

Introduction

Accidental dural puncture (ADP) occurs in approximately 1% of epidural catheter insertions. A recognised dural puncture could have the needle or catheter removed; it may be appropriate to proceed with an intrathecal catheter. No universally agreed guidance advises how to manage recognised ADP in the labouring patient. Dural puncture risks a post-dural puncture headache, which may be mild but can be prolonged and debilitating. National guidance suggests local policies should be in place to advise clinicians.

Aims

Primary Outcome

- ✓ Determine extent of variance in practice among anaesthetists locally regarding management of dural puncture

Secondary Outcomes

- ✓ Determine variance in practice in recognised ADP and intrathecal catheters
- ✓ Determine need and desire for local guidance on management of ADP including Epidural Blood Patches (EBP)

Methods

Reviewing Current Practice

Local departmental approval was obtained. A survey with free-text and Likert scale answering formats was distributed to anaesthetists regularly practicing in the Labour Suite / elective obstetric theatres.

Determining National Practice

Literature review including guidance from the Obstetric Association of Anaesthetists (OAA) and Association of Anaesthetists (AoA) was compared to local guidance and survey responses.

Results

31 anaesthetists responded to the departmental survey.

Immediate Management of Recognised Dural Puncture

In the event of observed CSF from the needle / epidural catheter:

Remove and Repeat	Intrathecal Catheter	Context Dependent
20	3	7

The volume and preparation of test doses for an intrathecal catheter was variable; 56% were unsure or unable to provide a suggested test dose.

Epidural Blood Patch

An epidural blood patch is a consultant led intervention in NHS Tayside, but identification of patient suitability, preparation of a suitable area and review prior to discharge after this intervention may include registrars:

What Bloods Are Necessary Bloods Prior to EBP?

FBC	Coag	U&Es	LFTs	CRP	None	Unsure
29	19	5	1	23	2	1

There was also variability in responses regarding:

Suitable Location

Necessary Monitoring

Prophylactic LMWH

Discussion

National guidance suggests that local guidelines should be in place to advise practitioners on how to approach dural puncture, including the use of intrathecal catheters. A protocol for NHS Tayside was consequently developed. Given the variance of opinion on whether to proceed with an intrathecal catheterisation in labour, a decision-making tool was developed to empower clinicians to determine the appropriateness of repeating the procedure (which risks repeat dural puncture) or to proceed with an intrathecal catheter in labour. It also provides suggested dosing for top ups.

Decision Making

Accidental dural puncture during lumbar epidural occurs in 1 – 2% of patients (NHST data approximately 1%). There is no universally agreed practice on whether to proceed with an intrathecal catheter or to remove the needle and repeat the procedure:

Risk of IT Catheter: Staff Unfamiliarity | High Block / Total Spinal | Neurological Complication

Risk of Removal: Repeat Dural Puncture | Intrathecal Spread | Failure of Repeat Procedure

While it is ultimately the responsibility of the anaesthetist to agree which is best suited with their patient, the below table has been developed as a decision-making tool for their reference:

Proceed with Intrathecal Catheter?			
	Consider Removal	↔	Consider Proceeding
Maternal Pain	Mild	Moderate	Severe
Anaesthetist	Junior (CT2 – 3)	Senior (ST4+)	Consultant
Insertion	Straightforward	Challenging	Very Challenging
Multiple Attempts	No	Yes (Junior)	Yes (Senior)
Delivery Imminent	No		Yes

If the decision is taken to proceed with an intrathecal catheter:

During Labour:

1. Clearly label the IT catheter and inform the Anaesthetic SR or Consultant
2. Explain the nature of the catheter to the midwife and patient and document in notes
3. Anaesthetic ONLY delivered top ups should be administered approximately 1-2 hourly with 2.5 mL bag mix (0.1% Levobupivacaine / 2 mcg mL⁻¹ Fentanyl)
4. Multidisciplinary discussion is recommended; mode of delivery may be unchanged
5. An apology should be given to the patient

For Instrumental / Surgical Delivery:

1. Review block height and time of last administered top-up
2. Top-ups should occur in theatre with full monitoring and IV crystalloid fluids running
3. Titrate 0.5 mL of 0.5% heavy bupivacaine in 3 minute intervals ± 300 mcg diamorphine
4. Monitor closely for evidence of high block / total spinal

After Delivery:

1. Remove the catheter as soon as is safe to do so
2. All patients should receive an NHS Tayside PDPH leaflet
3. Inpatients should be reviewed daily; discharged patients should receive a phone-call
4. Offer a 6-8 week anaesthetic clinic appointment

Future Practice

Follow up is required to determine the effectiveness of this newly implemented guideline to ensure greater uniformity of practice and improved awareness / decision making with regards to intrathecal catheter use in labour.

References

- Griffiths, S. K., Russell, R., Broom, M. A., Devroe, S., Van de Velde, M., & Lucas, D. N. (2024). Intrathecal catheter placement after inadvertent dural puncture in the obstetric population: Management for labour and operative delivery. guidelines from the Obstetric Anaesthetists' Association. *Anaesthesia*, 79(12), 1348–1368. <https://doi.org/10.1111/anae.16434>
- Moaveni, D. (2020). Management of intrathecal catheters in the obstetric patient. *BJA Education*, 20(7), 216–219. <https://doi.org/10.1016/j.bjae.2020.02.004>