Unintended durotomy case series

Park et al. retrospectively analyzed 643 percutaneous biportal endoscopic spine surgery (PBES) cases by reviewing medical charts, operative records, and operative videos. Incidental durotomy was identified in 29 cases. They analyzed the size and anatomical location of dural tears, as well as the surgical instrument that caused the tear, and the technique used to seal the tear.

The dural tear incidence was 4.5% (29/643 cases). Tears in the exiting nerve area (two cases, 6.9%) were mainly caused by curettage, while tears in the thecal sac area (18 cases, 62.1%) were associated with electric drill and forceps use, and use of a Kerrison punch in the traversing nerve area (nine cases, 31%). Twelve cases of dural tear were treated with in-hospital monitoring and bed rest. Fourteen cases were treated using a fibrin sealant. Two cases were treated with a non-penetrating titanium clip, and one was converted to microscopic surgery. One case of postoperative meningocele after conservative treatment required endoscopic revision surgery to close the dural tear.

Most cases of incidental dural tear during PBES were treated with an endoscopic procedure. The incidence of dural tear was no higher than that was associated with microscopic surgery. There management strategy for incidental dural tears in biportal endoscopic spinal surgery is safe and effective ¹.

2017

Of 212 consecutive patients, an intraoperative dural tear was observed in nine patients (4.2%). A dural tear occurred in 1.1% of cases of lumbar disc herniation, in 7.9% of cases with lumbar spinal stenosis, in 37.5% of cases with a synovial cyst. An autologous muscle sample was harvested within the operative field and grafted at the dural defect in several layers. Fixation of the transplantation and watertight closure were achieved by the application of fibrin sealant with gelfoam. The mean time for dural closure was 209 s (range 47-420 s). Postoperatively no CSF fistula, no new deficits nor worsening of a pre-existing neurological deficit occurred. None of the patients had problems with wound healing, or discomfort which could be related to the CSF leak.

Dural closure with an autologous muscle graft in combination with fibrin sealant patch is a fast, safe and alternative technique for the management of dural tear in microendoscopic surgery ²).

2016

The full set of prospectively gathered Medicare insurance data (2005-2012) was retrospectively reviewed. Patients who underwent primary lumbar discectomy for lumbar disc herniations from 2009 to quarter 3 of 2012 were selected. This cohort (n = 41,655) was then divided into two subgroups: those who were diagnosed with incidental durotomy on the day of surgery (n = 2,052) and those who were not (control population). To select a more effective control population, patients of a similar age, gender, smoking status, diabetes mellitus status, chronic pulmonary disease status, and body-mass-index were chosen at random from the control population to create a control cohort. In-hospital costs, length of stay, and rates of 30-day readmission, 90-day wound complications, and 90-day serious adverse effects were compared.

An incidental durotomy rate of 4.9% was observed. Higher rates of wound infection (2.4 vs 1.3%; OR

1.88; 95% CI: 1.31 - 2.70; p<0.001), wound dehiscence (0.9 vs 0.4%; OR 2.39; 95% CI: 1.31 - 4.37; p=0.004), and serious adverse events related to incidental durotomy (0.9 vs 0.2%; OR 4.10; 95% CI: 2.05 - 8.19; p<0.0001) were observed in incidental durotomy patients. In-hospital costs were increased by over \$4,000 in patients with incidental durotomy (p<0.0001).

Incidental durotomies occur in almost one in every twenty elderly patients treated with primary lumbar discectomy. Given the increased hospital costs and complication rates, this complication must be viewed as anything but benign ³.

The Japanese Society for Spine Surgery and Related Research (JSSR) performed a third study on complications in spinal surgery in 2011. The purpose was to present information about surgery and complications in a large amount of elderly patients aged 65 years with lumbar spinal stenosis (LSS) without coexisting spondylolisthesis, spondylolysis, or scoliosis, and to compare patients aged \geq 80 years to those aged 65-79 years.

A recordable optical disc for data storage was sent by JSSR in January 2012 to 1105 surgeons certified by the JSSR in order to collect surgical data. Data were returned by the end of May 2012.

Data were accumulated for 8033 patients aged 65 years. The incidence of surgical complications was 10.8%, and did not differ significantly between age groups. The incidence of general complications was 2.7%, and differed significantly between age groups (p < 0.005). The highest incidence of surgical complications was for dural tear (DT) (3.6%), followed by deep wound infection (DWI) (1.4%), neurological complications (1.3%), and epidural hematoma (1.3%). Spinal instrumentation was applied in 30.3%. Incidences of surgical complications in instrumented and noninstrumented surgery were 17.3% and 8.8%. In instrumented surgery, incidences of surgical and general complications were higher in the \geq 80 year age group than in the 65-79 year age group. Logistic regression analyses showed patients with microendoscopic surgery at increased risk of DT. Patients with diabetes mellitus and instrumented surgery showed increased risks of DWI.

Incidences of surgical complications did not differ significantly between age groups. Attention should be paid to both surgical and general complications, particularly for postoperative mental disease in instrumented surgery for patients \geq 80 years old ⁴.

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