Perforation of the anterior annulus during lumbar discectomy

Case report

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✓ A case of retroperitoneal vascular injury during removal of a lumbar intervertebral disc is presented. It is proposed that the rapid escape of irrigating saline through the disc space may serve as a reliable sign of surgical perforation of the anterior annulus and anterior longitudinal ligament prior to the appearance of other signs of vascular injury.

KEY WORDS lumbar intervertebral disc perforation of anterior annulus retroperitoneal hemorrhage vascular injury

In less than half of the cases of retroperitoneal vascular injury during lumbar disc surgery, immediate severe bleeding via the disc space was reported.1-3 The first clue was the development of hemorrhagic shock, minutes to hours later, or the delayed appearance of symptoms secondary to an arteriovenous communication at the site of the injury. The mortality rate from this complication has been about 50%.2 Therefore, a reliable sign indicating that the anterior annulus and longitudinal ligament are not intact would be useful.

Case Report

A 36-year-old man was admitted to the Veteran's Administration Hospital, Washington, D.C., with signs and symptoms of lumbar disc disease at L4-5. He was treated with bed rest and pelvic traction for 10 days, but his symptoms recurred when walking. A lumbar myelogram showed a large defect on the left, suggesting a ruptured intervertebral disc at L4-5. Fourteen days after admission a partial hemilaminectomy was performed at L4-5 under general anesthesia. During removal of the nucleus pulposus a straight pituitary rongeur was passed to an unusual depth. No tissue was grasped with the instrument and it was immediately withdrawn. Unusual bleeding was not observed, but the anesthesiologist was advised to monitor the vital signs continuously. The remainder of the disc material was removed without difficulty, and then the wound was filled with irrigating saline. The level of the saline pool rapidly fell until virtually all of it had drained from the wound. This observation was repeated three consecutive times. Approximately 10
minutes after the apparent perforation of the anterior annulus, the anesthesiologist noted a rapid drop in blood pressure. Within a few minutes thereafter brisk bleeding from the intervertebral space was observed for the first time. The wound was packed, and the patient turned to a supine position. Cardiac arrest occurred but he was successfully resuscitated with rapid transfusions of whole blood, intracardiac adrenalin, and external cardiac massage. A midline abdominal incision was made and a large retroperitoneal hematoma found and evacuated. The right common iliac artery had been transected and the iliac vein lacerated where it joined the inferior vena cava. The vein was repaired primarily but the arterial repair required a dacron prosthesis. Throughout the abdominal operation and for hours thereafter the patient remained hypotensive and anuric despite adequate blood replacement and cardiac support. He died approximately 24 hours after surgery.

Discussion

This single observation indicates that the retroperitoneal space can rapidly accept several hundred cubic centimeters of saline despite bleeding from arterial injuries. In hundreds of subsequent uncomplicated lumbar disc removals we have seen nothing to suggest escape of irrigating saline through the disc space. This phenomenon may reliably indicate surgical perforation of the annulus and anterior spinal ligament, and suggest to the surgeon that he revise the direction and depth of his instrumentation and alert his operative team to the possibility of visceral or vascular injury prior to the appearance of bleeding from the disc space or rapid change in the vital signs.

References


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