



Commentary



Commentary on “Intraoperative Management of Iatrogenic Durotomy in Endoscopic Spine Surgery: A Systematic Review”

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The authors review the very important issue of incidental durotomy (ID) in endoscopic spine surgery.¹ Although endoscopic spine surgeries have been performed for decades the transition into mainstream practice has occurred in the last 5 years.² Now, as the uptake of endoscopic spinal surgery rapidly expands, it is a good time for a review of one of the dreaded complications in endoscopy-ID.

Spinal endoscopy carries unique challenges relating to ID; recognition is not always easy due to ongoing fluid irrigation and repair is difficult due to the very small port of access.³ Endoscopic spine surgeons must therefore be clear in how to manage ID. While management is often discussed during training there is a lack of evidence-based guidance available.

The authors identify clearly that there are no randomised control trials (RCTs) and hence perform a systematic review which is of greater value than a narrative review alone. In lieu of RCTs they included prospective and retrospective cohorts, case reports, case series, and technical notes. The inclusion of such studies, which are on a lower tier of evidence, is however vital due to the relative scarcity of IDs and these studies being a useful source of information in the context of an evolving surgical discipline.

Their study was reported in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, and the study protocol was registered on the PROSPERO (International Prospective Register of Systematic Reviews). The review was conducted in accordance with the Cochrane Handbook for Systematic Reviews of Interventions with data extracted by 2 independent reviewers. The risk of bias was also calculated and as such the systematic review itself was very well conducted. Overall, 14 studies were included with 68,546 patients.

The paper discusses several important findings. The overall incidence of ID that is reported ranges between 1.01% and 8.18%. This is comparable or lower than open surgery.^{4,5} They report that the rate of ID varied significantly between studies and approaches. In one study which investigated the more complex technique of unilateral laminotomy for bilateral decompression one of the highest rates of ID of 7.5% was identified but while ID increased the length of hospital stay it reassuringly did not negatively influence other perioperative complications or revision rates.⁶

The articles from Vargas et al.^{7,8} are quite interesting and bring up the important issue of

raised epidural pressure in endoscopy resulting in rare but serious complications. This irrigation fluid issue is not well recognised or discussed in existing literature and we feel anecdotally may be an underreported issue.

With respect to the inclusion criteria, interestingly 2 included studies used surgeon surveys for data collection.^{8,9} One of these studies presents a very large data set with 64,470 lumbar endoscopies and 689 dural tears. While an interesting concept, unfortunately surgeon recall is worse than a retrospective study and we are concerned regarding the validity of including these results in the systematic review. The authors do however clearly identify the high risk of bias.

It should also be noted that 11 of the 14 studies included in the study utilised uniportal endoscopy and one reports both uniportal and biportal. This should be acknowledged for 2 reasons. Firstly, this may not be representative of the proportion of surgeries being performed with each technique. There has been a growing trend of unilateral biportal endoscopy especially in South Korea over recent years.¹⁰ Secondly, it is important to compare techniques in terms of outcomes, complications and management of complications and this can only be achieved if there is adequate representation in the literature.

The authors address the heterogeneity of recommendations in the literature such as those advocating for open repairs while others recommend required management for ID. The authors manage to distil this heterogeneous information into a clear and useful flow chart which guides management of endoscopic ID. Their recommendations divided ID into 2 groups—contained and uncontained based on herniation of nerve roots. If nerve roots are irreducible then this necessitates open repair. With contained ID the management depends on the size with <5 mm managed with observation or a patching technique, 5–10 mm managed with patching technique or endoscopic repair and >10 mm managed with endoscopic or repair. This algorithm provides a sound basis to consider management but specifics relating to the best type of patch or endoscopic repair are not provided, due to the lack of robust evidence, and therefore must be an area of future study.

In addition to the lack of specific guidance relating to repair techniques, the authors do themselves identify several other limitations in their study. Firstly, over half of the included studies raised concerns regarding risk of bias. Secondly, the relatively small number of studies and participants could impact on the validity of the study. Thirdly, they highlight the heterogeneity of practice and management in the included studies. Lastly, they hypothesise that the incidence of endoscopic ID is higher than

that reported in the literature. It is of our opinion that these limitations overarch the need for such a study as this. The algorithm which the authors have presented not only gives considered management guidelines to the clinician in the event of an endoscopic ID but also provides a template for the recording of the extent of the ID (contained, uncontained, size <5 mm, 5–10 mm, >10 mm) and the management (closed observation, patching technique, endoscopic repair, open repair) which, should they be adopted as documentation standards, will support less heterogeneity in future retrospective studies. It is our view, however, given the risk of reporting bias and the relatively low number of complications experienced that to truly gain information which can drive forward clinical care, there should be focus on prospective data collection in well-designed registries and well-designed prospective multicentre studies. This study provides a fantastic foundation, with regards to ID, for the development of such projects.

• **Conflict of Interest:** The authors have nothing to disclose.

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