ISSN: 2377-9004

Chatterjee P et al. Obstet Gynecol Cases Rev 2025, 12:266
DOI: 10.23937/2377-9004266
Volume 12 | Issue 1
Open Access

Obstetrics and Gynaecology Cases - Reviews

CASE REPORT

Dry Tap in a Pregnant Woman Undergoing Caesarean Section: An Anaesthetic Quagmire

Protiti Chatterjee[1], Adethen Gunasekaran[1]*, Jeevasri Calaidrajane[1] and Chitra Rajeswari[2]

[1]*Senior Resident, Department of Anaesthesia & Critical Care, JIPMER Puducherry, India*

[2]*Additional Professor, Department of Anaesthesia & Critical Care, JIPMER Puducherry, India*

***Corresponding author:** *Adethen Gunasekaran, Assistant Professor, Velammal Medical College and Research Institute, Madurai, India, Tel: 8778376217*

Abstract

"Dry tap", characterized by the lack of return of cerebrospinal fluid via the spinal needle following a dural puncture, is a distressing clinical conundrum for the anaesthesiologist. It assumes greater significance in situations where administering general anaesthesia is associated with significant risks, such as in pregnant women. Dry tap can have myriad causes, such as a blocked needle, incorrect technique, wrong space, and low cerebrospinal fluid pressure. Alternate neuraxial approaches, such as epidural anaesthesia, can be attempted in certain patients, but the risk of an unrecognized dural puncture must be borne in mind. Cases have been reported where a successful subarachnoid block has been administered despite obtaining a dry tap. However, the decision on the subsequent anaesthetic management after obtaining a dry tap rests on the attending anaesthesiologist and, hence, varies from one case to another.

Keywords

Cesarean section, Pregnant woman, Spinal anaesthesia, Subarachnoid block, Cerebrospinal fluid (CSF)

Introduction

The subarachnoid block is the preferred anaesthetic modality for caesarean section, given its relative safety over general anaesthesia in terms of airway manipulation, aspiration of gastric contents, and ease of performance [1]. However, one can encounter a situation where, despite being in the appropriate neuraxial space as appreciated by the characteristic 'pop-up' or 'giveaway' sensations, no flow of cerebrospinal fluid (CSF) can be observed at the hub of the spinal needle [2]. This clinical conundrum is both perplexing and distressing to the anaesthesiologist, especially in a situation where the risks of administering general anaesthesia outweigh the benefits, such as in most caesarean sections.

Case Report

We describe the case of a 21-year-old parturient, G2P1L1, with polyhydramnios, who was posted for an emergency lower segment caesarean section (LSCS) given pathological foetal cardiotocograph. She was a well-controlled type 2 diabetic on oral Metformin tablets and Insulin injections, and her previous surgical history included an LSCS under subarachnoid block two years prior. She had no other comorbidities, and her reported effort tolerance was adequate. On examination, she was found to be afebrile and haemodynamically stable, and her systemic examination was within normal limits. Her airway and spine examination revealed no abnormal findings. Spinal anaesthesia was planned for the patient and was attempted in the left lateral position with a 25 G Quincke needle. Despite the feeling of 'give away', no CSF was noted to appear in the hub of the spinal needle. After three unsuccessful attempts, the paramedian approach was tried but to no avail. She was then made to sit, and a dural tap was attempted in both approaches with a 25 G, followed by a 23 G Quincke needle. The feeling of 'give away' was appreciated in each attempt, but no attendant CSF flow was seen in the needle hub. Finally, considering the patient's discomfort due to prolonged positioning and multiple

Citation: Chatterjee P, Gunasekaran A, Calaidrajane J, Rajeswari C (2025) Dry Tap in a Pregnant Woman Undergoing Caesarean Section: An Anaesthetic Quagmire. Obstet Gynecol Cases Rev 12:266. doi.org/10.23937/2377-9004266

Accepted: May 12, 2025: **Published:** May 14, 2025

attempts and bearing in mind the emergency nature of her surgery, general anaesthesia was administered. The subsequent intraoperative course was uneventful. After an hour-long surgery, she was extubated on the operation table, kept in the post-anaesthesia recovery room for observation, and subsequently shifted to a ward on the same day.

Discussion

One significant advantage of spinal anaesthesia is having an objectively defined endpoint with CSF backflow [3]. However, 'dry tap', described as the absence of CSF return despite a dural puncture, may occur and can have myriad causes, such as a blocked needle, wrong space, incorrect technique, prior spine surgery, and low CSF pressure [2]. In patients with absent or low CSF volume, it is postulated that the dura mater collapses on the pia mater, extirpating the subarachnoid space and leading to a dry tap. While this situation can sometimes be mitigated by changing the needle and preloading with one litre of crystalloid to increase the CSF pressure, it is still possible that these measures do not overcome the problem. Few existing case reports also describe dry taps in patients with epidural, paraspinal, and psoas abscesses. In these cases, either frank pus was aspirated when attempting dural puncture or imaging was performed, which led to a retrospective diagnosis of paraspinal abscess [4,5]. Most of these patients were either diabetic, immunocompromised, or alcoholic.

Nevertheless, there is proof that dry tap does not abnegate the possibility of achieving a successful subarachnoid blockade. There are reported cases in the literature where local anaesthetic has been administered via the subarachnoid route after the tactile feeling of 'giveaway' was appreciated despite having no CSF return [6,7]. Since the CSF pressure is higher in the sitting position (40 cm H_2O) than in lateral decubitus (5-20 cm H_2O), it may offer a theoretical benefit to undertake subsequent attempts at spinal anaesthesia following a dry tap in the sitting position [8]. However, in most case reports, changing the patient's position to sitting did not yield a discernible CSF flow. Hence, whether making patients sit for subarachnoid blockade should be routinely practised in the face of a dry tap is a matter of conjecture. Similarly, no data exists describing the effect of intravenous fluid loading during a subarachnoid blockade on the lumbar CSF pressure. Hence, the question of whether co-loading with intravenous fluids can increase the chances of getting CSF return during subarachnoid blockade by raising the lumbar CSF pressure remains unanswered.

Conclusion

Our patient neither exhibited signs or symptoms suggestive of an epidural abscess nor did she have previous spine surgeries. Her previous experience of spinal anaesthesia was uneventful and devoid of complications. In our case, measures were also taken to rule out the possibility of needle block or technical incompetence. Low CSF volume can be a plausible explanation for dry tap, as prolonged labor may have led to significant dehydration. In this setting, alternate neuraxial approaches such as epidural anaesthesia can be considered, but the possibility of an inadvertent dural puncture going unrecognized must be borne in mind.

Declaration of Patient Consent

The authors certify that they have obtained all appropriate consent forms from the parents of the patient. In the form, the parent/s has/has given consent for their child's images and other clinical information to be reported in the journal. The parent/s understands that her name and initial will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

Financial Support and Sponsorship

Nil.

Conflicts of Interest

There are no conflicts of interest.

Declarations

Disclosures and funding statement

None.

Informed consent

The patient has given informed consent.

All authors contributed to the conceptualization and design of the response. All authors have read and approved the manuscript and believe it to represent honest work.

The authors hereby declare that they have no conflicts of interest to disclosure.

Author Contributions

Chatterjee P: Concept, design, literature search, manuscript preparation, manuscript editing.

Gunesekaran A: Concept, design, definition of intellectual content, manuscript review.

Rajeswari C: Clinical studies, data acquisition, manuscript preparation.

Jeevasri C: Data acquisition, manuscript preparation, manuscript editing.

References

1. Ghaffari S, Dehghanpisheh L, Tavakkoli F, Mahmoudi H (2018) The effect of spinal versus general anesthesia on quality of life in women undergoing cesarean delivery on maternal request. Cureus 10: e3715.

2. Ramachandran K, Ponnusamy N (2005) Dry tap and spinal anesthesia. Can J Anaesth 52: 1104-1105.

3. McLeod G, McCartney C, Wildsmith T (2013) Principles and practice of regional anaesthesia. Oxford Textbooks in Anaesthesia.

4. Sahu DK, Kaul V, Parampill R (2012) Dry tap during spinal anaesthesia turns out to be epidural abscess. Indian J Anaesth 56: 287-290.

5. Ghatak T, Gurjar M, Kohat AK, Azim A, Hiralal (2013) Dry spinal tap due to primary psoas and paraspinal abscesses. Saudi J Anaesth 7: 215-216.

6. Das HK, Gunjal MK, Toshikhane HD (2014) Spinal anesthesia in a caesarian case after dry tap. Anesth Essays Res 8: 103-104.

7. Carvalho CMP, Correia AS, Pai RVB (2022) Successful subarachnoid block following a dry tap in a geriatric patient. Hamdan Medical Journal 15: 224-226.

8. Sharma HM, Khandelwal M, Beniwal S, Gurjar SS, Sharma S (2022) Comparison of sitting versus lateral decubitus position during spinal anaesthesia on the occurrence of post-dural puncture headache in patients undergoing lower segment caesarean section: A randomised controlled trial. Indian J Anaesth 66: 738-740.