# Current neuraxial techniques for labour analgesia in the UK: a survey of OAA members

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## Abstract:

**Background:** Neuraxial labour analgesia can be delivered via labour epidural analgesia (LEA), combined spinal-epidural (CSE), or dural puncture epidural (DPE) techniques [(1)]. While CSE may offer faster onset and improved block quality compared with LEA, DPE has been proposed as an alternative combining some advantages of CSE while avoiding full intrathecal dosing [(2)]. Despite emerging evidence, real-world adoption of DPE in the UK remains unclear. This study aimed to characterise current UK practice, including first line neuraxial analgesia, CSE technical preferences, and DPE awareness and uptake.

**Methods:** A cross-sectional survey was distributed electronically to 1,906 UK-based members of the Obstetric Anaesthetists' Association (OAA) between June and July 2025. The nine-item survey collected demographics, routine neuraxial practice, technical aspects of CSE, and DPE familiarity and use, with three questions allowing free-text responses. Responses were anonymised, analysed descriptively, and thematic analysis was performed on free-text data.

**Results:** A total of 338 clinicians responded (18% response rate), predominantly consultants (76%). Most respondents routinely provide LEA (93.2%), with CSE used less frequently (6.5%) and DPE rarely used (0.3%). Among those performing CSE, needle-through-needle (NTN) technique was slightly more common than separate-needle technique (56.6% vs 43.4%). Spinal needle gauge selection varied, with 25G and 27G most commonly used, and intrathecal regimens typically comprised low-dose local anaesthetic–opioid mixtures (0.1% bupivacaine/levobupivacaine with 2 μg/mL fentanyl). Awareness of DPE was high (93.7%), yet 65% would not consider its use, citing safety concerns, limited perceived benefit over CSE, and limited robust evidence. Among the few using DPE (4%), application was situational, including advanced labour, high BMI, or unilateral block. Thematic analysis highlighted recurring considerations: risk–benefit balance, preference for existing techniques, need for further evidence, selective clinical use, and influence of local protocols.

**Conclusions:** LEA remains the dominant method of labour analgesia in the UK, with CSE adopted selectively and DPE rarely implemented despite high awareness. Barriers to DPE uptake include perceived risks, limited demonstrated advantage over CSE, and lack of high-quality evidence and consensus guidelines. These findings provide a contemporary snapshot of UK practice, highlight areas of variability in neuraxial labour analgesia, and underscore the prevailing caution and limited adoption of DPE among clinicians.

## Introduction

Neuraxial labour analgesia may be delivered using standard labour epidural analgesia (LEA), combined spinal-epidural (CSE), or dural puncture epidural (DPE) techniques. The choice of approach varies across clinicians and institutions and is influenced by both patient and procedure-related factors [1].

Compared with standard epidural analgesia, CSE has been associated with several potential advantages, including more rapid onset of analgesia, reduced incidence of patchy or unilateral block and improved maternal satisfaction [3]

CSE's can be performed using either a needle-through-needle technique (NTN) or separate-needle technique (SNT). Existing literature suggests that the NTN technique is more commonly used and may offer advantages, including shorter procedural time and higher patient satisfaction [4]. However, some studies have reported higher failure rate of the spinal component with the NTN technique, with rates ranging from 1% to 20% depending on operator experience, compared with reported failure rates of less than 5% with the SNT approach [4].

DPE has been proposed as a technique that combines some advantages of CSE, namely confirmation of cerebrospinal fluid (CSF) before catheter placement and partial transdural spread of local anaesthetic, which may accelerate onset and enhance analgesic effect, while avoiding the adverse effects associated with administration of a full intrathecal dose [2].

Early randomised controlled trials (RCT) comparing DPE with LEA suggested improved block quality with DPE; however, a systematic review published in 2019 concluded that evidence of clear benefit remained inconclusive [2,5,6]. Ongoing clinical equipoise was highlighted in a 2022 editorial [6], although more recent data have begun to suggest potential advantages. DPE performed with a 27-gauge Whitacre needle has been shown to increase the incidence of bilateral sacral blockade at 20 minutes in early labour compared with LEA in nulliparous parturients [7], and a 2024 systematic review demonstrated that DPE using 25G spinal needles was associated with faster analgesic onset, improved sacral coverage and greater block symmetry of block compared with standard epidural analgesia [8]. Comparisons between DPE and CSE remain limited. In a 2024 RCT comparing CSE and DPE techniques for labour analgesia, no significant differences were observed in overall analgesic quality, including block symmetry, need for top-up interventions, catheter adjustment or replacement, or failed conversion to C-section. However, median pain scores at 15 minutes were significantly lower in the CSE group [9].

In the context of evolving evidence, understanding contemporary real-world UK practice is essential. While comparative studies have explored the relative efficacy of epidural, CSE, and DPE techniques, it remains unclear how this evidence has translated into routine clinical decision-making in the UK. There is limited information on clinicians' first-line labour analgesia choices, preferred technical approaches to CSE, and the extent to which DPE has been adopted or incorporated into selective practice. Evaluating these factors among UK obstetric anaesthetists provides insight into current standards of care, identifies variation in practice, and helps contextualise emerging evidence within everyday clinical workflows, thereby informing future research priorities and potential guidance development.

## Method

A cross-sectional survey was distributed electronically via email to members of the Obstetric Anaesthetists' Association (OAA) in the United Kingdom. The survey comprised nine questions: two on respondent demographics and seven topic-focused multiple-choice questions, three of which included free-text comments (Figure 1).

The survey was open for completion between 11th June 2025 and 23rd July 2025 and was distributed to 1,906 UK-based OAA members. Responses were collected anonymously and provided by the OAA in an excel format.

Data were manually reviewed and formatted, after which descriptive analysis was performed on the anonymised dataset by KESC. Free-text responses were examined qualitatively to identify recurring themes.

**Figure 1: Survey distributed to OAA members**

**Q1: Please select your current grade**
- Consultant
- Associate specialist, SAS doctor, speciality doctor or equivalent
- Stage 3 Resident or equivalent (ST6/7)
- Stage 2 Resident or equivalent (ST4/5)
- Stage 1 Resident or equivalent (CT1-4)

**Q2: In which country do you currently practise?**
- England
- Scotland
- Wales
- Northern Ireland

**Q3: Which of the following is your current routine practise for neuraxial labour analgesia?**
- Epidural (LEA)
- Combined spinal-epidural (Needle-Through-Needle (NTN))
- Combined spinal-epidural (Separate Needle (SNT))
- Dural-puncture epidural (DPE)

**Q4: When you perform a CSE, which technique do you routinely use?**
- Needle-Through-Needle technique (NTN)
- Separate Needle technique (SNT)

**Q5: Which gauge needle do you use for your CSE?**
- 25G
- 27G
- Other (free text response)

**Q6: For a CSE, what do you deliver into the CSF**
- Low dose-mix (0.1% levobupivacaine and 2mcgs/ml fentanyl)
- Local anaesthetic/opioid/adjunct mix

- Other (free text response)

**Q7: Have you heard about the 'Dural-Puncture Epidural' (DPE) technique?**
- Yes
- No

**Q8: Would you consider using a DPE technique for a parturient who has sacral sparing or who is in advanced/late labour?**
- Yes
- No
- Unsure

**Q9: Would you consider using the DPE technique in the future?**
- Yes – I use it currently
- Yes – I would consider it
- No – I do not think benefits outweigh risks
- No – I think more research is required
- Other (free text response)

## Results:

**Demographics:**

A total of 338 clinicians responded to the survey, representing an 18% response rate of the OAA membership. Most respondents were consultants (76%, n=258), while resident doctors accounted for 17% (n=56), and associate specialists, specialty doctors, SAS doctors, or equivalent grades comprised 7% (n=24). Geographically, 78% (n=265) of respondents worked in England, 12% (n=39) in Scotland, and 5% (n=17) each in Wales and Northern Ireland (Table 1). Not all questions were answered by the 338 respondents.

| **Grade/Role** | **Number (n)** | **Percentage (%)** |
|---|---|---|
| Consultant | 258 | 76 |
| Stage 3 Resident or equivalent | 36 | 11 |
| Associate specialist/SAS/Speciality doctor or equivalent | 24 | 7 |
| Stage 2 Resident or equivalent | 15 | 4 |
| Stage 1 Resident or equivalent | 5 | 2 |
| **Total** | **338** | **100** |

**Table 1**: Respondent demographics

**Neuraxial techniques:**

Regarding the type of neuraxial labour analgesia performed routinely, most respondents provide epidurals (93.2%, n=315). A total of 6.5% (n = 22) perform CSEs, of which 68.1% (n=15) perform needle-through-needle technique (NTN) and 31.8% (n= 7) perform separate-needle technique. (SNT). Only 0.3% (n=1) perform dural puncture epidurals routinely (Figure 2).

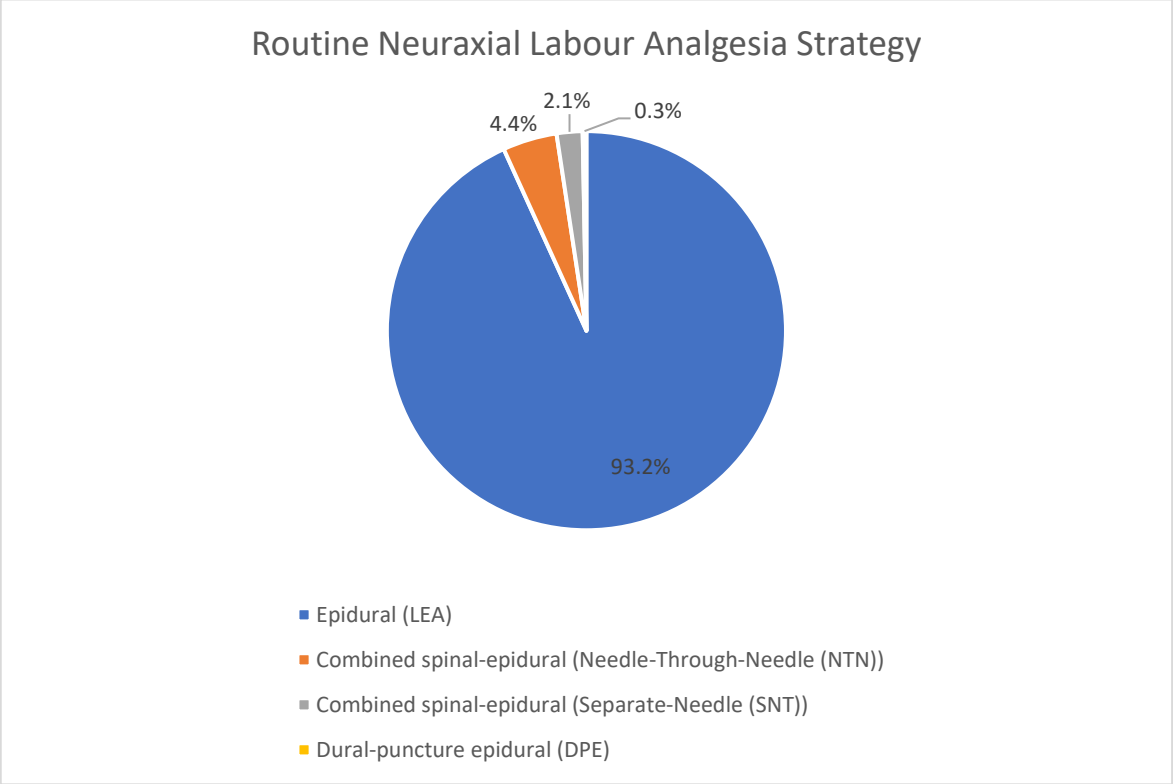


**Figure 2**: Pie chart demonstrating the responses to the question "**Which of the following is your current routine practise for neuraxial labour analgesia?"**

**CSE:**

When specifically performing a CSE, of the 96.7% (n=327) who answered the question, 56.6% (n=185) perform NTN, while 43.4% (n=142) perform separate needle technique (Figure 3).

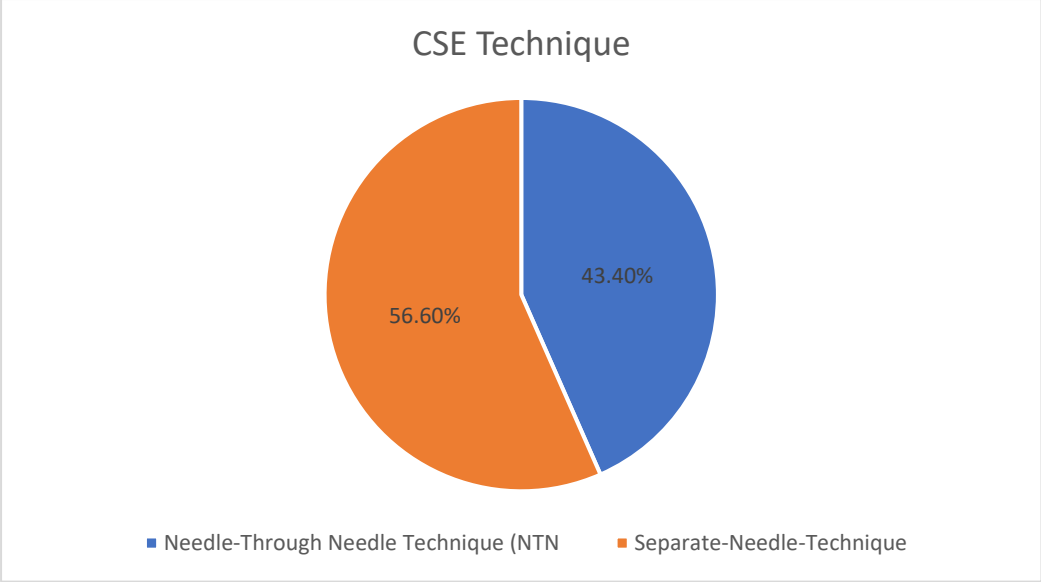


**Figure 3:** Pie chart demonstrating the responses to the question "**When you perform a CSE, which technique do you routinely use?**

Spinal needle usage varied, with 25G being the most commonly used (56.1%, n=185), followed by 27G (42.1%, n=139). Smaller proportions used 24G (1.5%, n=5) and 26G (0.3%, n=1) (Figure 4). Several respondents commented on regional variation in the availability of specific needle sizes, nothing that gauge selection often depended on whether a CSE pack was used for NTN technique or separate spinal pack used for SNT.

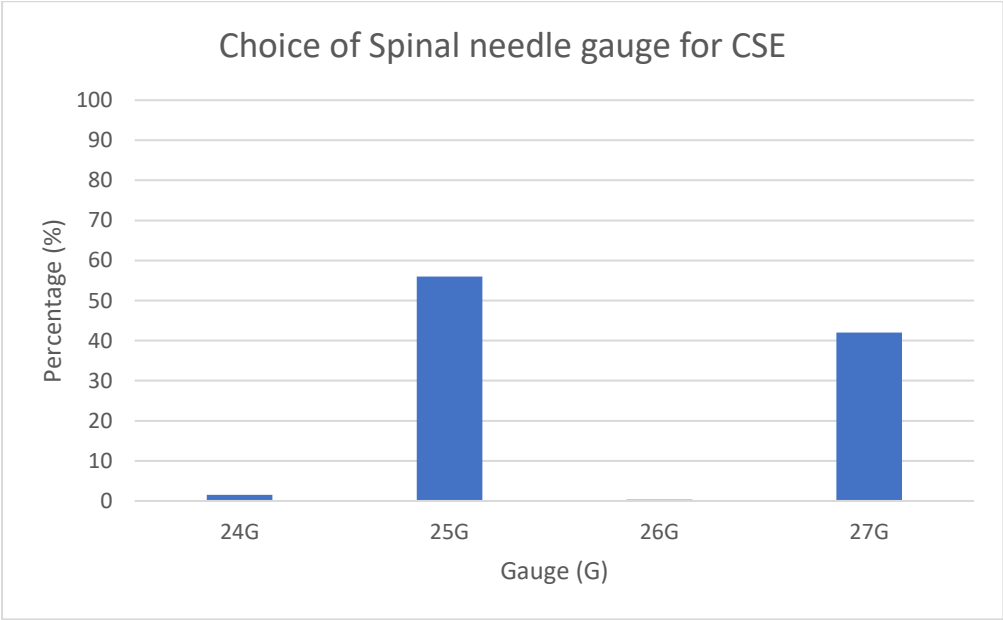


**Figure 4:** Bar chart demonstrating the responses to the question "**Which gauge needle do you use for your CSE?"**

With respect to the intrathecal agent administered during CSE, practice varied. The majority of respondents reported using a low-dose local anaesthetic–opioid mixture, typically 0.1%

bupivacaine or levobupivacaine combined with fentanyl 2 µg/mL, while others reported using a range of alternative intrathecal regimens (Table 2).

| | |
|---|---|
| 0.1% | bupivacaine |
| 0.1% | bupivacaine with 5mcgs/ml fentanyl |
| 0.125% | bupivacaine with 20mcgs fentanyl in 2ml |
| 0.125% | bupivacaine |
| 0.25% | bupivacaine and 25mcgs fentanyl |
| 0.25% | bupivacaine |
| 0.25% | bupivacaine and 250mcgs alfentanil |
| 0.25% | levobupivacaine |
| 0.25% | levobupivacaine with 1ml 0.9% saline and 15mcgs fentanyl |

**Table 2:** Demonstrating local anaesthetic/opioid combinations administered intrathecally during CSE for labour analgesia

**Dural-Puncture Epidural:**

Most respondents (93.7%, n=314) had heard of the DPE technique, while 6.3% (n=21) had not (Figure 5).

Regarding consideration of the use of the DPE technique for a parturient with sacral sparing or who is in advanced/late labour, 53.7% (n=181) said they would not use the technique, 28.5% (n=96) said they were unsure and 17.8% (n=60) said they would consider it (Figure 6).

In terms of the use of the technique in future practise, 65% (n=197) indicated they would not consider the DPE technique. Among these, 35.6% (n=108) felt the benefits do not outweigh the risks, and 29.4% (n=89) indicated more research is required. Of the 35% (n=106) who would consider the technique, 31% (n=94) might use it, and 4% (n=12) already do (Figure 7).

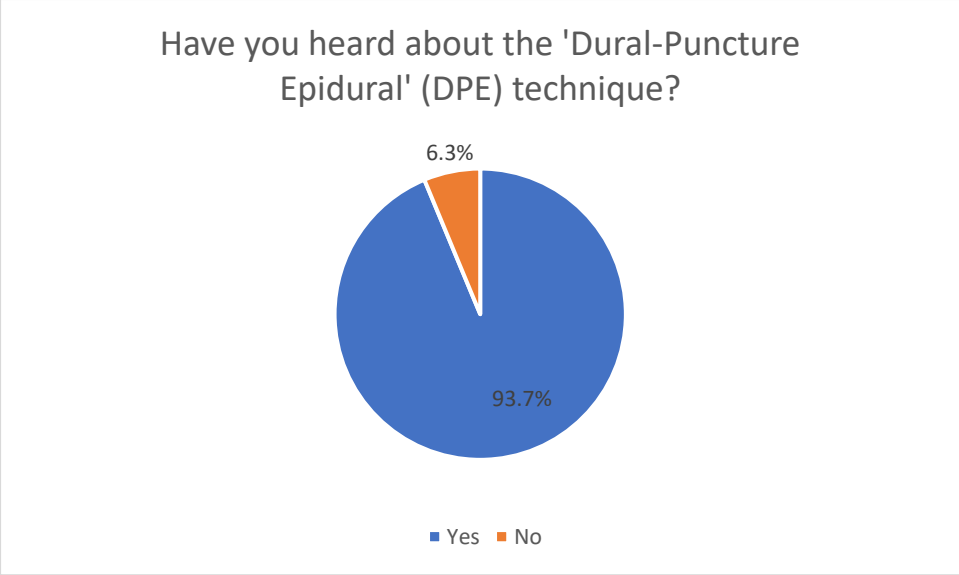


**Figure 5:** Pie chart demonstrating the responses to the question **"Have you heard about the 'Dural-Puncture Epidural' (DPE) technique?"**

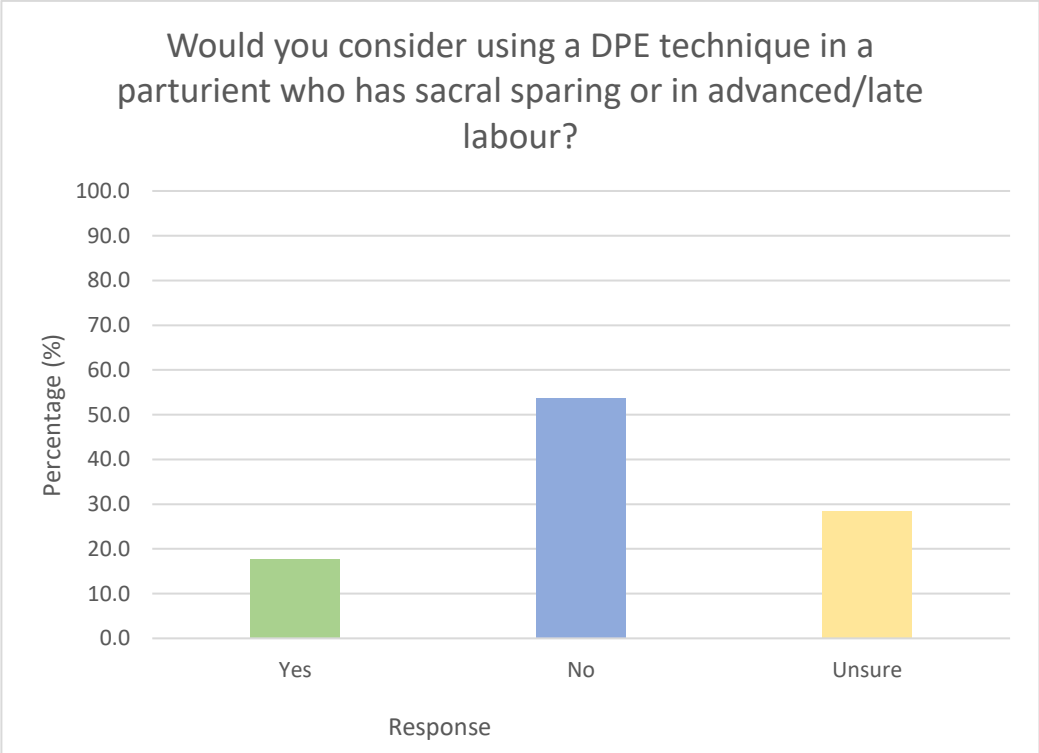


**Figure 6:** Bar chart demonstrating the responses to the question **"Would you consider using a DPE technique for a parturient who has sacral sparing or who is in advanced/late labour?"**

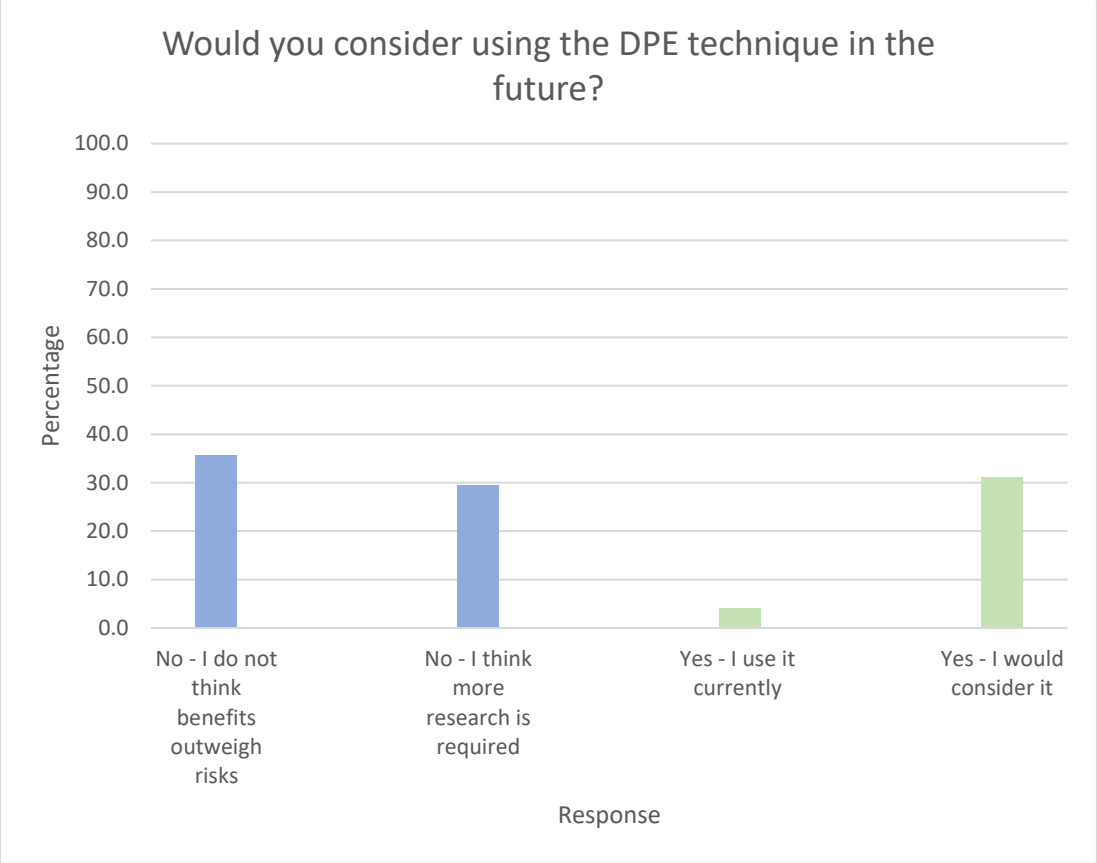


**Figure 7**: Bar chart demonstrating the responses to the question **"Would you consider using the DPE technique in the future?"**

Thematic analysis of the free-text responses regarding the question "Would you consider using the DPE technique in the future?", revealed several recurring themes. **Safety and risk concerns** were prominent, with respondents citing post-dural puncture headache, potential chronic intracranial hypotension, and the risks associated with routine dural puncture. Many highlighted a **perceived lack of benefit**, expressing that DPE offered little advantage over standard epidural or CSE techniques. **Preference for existing techniques** was common, with several respondents favouring CSE for faster onset or reliability and the consistent comment that if we are deliberately puncturing the dura then we should deliver medication into it. **Knowledge gaps and need for evidence** also emerged, with clinicians indicating unfamiliarity with the technique and a desire for more safety and efficacy data. Some respondents described **situational or selective use**, employing DPE in specific scenarios such as advanced labour, high BMI, unilateral block, or after failed epidurals. Finally, a few noted **practical considerations**, including departmental adoption and local protocols as influencing factors (Table 3).

| **Themes** | **Codes** | **Representative Responses** |
|---|---|---|
| **Safety/Risk Concerns** | PDPH,<br>Dural puncture risk<br>Chronic hypotension | "Concern about PDPH"<br>"Concern about puncturing the dura routinely" |

| | | |
|---|---|---|
| | | "Potentially slightly hastened onset not worth the risks"<br>"Why add the additional risk of a known dural puncture"<br>"Increased risk of meningitis"<br>"Questionable technique"<br>"Unreliable spread of drug" |
| | | |
| Perceived lack of benefit/clinical need | No advantage over CSE | "Don't see the point"<br>"No advantage in late labour"<br>"Not convinced of benefit" |
| | | |
| Preference for existing techniques | CSE or LEA preferred | "CSE is better"<br>"Prefer CSE"<br>"If you're going to puncture the dura then might as well deliver drug into it"<br>"Considered it in a woman with 2 labour epidurals with inadequate blocks but did a CSE instead" |
| | | |
| Knowledge/evidence | Need more information, unfamiliar.<br>Too much research already | "Don't know enough about it"<br>"Need more information regarding safety and efficacy"<br>"Need to be more familiar with the research evidence"<br>"Researched to death"<br>"Unfamiliar with technique" |
| | | |
| Situational/Selective Use | Use in advanced labour, unilateral block after failed epidurals | "Use it in advanced labour"<br>"Use it in patients who have a unilateral block and are in early labour"<br>"Used it on patients with high BMI"<br>"Quicker onset than epidural" |
| | | |
| Practical/Departmental Factors | Adoption depends on local practise and consensus guidelines from OAA | "What is the consensus from the OA?" |

| | | |
|---|---|---|
| | | "If I was trained in it and it was accepted practise in the department" |

**Table 3:** Thematic analysis of free-text responses to the question: **"Would you consider using the DPE technique in the future?"**

## Discussion

This survey provides insight into the current practise of neuraxial labour analgesia among UK-based obstetric anaesthetists.

The results demonstrate that epidurals remain the dominant method of labour analgesia, with CSE techniques used less frequently and DPE adoption limited.

Despite evidence suggesting that CSE techniques confer advantages over epidural analgesia alone, uptake of CSE as a first-line technique remains low. This likely reflects considerable variability in individual and institutional practise. As one respondent noted, "I perform epidural or CSE for labour on a case-by-case basis approximately 50/50", highlighting personalised decision-making rather than routine use. At an institutional level, some labour wards adopt CSE as the default approach for all labouring women, whereas others reserve it for selected cases. Factors such as variable confidence in CSE performance among Residents, concerns regarding adverse effects including foetal bradycardia and opioid-induced pruritus and differing departmental cultures may all contribute to the limited routine adoption of CSE despite supportive evidence [(3)]

Where CSEs are performed, the choice of spinal needle technique was relatively evenly split, with just over half of respondents favouring the needle-through-needle (NTN) approach. This finding supports existing literature identifying NTN as the most commonly used technique [(4)]. Several free-text responses highlighted a preference for the separate-needle technique (SNT) in specific clinical scenarios, particularly to facilitate patient positioning by first establishing analgesia in cases of advanced labour or maternal distress, prior to epidural needle insertion.

Regarding other aspects of the CSE technique, most clinicians reported using either 25G or 27G spinal needles, with an almost equal distribution between the two. Several respondents noted that needle gauge selection was influenced by the technique employed, specifically whether a needle-through-needle CSE kit or a separate-needle technique using a spinal pack was used, as well as by local equipment availability. Similarly, although the majority of respondents administered a "low-dose mix"; 0.1% bupivacaine/levobupivacaine with 2mcgs/ml fentanyl, the observed variation in intrathecal regimens likely reflects differences in institutional protocols, clinician preference and attempts to balance efficacy with minimising side effects.

Awareness of the DPE technique was high, with over 90% of respondents reporting familiarity. Despite this, most clinicians (65%) indicated they would not currently consider

using DPE, primarily due to concerns regarding safety and the risk–benefit balance, including post-dural puncture headache and other complications of routine dural puncture. Many perceived limited advantages over CSE techniques, often favouring CSE for its faster onset and reliability, and expressed the view that if the dura is deliberately punctured, medication should be delivered intrathecally. Indeed, when a DPE might be indicated, according to the literature, respondents reported that CSE would typically be performed instead, leaving little perceived role for DPE.

Knowledge gaps and the need for further evidence were emphasised, with respondents expressing unfamiliarity with the technique and a desire for robust safety and efficacy data prior to implementation.

Among the small proportion (4%) who reported using DPE, application was typically situation specific, for example, in advanced labour, patients with unilateral block, or those with high BMI. One respondent replied that they use it because it has a quicker onset to analgesia that epidural alone. Practical factors, including departmental adoption and local protocols, also influenced uptake.

Overall, clinical adoption remains cautious, reflecting limited high-quality evidence and the absence of consensus guidelines. DPE is therefore unlikely to achieve wider use without clear evidence of superiority over CSE and formal guideline endorsement.

**Limitations:**

Limitations of this study include the modest response rate (18%), which may introduce response bias, and the self-reported nature of practice patterns, which could differ from actual clinical behaviour. Additionally, the survey did not capture information on institutional protocols or local policies that may influence technique choice.

## Conclusion:

This survey provides a contemporary overview of neuraxial labour analgesia practice among UK obstetric anaesthetists. Epidural analgesia remains the predominant approach, with CSE used selectively and DPE adoption still limited despite high awareness. Key barriers to DPE uptake include perceived safety risks, lack of demonstrated benefit over CSE, and insufficient high-quality evidence or guideline support. These findings not only highlight areas of variability in practice but also underscore the prevailing caution toward DPE. Realistically, even if emerging evidence robustly demonstrates benefit over risk of the DPE technique, widespread adoption will likely require formal consensus guidance to support its safe and standardised implementation.

References:


1. Toledano RD, Leffert L. What's New in Neuraxial Labor Analgesia. Curr Anesthesiol Rep. 2021;11(3):340–7.
2. Segal S, Pan PH. Dural Puncture Epidural for Labor Analgesia: Is It Really an Improvement over Conventional Labor Epidural Analgesia? Anesthesiology. 2022 May 1;136(5):667–9.
3. Cappiello E, O'Rourke N, Segal S, Tsen LC. A Randomized Trial of Dural Puncture Epidural Technique Compared with the Standard Epidural Technique for Labor Analgesia. Anesth Analg. 2008 Nov;107(5):1646–51.
4. Ong KB, Sashidharan R. Combined spinal–epidural techniques. Continuing Education in Anaesthesia Critical Care & Pain. 2007 Apr;7(2):38–41.
5. Chau A, Bibbo C, Huang CC, Elterman KG, Cappiello EC, Robinson JN, et al. Dural Puncture Epidural Technique Improves Labor Analgesia Quality With Fewer Side Effects Compared With Epidural and Combined Spinal Epidural Techniques: A Randomized Clinical Trial. Anesth Analg. 2017 Feb;124(2):560–9.
6. Segal S, Pan PH. Dural Puncture Epidural for Labor Analgesia: Is It Really an Improvement over Conventional Labor Epidural Analgesia? Anesthesiology. 2022 May 23;136(5):667–9.
7. Frassanito L, Filetici N, Piersanti A, Vassalli F, Van De Velde M, Tsen LC, et al. Sacral sensory blockade from 27-gauge pencil-point dural puncture epidural analgesia or epidural analgesia in laboring nulliparous parturients: a randomized controlled trial. Int J Obstet Anesth. 2024 Nov;60:104217.
8. Lin W, Lin J, Yang Y, Lin L, Lin Q. Dural puncture epidural with 25-G spinal needles versus conventional epidural technique for labor analgesia: A systematic review of randomized controlled trials. Technology and Health Care. 2024 Mar 14;32(2):495–510.
9. Zang H, Padilla A, Pham T, Rubright SM, Fuller M, Craig A, et al. Combined spinal-epidural vs. dural puncture epidural techniques for labour analgesia: a randomised controlled trial*. Anaesthesia. 2025 Jan 7;80(1):29–37.