URETERAL INJURY IN LUMBAR-DISC OPERATION

MAJOR ANTHONY A. BORSKI, M.C.,* AND MAJOR ROGER A. SMITH, M.C., A.U.S.†

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Ureteral injury during operation on a herniated lumbar intervertebral disc is extremely rare. Linton and White in 1945 and Holscher in 1948 reported the first cases of vascular complications of disc surgery. DeSaussure in 1959 reported a total of 106 vascular injuries following a questionnaire sent to over 3,000 neurosurgeons and orthopedists. The addendum to that article listed a case in which the ureter was injured. This occurred in 1950 and no report was published. Holscher cited 4 other unreported cases of vascular damage, the outcome of the majority being fatal. Seeley et al. reported 2 additional cases in 1954 and mentioned 3 other unreported cases of injury of the common iliac artery and 1 of injury of the inferior vena cava attending operation for herniated lumbar disc. We believe the following is the first reported case of ureteral injury during operation on a lumbar disc.

CASE REPORT

A 30-year-old white female was admitted on June 11, 1957 with the chief complaint of pain in the lower part of the back and the posterior aspect of the right lower extremity of 10 years' duration. Conservative treatment failed to afford lasting relief. Because of her continued difficulty she was admitted for definitive treatment. Past history was not remarkable except for a bilateral salpingo-oophorectomy and appendectomy in March 1956 for extensive endometriosis. System review was not remarkable, with special emphasis on the genitourinary system.

Examination. The positive physical findings were limited to the neuromuscular system. There was obliteration of the normal lumbar curve with associated paravertebral muscle spasm, bilaterally. She walked with a slight list to the right, and straight leg raising was limited to 30 degrees on the right. Urinalysis was within normal limits, serology was negative, and hematology was normal.

Roentgenograms of the lumbosacral spine revealed a moderate degree of straightening of the spine in the lateral view; there was a lumbarized S1 vertebra. A Pantopaque myelogram showed a bilateral defect at the L4 interspace.

Operation. On June 6, 1957 bilateral lumbar laminectomy was done at the L4 interspace by one of us (R.A.S.). A large herniated nucleus pulposus was removed from the right side. The L4 intervertebral space was entered on the right side and a great deal of degenerated cartilage was removed, using curettes and a pituitary rongeur. Exploration of the left side was negative, consequently the intervertebral space was not entered from this side. The operator felt that the operation was uneventful.

Course. Immediately postoperatively the patient complained bitterly of pain in the back and numbness of the right lower extremity. Severe paralytic ileus developed with pain in the left side of the abdomen. This was treated conservatively with antibiotics, analgesics, Levine suction and intravenous fluids with some response. On the 6th postoperative day the ileus responded to therapy. However she continued to run a low-grade fever and still had pain in the left flank and tenderness in the left lower abdomen. Consultations were obtained with the Medical and Gynecological Services without any specific etiological factor found to account for these symptoms. An intravenous urogram on the 20th postoperative day showed bilateral

* Present address: Fitzsimons Army Hospital, Denver 30, Colorado.
† Present address: 1485 Waterman Avenue, San Bernardino, California.

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function in 5 minutes with good visualization of the calyces and minimal dilation of the left calyces. The left ureter was not visualized (Fig. 1). On the 15-minute upright film there was an opacity at the L4 interspace on the left; the ureter was noted below this opacity (Fig. 2). The exact etiology was not determined and a retrograde urogram was advised. However, the patient felt better and desired to go home for several days.

On July 5 a combined intravenous and retrograde urogram was done (Fig. 3). This showed extravasation of dye at the L4 space on the left, where the ureteral catheter met obstruction.

On July 9 the left flank was explored and a pocket of about 100 cc. of urine was found in the area of the L4 interspace, with a defect on the posterior aspect of the ureter which measured approximately 1 cm. in its greatest dimension. However, there was continuity of the ureter anteriorly. The defect in the ureter was repaired, using an end-to-end anastomosis at the site of the injury, with a ureterostomy catheter proximal to the anastomosis and a splinting catheter to bridge the defect. Both ureteral catheters were drawn out through the left flank.

The postoperative course was uneventful. On July 30 both catheters were removed; there was no drainage from the flank and the patient was discharged on the following day.

A retrograde urogram was performed 2 weeks postoperatively and this showed good healing and an essentially normal ureter (Fig. 4). A 10F ureteral catheter was passed easily to the renal pelvis. A 1-year follow-up showed an essentially normal urogram. However, she still had weakness of dorsiflexion of the right foot.

**DISCUSSION**

The ureter is in anterior or anterolateral apposition with the 4th lumbar intervertebral disc. Its abdominal part is retroperitoneal, resting upon the psoas muscle, and is crossed by the spermatic or ovarian vessels. The right ureter is close to the inferior vena cava while the left ureter is in relatively close relationship to the aorta.