Ureteral Calculus Accurately Located by the X-Rays and Removed by an Extraperitoneal Operation

W. W. Keen, M. D., LL. D., F.R.C.S. (Hon.) - Philadelphia

Reprinted from
THE JOURNAL
of the American Medical Association
August 31, 1901

URETERAL CALCULUS ACCURATELY LOCATED BY THE X-RAYS AND REMOVED BY AN EXTRAPERITONEAL OPERATION.*

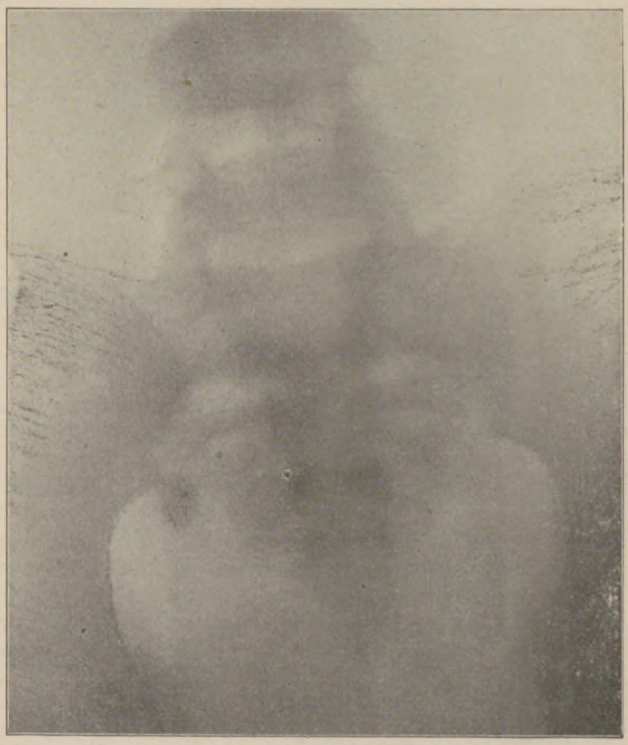
W. W. KEEN, M.D., LL.D., F.R.C.S. (Hon.)
Professor of the Principles of Surgery and of Clinical Surgery, Jefferson Medical College.
PHILADELPHIA.

Henry E. S., aged 10, of New Bloomfield, Pa., was admitted to the Jefferson Medical College Hospital Oct. 25, 1900, at the request of Dr. E. E. Moore.

Neither his family nor personal history, other than as related below, have any bearing on the case. When he was 2 years old he had an attack of pain in which he passed bloody urine. Five years ago—at the age of 5—he had another attack of severe pain in the region of the left kidney. The pain extended downward into the scrotum and to the head of the penis. It was finally relieved by the application of heat and the use of morphin. Similar attacks have recurred at varying intervals, sometimes every three or four days, sometimes not for two months. During the winter of 1897-98, in several attacks he passed bloody urine and uric acid crystals. What he thinks was a small stone escaped in September, 1900, but neither he nor any one else examined it carefully. In February, 1900, he had scarlet fever and since then his attacks have been much more frequent and severe. He has never had any pain on the right side.

* Read at the Fifty-second Annual Meeting of the American Medical Association, in the Section on Diseases of Children, and approved for publication by the Executive Committee of the Section: H. E. Tuley, Edwin Rosenthal and Samuel W. Kelley.

On admission the entire left side of the abdomen was so painful that it was impossible to make any diagnosis as to the location of a stone, though the diagnosis of calculus was perfectly clear and had already been made by his physician. The urine which he passed on admission was clear, amber-colored, sp. gr. 1013, reaction acid, no albumin, sugar, blood, pus or casts present, urea 1.1 per cent.



Dr. Charles L. Leonard took a skiagraph (see Fig.) which showed a ureteral calculus about one-half the size of the last joint of the little finger, in the left ureter, which was thought to be at the pelvic brim, but at the operation was found a little below this level somewhat nearer the bladder.

At the operation, Oct. 31, 1900, I made an oblique

incision from above the crest of the ilium and parallel to it, extending to a point above the middle of Poupart's ligament, and pushed back the peritoneum. I had considerable difficulty in finding the ureter. It was raised with the peritoneum, but was so small, flattened and indistinct that it was some time before I could recognize it. Tracing it downward, just below the pelvic brim, I found a hard mass in which the ureter was apparently lost. No stone could be felt at first, but on cautiously cutting and tearing through the mass, I discovered a ureteral calculus measuring 1.5 cm. in length, 1 cm. in breadth and 8 mm. in thickness. The exterior was rough from the points of many spicules due to crystals, which by their fusion constituted the solid mass. The sharp spicula were especially marked at the two ends. Professor Coplin examined it and reported that the stone was quite dense; the nucleus was dark in color and gave the reaction for mucin. The shell was of calcium phosphate with a trace of organic matter.

Evidently the calculus had ulcerated its way through the posterior wall of the ureter, had matted together the rectum and ureter and lay in a pouch which was partly intra-ureteral and partly extra-ureteral. The caliber of the ureter was not entirely blocked up by the calculus. The moment that I opened the ureter a very considerable amount of urine, which I estimated at about one-quarter of an ounce, escaped through the ureter from the somewhat hydronephrotic kidney. Though the kidney was somewhat distended, I judged that on removal of the obstruction it would recover itself, especially in view of the recuperative powers of childhood. The edges of the opening in the ureter were then closed by a continuous catgut suture. In view, however, of the inflammatory conditions present, as there would almost certainly be some leakage of urine, I packed a small amount of iodoform gauze against the sutured opening and led the end out through the wound. The muscular wall of the abdomen was then closed with a continuous silk suture, and the skin with interrupted silkworm gut sutures. The gauze packing was removed on the second day after the operation, as I found no leakage took place. He made a perfectly smooth recovery, the highest temperature having only once been 100 degrees. He was kept in bed for between three and

four weeks. so as to allow firm union to occur, with a view to preventing a hernia.

March 22, 1901, a letter from Dr. Moore stated that when he reached home, November 28, he was suffering considerably from pain in the region of the left kidney. Examination of the urine showed the phosphates to be greatly in excess. A purge of calomel relieved him from pain and he has never had any since. There is also no sign of hernia at the site of the wound.

No remarks are needed save to call attention to the accuracy and value of the *x*-ray picture, both as an absolute verification of the diagnosis and as a guide at the time of operation. Instead of having to open the kidney with the idea that the stone might be there, or to examine the entire length of the ureter to find it, the skiagraph guided me at once to the exact location of the stone.