Accidental dural puncture *during* epidural blood patch: what happens next? A national survey

MA. Broom, R. Boyle, R. Campbell, M. Loy

Princess Royal Maternity Hospital, Glasgow Royal Infirmary

Obstetric ANAESTHESIA Princess Royal Maternity

Introduction

Accidental dural puncture (ADP) complicates ~1% of epidural placements.[1] An epidural blood patch (EBP) remains the gold standard treatment for severe post dural puncture headache (PDPH). Similar incidence of risk for ADP is quoted during consent for EBP, yet a recent review suggested only three documented cases of ADP during EBP.[2] It seems likely that this is more common than is acknowledged, yet we are unaware of any guidance on how to proceed in this situation. We aimed to better understand the incidence and management of ADP during EBP, to inform local and national discussion.

Methods

We undertook a national survey of all consultant OAA members. Questions explored incidence and management of ADP during EBP, reflecting both actual clinical experience of this complication, and, how individuals would theoretically mange this, were it to occur in future practice.

Results

1063 email surveys were sent, to which we received 234 (22%) responses.

Incidence

Most respondents, n=212 (91%), had never caused an ADP during EBP. Twenty (8%) had experienced this complication once, and two (1%) reported it occurring on >3 occasions.

Management

Of those who had experienced an ADP during EBP, the majority managed the complication by immediately re-attempting the EBP either at another vertebral level (38%) or by withdrawing the needle until cerebrospinal fluid (CSF) flow ceased but loss of resistance (LOR) remained and completing the EBP (27%).

All survey respondents were asked how they would manage ADP during EBP, regardless of past experiences, were it to occur today. Figure 1 shows all stated management strategies: *actual* management, by those who had encountered this complication, and *proposed* management, by those who had not.

Imaging

Most (63%) would not seek further imaging before a subsequent EBP. Of those who would, 16% would request an MRI spine, 4% MRI head, 4% CT spine and 3% CT head. 13% would choose ultrasound imaging of the back.

Repeat EBP - Outcomes

Of the 22 respondents who had experienced repeat ADP during EBP, those who chose to manage this situation with a second EBP were asked how this affected the patient's headache. It was reported in all cases that some degree of headache resolution was achieved. The overall rate of complete headache resolution for patients undergoing EBP at any time interval was 75%.

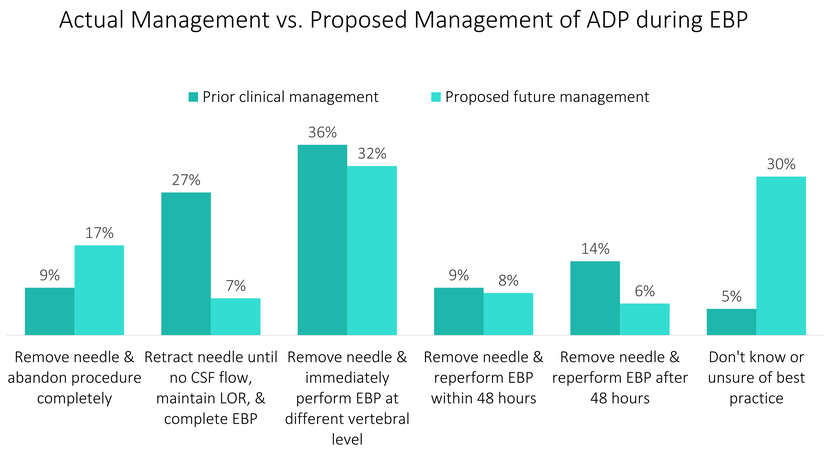


Figure 1: *Prior management of ADP during EBP (n=22) vs proposed future management (n=234).*

Guidelines

No respondent was aware of, or could specify, any guidelines on managing ADP during EBP.

Further comments

There were 73 free-hand comments, with recurring themes:

- Concerns around uncertainty in managing repeat ADP
- Concerns about causing neurological complications with immediately reattempting EBP
- Survey had prompted personal reflection on the topic
- An expressed wish and need for national guidance

Discussion

The true incidence of ADP during EBP remains unknown, however, our data suggests that it is underestimated. Patients, having already suffered an ADP, are likely to represent a higher risk cohort for repeat ADP. There is no guidance on how to manage ADP during EBP.

The incidence of ADP during EBP is higher than previously acknowledged.

Extrapolation from the small amount of available literature, indicates an incidence of ~0.8%, broadly in-line with recommended consent risk. In this survey, 9% of respondents had experienced this complication at least once. Whilst this is clearly subject to a degree of reporting bias, the issue is magnitudes greater than previously reported in literature.

There is disagreement and lack of clarity about how to proceed.

Amongst all respondents, 47% would either abandon completely or would be unsure how to proceed, and 39% would re-attempt EBP immediately. Freehand comments revealed concerns around management uncertainty.

Lessons and future actions

Whilst this survey cannot determine the true incidence of ADP during EBP, based on available data, it may be around 0.5–1%. Given the relatively few numbers of EBPs performed as a proportion of epidurals sited, even on large units, this event may only be seen once in well over a decade and is unlikely to happen to every consultant over their career.

Immediately re-attempting a patch, at a different level, may be a reasonable management approach, and is the majority approach (both 'actual' management in those experienced, and the preferred management, in all respondents). This appears effective, without clear evidence of harm, and there is no clear benefit shown (or known) in delaying further. However, the very limited nature of current evidence should be acknowledged.

ADP during EBP is one of relatively few areas of practice where there appears to be an almost complete paucity of data or guidance. This survey can, we hope, begin to inform discussions toward creating a national consensus guidance.

References

1. Risks of Regional Anaesthesia and General Anaesthesia Explained. OAA/LabourPains.com 2020. Accessed 08.09.2021 https://www.labourpains.com/learn-more-risks-epidurals-spinals-general-anaesthetics
2. Russell R, Laxton C, Lucas DN, Niewiarowski J, Scrutton M, Stocks G. Treatment of obstetric post-dural puncture headache. Part 2: epidural blood patch. *Int J Obstet Anesth* 2019; 38: 104-18