



Accidental dural tear in lumbar spine surgery

Parmenion P. Tsitsopoulos¹

Received: 19 May 2022 / Accepted: 23 May 2022 / Published online: 1 June 2022
© The Author(s), under exclusive licence to Springer-Verlag GmbH Austria, part of Springer Nature 2022

Dear editor,

Unintentional dural tear is a bothersome intraoperative complication in lumbar spine surgery. It represents a well-known incident with a varying frequency reported up to 18% in the literature [4, 5]. As expected, revision surgeries, scarring, extensive adhesions, ossification of the yellow ligament, and marked stenosis increase the risk of unintended durotomy. Surgeon's technique and awareness during surgery may also contribute to this incident. Other risk factors such as diabetes mellitus, sex, and age have been inconsistently reported [1].

The possible consequences of dural tear in spine surgery have been described in detail. Problems such as cerebrospinal fluid fistula, pseudomeningocele, meningitis, arachnoiditis, wound infection, and dehiscence can result from persistent leakage [3]. However, early recognition of the tear and adequate repair can reduce postoperative morbidity. Thus, spine surgeons should be well aware of this complication aiming to avoid it, but, at the same time, should be well trained for proper and prompt management in case it occurs.

Nielsen et al. in their short report investigated the incidence and risk factors of incidental dural tear in patients undergoing lumbar spine surgery. The diagnoses of spinal stenosis and disc herniation were included. Data was extracted from the Danish national database for spine surgery. This is a database where information is added prospectively. A wide variety of surgical approaches from limited decompression to fusion plus fixation were included. For the identification of risk factors, a univariate and a multivariate regression analysis model was applied [2].

Among 1139 lumbar surgeries for degenerative pathology, an overall incidence of 10.4% in dural tear was noted. As expected, the occurrence was higher in surgery for lumbar stenosis than for lumbar herniation. Reoperations had a

higher incidence of dural tear. Univariate analysis identified multiple factors that correlated with dural tear. However, in multivariate analysis, only age, revision surgery, and surgery in two or more spinal levels were associated with incidental durotomy, parameters that increased the relative risk of the occurrence of this event. Revision rates following durotomy were low.

Overall, this is a solid manuscript, but a number of important issues should be highlighted. The provided information has been extracted from registry data which is typically collected retrospectively but analyzed prospectively for research purposes. Nevertheless, in this occasion, data was collected prospectively. Although registry-based studies provide longitudinal data and results from large patient samples which are typically generalizable, selection bias frequently exists since assessment and treatment criteria are not uniform and there is no control population. Furthermore, difficulties in the verification and validation of data may be encountered.

Besides registry-related problems, in this report, information regarding the experience of the surgeon who performed the operations and additional intraoperative details that may have influenced the occurrence of dural tear are missing. Moreover, as the authors already point out, the rate of revision surgeries may be underestimated if the primary surgery was not included in the registry database.

Studies using prospectively collecting data represent the most accurate way to assess complication rates following spinal surgery. The incidence of dural tear in lumbar surgery has been repeatedly investigated. This is one more study which assessed parameters from a national registry database and provided some interesting observations. Besides investigating the incidence and risk factors for incidental dural tears, it is critical for neurosurgeons to focus on technical practices to prevent and effectively manage this undesirable complication.

✉ Parmenion P. Tsitsopoulos
par_tsits@yahoo.gr

¹ Department of Neurosurgery, Hippokraton General Hospital, Aristotle University School of Medicine, Thessaloniki, Greece

Declarations

Ethical approval Not applicable.

Informed consent Not applicable.

Conflict of interest The author declares no competing interests.

References

1. Alshameeri ZA, Jasani V (2021) Risk factors for accidental dural tears in spinal surgery. *Int J Spine Surg* 15:536–548
2. Nielsen TH, Rasmussen MM, Thygesen MM (2022) Incidence and risk factors for incidental durotomy in spine surgery for lumbar stenosis and herniated disc. *Acta Neurochir (Wien)* In press
3. Tafazal SI, Sell PJ (2005) Incidental durotomy in lumbar spine surgery: incidence and management. *Eur Spine J* 14:287–290
4. Takahashi Y, Sato T, Hyodo H, Kawamata T, Takahashi E, Miyatake N, Tokunaga M (2013) Incidental durotomy during lumbar spine surgery: risk factors and anatomic locations. *J Neurosurg Spine* 18:165–169
5. Yoshihara H, Yoneoka D (2014) Incidental dural tear in spine surgery: analysis of a nationwide database. *Eur Spine J* 23:389–394

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.