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NEPHROTOMY  
FOR  
CALCULUS PYELITIS.

*Nephrectomy rightly decided against  
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ently almost destroyed and useless Kidney found  
to secrete over four and a half times as much  
Urine as the other Kidney; Death.*

BY

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MISS L., aged 31; height, five feet three inches; weight, one hundred and four pounds; best weight over one hundred and twenty pounds some ten years ago; was first seen by Dr. W. W. Keen, January 17, 1891. She has lost only four pounds in the last three months. One paternal uncle is the only case of tubercular disease known in the family. Patient has always been delicate, and at the age of 5 had an anterior curvature of the spine. She recovered in two or three years, during which time she went on crutches. No abscess and no paralysis resulted.

For about two years she has had intermittent attacks of pain in the left loin. At first these attacks were from three weeks to two months apart, and lasted from several hours to one or two days. The pains were always in the left loin, and had a tendency to shoot



towards the epigastrium and towards, but not into, the bladder. The attacks were accompanied with a desire to urinate, and the urine at this time was high-colored but clear, containing no deposit. Her general health was good.

During the latter part of last August she had what she called chills and fever, and co-existent with this development the pain in the loin became constant and remained so. She had no night-sweats. The chills were probably septic.

Dr. Stewart first saw her on December 3, 1890; she had then been in bed for three weeks. She was very dyspeptic and constipated. Her temperature did not rise above 100° F. The urine at this time was normal in amount, and when lithia-water had been taken, had sometimes run up to two quarts. In an eight-ounce bottle of urine there was about half an inch of sediment. The urine was examined, frequently under the microscope, and found to consist chiefly of pus; in addition, there were some large cells, probably from the pelvis of the kidney or from the ureter, and considerable squamous epithelium, probably from the bladder or vagina. There were some red blood-cells, and on two occasions granular and hyaline casts were found. In the later specimens there was also a little uric acid, but no oxalates. The urine was always acid, even after standing three or four days. The amount of albumen was in proportion to the amount of pus.

Tubercle bacilli were repeatedly searched for by Dr. Stewart, with negative result.

There was always tenderness on pressure,

most marked in the left loin over the kidney, but also detected over the left half of the abdomen and back. There was decided tenderness posteriorly and increased dulness and slight but perceptible fulness over the left loin and kidney.

A careful survey of the subjective and objective symptoms by Dr. Stewart having led him to make a diagnosis (rather by a process of exclusion than otherwise) of calculus pyelitis, he arranged for a consultation with a view to operation.

January 17, 1891. A slight, rather delicate woman in fair health; has been permitted to walk about the house restrictedly. It causes fatigue but no pain to go up and down stairs. Walking itself produces fatigue but no pain, but it is followed by an increase of pain. Appetite good. With the exception of the last two or three nights, has slept pretty well.

Examination shows the upper part of the sternum to be very prominent; the lower half is deeply cupped and seems to be bifurcated. Distinct fulness on the left side of the abdomen below the border of the ribs, also increased resistance. Pressure produces distinct pain. The lower limit of resistance is the anterior superior spine. Dulness begins gradually at two to three inches to the left of the umbilicus and goes around to the left flank. When lying on her face there is slight prominence of three of the lumbar spines. No fulness appears in either loin. Pressure just below the last rib on the left side produces pain. Bimanual pressure produces pain, which is greatest in front. In the prone

position the fulness in the abdomen is much more marked, and gives a sensation of an almost globular mass about the size of a fist. Dulness begins on the left side posteriorly at the tenth rib. Right loin far more resonant; in fact, the renal dulness is scarcely perceptible. No perceptible enlargement of the spleen. Lungs and heart negative. Urine, specific gravity 1011; acid; pus; club-shaped cells; pavement epithelium; slight amount of albumen; no sugar.

January 26, 1891. The quantity of urine having fallen to fifty ounces, its specific gravity to 1010, and the percentage of urea being only .8 and the amount one hundred and ninety-two grains, we decided to postpone the operation, which had been appointed for to-morrow, and Dr. Stewart prescribed citrate of potassium to stimulate the right kidney into greater activity.

January 27. The amount of urine to-day has risen to seventy-six ounces, and the urea is .8 per cent. and the amount two hundred and ninety-two grains.

For some time after this the quantity of urine remained moderately high, but the urea fluctuated between about one and one and a quarter per cent., never rising above this latter figure, and the total amount being generally less than one-half of the normal. As her health was evidently gradually failing, it was finally decided to operate in order to evacuate the pus. But, as stated to the gentlemen present, it had been decided *not* to remove the kidney on account of the small percentage of urea, which showed that the opposite kidney was not doing its proper work, and

nephrectomy would be inevitably and quickly fatal.

Operation, February 9, 1891. Ether; right semi-prone position. The distance from the last rib to the crest of the ilium, even when the patient was most favorably placed, was only two and a half inches. I was confirmed in my decision not to remove the kidney, inasmuch as the specific gravity of the urine had fallen to 1008 and the urea to one hundred and forty grains. In view also of the known suppurating condition of the left kidney, in spite of the narrow distance in the loin, I decided to do an exploratory lumbar operation, carrying the incision well forward into the anterior abdominal wall, should any possible necessity arise for the removal of the kidney. An oblique incision was made in the loin about five inches long. The kidney was very soon reached, and touch convinced me that it was filled with fluid, which was confirmed by an incision. The whole kidney was found to be dilated into one great cavity containing a whitish-colored urine, the white color being due to pus and some *débris*. The finger could barely touch the upper limit of the cavity, three and a half to four inches above the last rib, and reached downward one and a half to two inches. We estimated that about a pint of liquid escaped. The thickness of the sac was less than one-eighth of an inch. No bleeding took place. The cavity was markedly sacculated at various points. No calculi existed free in the sac. By the finger I detected what I thought to be the ureter, and my finger was scratched at this place by the sharp point of a stone. The

electric light enabled me admirably to examine the entire interior of the sac. With a pair of forceps I dilated the mouth of the cavity in which the stone lay, which I now saw was the mouth of a contracted calyx. Two stones were detected here, of small size, rather irregular surface, and extremely adherent, so that every attempt to remove them by forceps and scoop brought on a rather violent hemorrhage.

The general condition of the patient showed that she could not bear much loss of blood or further shock, and I decided that the wisest course to pursue was to stitch the mouth of the cyst to the abdominal wall and drain, leaving to the future the escape or the removal of the calculi through the fistula, or the removal of the kidney itself, as should seem best. The amount of blood lost was perhaps ten or twelve ounces. Bleeding was controlled quite readily by washing out with hot water, but recurred easily at every interference.

February 10, 1891 (first day). The patient passed a fairly comfortable night, sleeping considerably; temperature  $99.2^{\circ}$  F. Four hours after the operation two ounces of fluid were drawn, mostly blood, showing that the left ureter was pervious. In the twenty-four hours following the operation only nine ounces of water were passed by the bladder; after one catheterization she was able to pass water voluntarily, and no blood appeared. As part of the urine came from the left kidney, it shows that the right kidney was doing but little work. The dressings were changed on the evening of the ninth and the morning

of the tenth day ; they were very abundant, but were entirely soaked through. At the second dressing even the bed was quite wet from the amount of urine passed through the drainage opening. As nearly as I could estimate, at least a pint was discharged in this way. The dressings were slightly stained with blood, but the amount was not large. She has felt quite comfortable, excepting for some gas in the stomach. Her diet has been entirely liquid ; her appetite has been good.

The following is a memorandum of the quantity of urine passed from the bladder day by day ; it therefore includes all the urine from the right (unoperated) kidney and some from the left.

1891.		
February	10.....	9 oz.
"	11.....	14 "
"	12.....	12 "
"	13.....	7 "
"	14.....	5 "
"	15.....	5 "
"	16.....	6 "
"	17.....	9 "
"	18 (47 from left kidney.)	10 "
"	19.....	11 "
"	20.....	16 "
"	21.....	12 "
"	22.....	14 "
"	23.....	15 "
"	24.....	9 "
"	25.....	9 "
"	26.....	9 "
"	27.....	10 "
March	1.....	10 "
"	2.....	12 "
"	3.....	10 "
"	4.....	10 "
"	5.....	13 "

1891.

March 6.....	17 oz.
“ 7.....	34½ oz.
“ 8.....	27 oz.
“ 9.....	29 “
“ 10.....	31 “

March 10 (twenty-ninth day). Within twenty four hours she was practically over the immediate effects of the operation. Her temperature rose on the third day to 101.4° F., but after that fluctuated between normal and 100° F. until the eleventh day, when there was an evening rise of 102° F. for four or five days, coincident with the development of an attack of cystitis; after that the temperature again resumed its old course.

March 11, thirty days after the operation, she had several severe hemorrhages from the left kidney through the wound, losing about a pint or more of blood. Her strength gradually failed, and she died March 17, thirty-six days after the operation. No post-mortem could be obtained.

*Remarks.*—Two points deserve especial mention: First, the relative amounts of urine from the apparently useless and hopelessly diseased left kidney and the other kidney, and, second, the amount of urea excreted as an indication for or against nephrectomy.

*First.*—The most remarkable and interesting point about her history was the relative amounts of urine coming from the two kidneys. A comparatively small amount of the urine from the left kidney undoubtedly found its way into the bladder, but the major part of that which was thus voided came, of course, from the right kidney. It sank grad-

ually to only five ounces within five days after the operation and the average for the three weeks after the operation was only 10.1 ounces a day. On the other hand, the dressings, pillow, and even the bed were wet by the profuse discharge, of which but little was pus, from the left kidney. Nine days after the operation, when the amount of urine from the bladder was ten ounces (double, therefore, the lowest amount), I measured, approximately, the amount from the left kidney in the following way. The dressings were weighed before they were applied, and as soon as they were removed wet they were weighed again, and it was thus determined that at this time the left kidney secreted forty-seven ounces of urine as against ten from the right. Yet the cortical substance of the left kidney looked so thin and wasted at the time of the operation that I scarcely thought it capable of secreting any appreciable amount of urine.

*Second.*—The normal percentage of urea is two and a half to three per cent., and the amount about five hundred grains. In this case the percentage never rose to two per cent., and at times was even less than one per cent. This led me to suspect that the other kidney was seriously diseased,—a suspicion verified by the subsequent examination of the vesical urine, even though an autopsy was not obtained. Had I removed this left kidney she would undoubtedly have died within two or three days from uræmia. My reason for not removing the other kidney was because of the small percentage of urea found before the operation. Dr. Stewart examined

the urine from the bladder three days after the operation, and found the urea to be 1.6 per cent. ; but as the amount of urine was only twelve ounces, the total amount thus excreted by the vesical urine was only eighty-six grains. We could not determine the amount in the urine from the fistula.

No nephrectomy ought to be undertaken, in my opinion, unless the percentage and the total amount of urea have been determined. If this percentage be below two per cent., nephrectomy should not be done until the kidneys have been stimulated to do their work, so that they eliminate at least this percentage of urea.







