

Since the clinical symptoms give but little information as to the exact location of calculi in the genito-urinary tract, it is desirable to first secure, if possible, a plate showing the region of both kidneys, both ureters, and part of the bladder. For this purpose the patient lies on his back, with head and knees elevated, so as to straighten the spine and bring it in contact with the plate. The tube is enclosed in a heavy lead glass tube shield, and supported upon a stand 26 to 30 inches high, with telescoping sides, permitting a greater elevation, if necessary. The top of the stand carries a circular piece of heavy sheet-lead, with an opening in the centre for diaphragms of various sizes. This heavy lead disk cuts off the stray rays from the walls of the tube and the diaphragm opening limits the rays that are to be used to a cone of approximately parallel rays. A satisfactory plate should have the following characteristics:

1. It should show the lateral processes of the vertebrae to the tip.
2. It should show the structure of the last two ribs.
3. It should show the border of the psoas muscle.

After a satisfactory view has been obtained, if there are any evidences of stone in any particular location, other plates of that portion should be made, using the compression diaphragm apparatus. This method, first introduced by Albers-Schönberg, has the advantage of giving clearer and more definite pictures of a limited area, owing to the fact that the diaphragm renders the rays more nearly parallel, the lead cylinder and shield cut off many stray rays, and the compression can be made so as to considerably diminish the amount of tissue to be penetrated by the rays.

The cases of ureteral calculus present some peculiar difficulties that make the diagnosis more difficult than the diagnosis of calculi in the pelvis or parenchyma of the kidney.

In the course of the lower portion of the ureter, shadows are frequently seen that have, in several instances, been mistaken for ureteral calculi, and operations have been performed under the mistaken diagnosis so made, with the result that nothing was found in the ureter but some other condition was present which sufficed to explain the occurrence of the shadows in the Röntgen plates. Among the extra-ureteral conditions giving rise to misleading shadows in the plates, may be mentioned:

1. Phleboliths or calcified areas in the walls of the veins in the pelvis.
2. Foreign bodies in the bowel, vagina, or bladder.
3. Calcified appendices epiploicae.
4. Calcified tuberculous lymph-nodes or tuberculous nodules in the epididymis or seminal vesicles that have become partly calcified.