is very slight. In the tubercular cases I have used gauze packing, and where there has been much oozing, the gauze drain.

Provided the other kidney is healthy, it seems to me that this method offers, in the absence of a septic element, the very best prognosis. In one case I sewed the ureter into the wound; in all the others, I tied, cauterized, and left it. All the cases did equally well, and there seems to have been no difference in the result by any of these methods; one would, however, feel safer having the ureter sewed into the lower angle of the wound. In tuberculous and inflammatory cases I believe in packing the whole cavity with dry sterile or iodoform gauze. The danger from iodoform absorption, however, has made me very cautious in the use of this drug, and I generally use dry

sterilized gauze. I prefer, in closing the wound, to use silver-wire sutures in this, as in all parts of the body. In almost all cases there is no suppuration whatever. Sterilization is much more easy and perfect than in the use of silk.

In the preparation of patients for operations on the kidney I have not varied from the usual methods pursued in private practice, as described in the article by Dr. Mumford and myself. In this operation as in all others, time is a very important element. None of the operations here reported have occupied more than thirty minutes. In considering, however, the question of time, none of the steps of the operation should be taken in haste. In the natural sequence of events in the removal of the kidney it seems to me that, by allowing plenty of time for them all, not more than thirty minutes should be taken.

In most cases the diagnosis can be made with sufficient accuracy to decide the question of operative interference. A movable tumor of the kidney usually presents enough physical evidence in addition to that from the history and the urinary examination to base a reasonably certain diagnosis upon. The distinction, however, between a movable tumor of the kidney and a dilated gall-bladder is not always easy. The same is true of a tumor of the pancreas or spleen. In one case I found a dilated gall-bladder containing gall-stones where I fully expected to find a diseased kidney. This being the only case in my experience where I have been wrong in placing the disease, I think I may safely maintain that it is very seldom that there can be a serious doubt as to the location of the lesion.

It is not so easy to make an accurate diagnosis of the nature of the lesion itself, nor is it essential generally, from the very fact that in many instances an accurate idea of the condition is beyond human skill. We need to consider only those points which may or may not

justify the risks of an exploration. I venture to repeat my views upon this subject in connection with the kidney, already expressed in remarks upon the gall-bladder and the vermiform appendix: — that in cases of disease of doubtful nature, affecting but one kidney, the patient is entitled to the benefit of the doubt, and should have, at least, the advantage of an exploration. These remarks apply to doubtful cases, and not to those often seen where the nature of the disease is plain and its hopelessness conspicuous.

Explorations by needles and other devices, notably Dr. Mixter's punch, at times give the lacking information, but the method should only be used in cases of doubt, and never in such a way as to pass through the peritoneum, on account of the occasional presence of enormous venous trunks and the danger of hæmorrhage into the abdominal cavity, together with the liability to peritonitis. A sufficient contraindication to exploration lies in the detection of metastases, remote or near, or a well-marked cancerous cachexia. A wasting of tuberculous origin, however, does not justify non-interference.

At times it is very evident that one kidney only is the seat of disease requiring radical relief, but which kidney it is cannot be made out. In such cases a median incision may be made large enough for digital exploration of both kidneys, followed by a second cut in the right or left, as the case may be. The best plan is to make an incision over one kidney for the removal of that one, if diseased, followed by a similar cut on the other side if the lesion is there. By this method there is an even chance that the first will be the only cut necessary.