

# Incidence of post-dural lumbar puncture headache (PDLPH) in comparison between emergency and elective lower segment cesarean section (LSCS) with 26G Quincke–Babcock cutting-beveled spinal needle

## ABSTRACT

**Background:** C-section is usually performed under spinal anesthesia also known as a subarachnoid block (SAB) over general anesthesia. Because of the lesser amount of dose used, there is a lower risk of local anesthetic toxicity and minimal transfer of drugs to the fetus. Obstetric patients have a higher risk of having post-dural puncture headache (PDPH). PDPH occurs due to leakage of the cerebrospinal fluid (CSF) through the hole created by a spinal needle. There are many elements affecting the frequency of PDPH, these elements can also consist of age, female sex, needle size, and types, pregnancy, preceding records of PDPH, median–paramedian distinction in approach, a puncture level. PDPH is commonly in the form of a frontal, occipital, or retro-orbital headache that starts in 12–72 h after the dural puncture and will increase when standing and decrease when lying down or resting. We aimed to learn about headache frequency between elective and emergency lower segment cesarean section using 26-G Quincke spinal needle in full-term pregnant patients.

**Objectives:** To study the incidence of PDPH using the 26G Quincke spinal needle. To analyze the causal factors/determinants such as adequate preloading of fluids, size of spinal needle, number of pricks, and technique of lumbar puncture effects on the incidence of PDPH.

**Methodology:** This study is a prospective questionnaire-based comparative observational study using the convenience sampling method. The patients were interviewed with a structured questionnaire at the Symbiosis University Hospital and Research Centre, Lavale, Pune. The patients observed for the study were between 20 and 40 of age group, posted for emergency or elective lower segment cesarean section, with body mass index (BMI) less than 14.5 to 24.9 and with ASA I and II grades. Patients with any comorbidities, recurrent headaches, obesity, and spine deformity were excluded. According to the review of the literature and with the help of a formula, the sample size was calculated as 20; 10 patients for elective LSCS, and 10 patients for emergency LSCS.

**Results:** Out of 20 patients, 10 patients were posted for elective LSCS, and the rest 10 patients were for emergency LSCS under spinal anesthesia. The incidence of PDPH was found only in 2 out of 10 emergency LSCS patients, and no patients from elective LSCS cases showed up with the incidence of PDPH.

**Key words:** Elective, emergency, lower segment cesarean section (LSCS), obstetric patients, post-dural puncture headache (PDPH), Quincke–Babcock needle, spinal anesthesia

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## Introduction

Cesarean section (c-section) a procedure performed under spinal anesthesia also known as a subarachnoid block (SAB) is used over the world, because of its several benefits over general anesthesia.<sup>[1]</sup>

In comparison with general anesthesia, spinal anesthesia is the approach preferred for lower segment cesarean section because it avoids intravenous and inhalational general anesthetic agents and also the chances of failed intubation and also due to the fact it gives effective pain control, mobility, and speedy return again to daily things to do for new mothers and amplify their best of lifestyles.<sup>[2]</sup>

Spinal anesthesia offers many advantages for cesarean delivery. The action occurs faster and offers a deep neural block. Because of the lesser amount of dose used, there is a lower risk of local anesthetic toxicity and minimal transfer of drugs to the fetus.<sup>[3]</sup>

Obstetric patients have a higher incidence of having post-dural puncture headache (PDPH).<sup>[4]</sup> A PDPH occurs due to the leakage of cerebrospinal fluid (CSF) through the hole created by a dural puncture with a spinal needle.<sup>[1]</sup>

There are many elements affecting the frequency of PDPH, these elements can also consist of age, female sex, needle size, and types, pregnancy, preceding records of PDPH, median-paramedian distinction in approach, a puncture level.<sup>[5]</sup> Women are thought to have a higher risk of PDPH, especially during pregnancy. The tone of the cerebral arteries can be affected by high amounts of estrogen in women, which increases the vascular distension response to CSF hypotension. The prevalence of PDPH is greater in young people and slim patients.<sup>[6]</sup> It normally occurs in less than 7 days after the puncture, worsens in less than 15 min after keeping the upright position, and improves within 30 min following medication. It starts fading within 14 days after spinal puncture. Headache is more common with the use of large needles owing to the increased leakage of CSF.<sup>[7]</sup> PDPH is commonly in the form of a frontal, occipital, or retro-orbital headache that starts in 12–72 h after the dural puncture and will increase when standing and decrease when lying down or resting.<sup>[8]</sup>

Dural puncture leading to CSF leakage results in decreased CSF pressure, as well as, absolute reduction of CSF volume under the cisterna magna, with resultant downward motion of the brain and traction on pain-sensitive structures in the cranial cavity, particularly the pain-sensitive basal dura.<sup>[7,8]</sup> CSF volume decreases in the course of lumbar puncture

reducing the brain's supportive cushion and thereby causing headache.<sup>[7]</sup>

Spinal anesthesia is a broadly used technique in present-day aesthetics. Although it is a reliable and often used anesthetic procedure, it includes complications, such as PDPH triggered through subarachnoid membrane puncture, which substantially influences postoperative well-being.

In this study, we aimed to learn about headache frequency between Elective and Emergency lower segment cesarean section using the 26-G Quincke spinal needle in full-term pregnant patients.

## Objectives

### Primary Objective

To study the incidence of PDPH using 26 G Quincke spinal needle.

### Secondary Objective

To analyze the causal factors/determinants such as adequate preloading of fluids, size of a spinal needle, number of pricks, and technique of lumbar puncture effects on the incidence of PDPH.

## Review of Literature

In 2020, authors Batova, R., & Georgiev, S. concluded a study on "To Compare The Incidence Of Post Dural Puncture Headache With Pencil Point 25 Gauge Whitacre Verse Cutting 25 Gauge Quincke Spinal Needle In Patients For C Section Under Spinal Anaesthesia." The it was a randomized controlled study. The targated population were all the patients asa status i or asa ii posted por c-section surgeries under spinal anesthesia, there was a comparision between 25 gauge whitacare pencil point and25 gauge verse cutting quincke spinal needles used in the patients posted for c-Section Under Spinal Anesthesia Having The Incidence Of PDPH. Result Stated That 27 (31.8%) Patients Had PDPH With Quincke Group Spinal Needle.

In 2019, Mustafa Bıçak, Fikret Salık, Hakan Akelma did study on "Is There An Effect On The Development Of Postdural Punctur Headache Of Dural Punction Made With The Spinal Needle In Three Different Orientations During Spinal Anaesthesia Applied To Pregnant Patients?" It was a prospective randomized study, the targated population were the patients in the age group of 18-45 years with the ASA I or II under going for spinal anesthesia for elective c-section. The sample size was 300 out of which 25 patients developed with PDPH.

In 2018, Authors Fikret Salik, Ebru Tarikçi Kiliç, Hakan Akelma, Abdülmenap Güzel, Studied the “The Effects Of The Quincke Spinal Needle Bevel Insertion On Postdural Puncture Headache And Hemodynamics In Obstetric Patients” it was a randomized prospective study, the targeted population were the patients with the age group of 18-40 years, ASA I & ASA II, posted for cesarean deliveries under spinal anesthesia, 26 gauge quincke spinal needle was used to check the incidence of pdph with comparison in either transverse or in sagittal planes, way of insertion of needle. result stated that the 8% out of 50 patients developed PDPH.

In 2017 a study conducted by Mehmet Salim Akdemir, Ayhan Kaydu, Yonca Yanlı, Mehtap Özdemir, Erhan Gökçek, And Haktan Karaman on “The Postdural Puncture Headache And Back Pain: The Comparison Of 26-Gauge Atraucan And 26-Gauge Quincke Spinal Needles In Obstetric Patients” it was a randomized prospective, double-blinded study, the targeted population were the patients with the age group of 18-45 years, ASA I & ASA II women undergoing for elective cesarean operations under spinal anesthesia. PDPH was compared between 26 gauge atraucan spinal needle and 26 gauge quincke spinal needle used for spinal anesthesia. result stated that out of 342 patients, in which 26 gauge quincke spinal needle was used, 17(4.98%) patients suffered from PDPH.

In 2017, Samuel I Nuhu, Henry Y Embu, Iornum Shambe did a study on “Prevalence Of Postdural Puncture Headache Among Caesarean Section Patients In North Central, Nigeria” it was the prospective questionnaire based study, the targeted population were the patients in the age group of 15-50 years undergoing for c-section under spinal anesthesia. there was a comparison done between the sizes of needle such as 24g, 26g and 27g quincke spinal needles, out of 236 patients, 134 (56.78%) patients underwent for emergency LSCS, and 36(26.86%) patients out of that had PDPH. 26g needle had the highest incidence of PDPH (8, 26.93%) on comparison with 24g and 27g.

A comparative study done by Anirban Pal, Amita Acharya<sup>1</sup>, Nidhi Dawar Pal<sup>2</sup>, Satrajit Dawn, Jhuma Biswas in 2011 with the title of study was “Do Pencil-Point Spinal Needles Decrease The Incidence Of Postdural Puncture Headache In Reality? A Comparative Study Between Pencil-Point 25g Whitacre And Cutting-Beveled 25g Quincke Spinal Needles In 320 Obstetric Patients.” it was a Monika Kambale: The Incidence Of Post Dural Lumbar Puncture Headache (PDLPH) In Comparison Between Emergency & Elective Lower Segment Cesarean Section (LSCS) With 26G Quincke-Babcock Cutting-Beveled Spinal Needle randomized prospective, double-blinded study, the targeted population were the patients with the age group

of 20-36 years, asa i & asa ii, posted for caesarean section under subarachnoid block, sample size was 320, PDPH was compared between 120 patients in which 25 gauge quincke spinal needle was used and in 120 patients in which 25 gauge whitacre spinal needle was used, and both group patients were posted for obstetric surgeries, out of which in 120 patients group with 25 gauge quincke spinal needle used, 45 (28.12%) patient were developed with PDPH.

## Methodology

Study design:- Prospective questionnaire-based comparative observational study.

Setting:- Labor operation theatre, obstetrics ward, postnatal care (PNC) ward, and obstetrics OPD.

Duration:- 2 months

Study subjects:- Full-term pregnant patients posted for elective and emergency c-section.

Sample size:- 20

Ten Emergency LSCS and 10 elective LSCS cases

## Patient Selection Criteria

### Study criteria

#### Inclusion criteria

- Elective and emergency surgeries posted for c-section under spinal anesthesia using the 26G spinal needle
- Weight under 80 kg
- American Society of Anesthesiologist (ASA) I and ASA II patients
- Age group of 20–40 years

#### Exclusion criteria

- History of recurrent headaches such as migraine
- Any comorbidities such as hypertension, diabetes, thyroid
- Spine deformity (kyphosis and scoliosis)
- Contraindications for spinal anesthesia: infection in the site of injection, coagulopathy

### Data collection method

After getting approval from the Institutional Ethics Committee (IEC), this comparative prospective questionnaire-based observational study using the convenience sampling method was conducted on 20 patients in a tertiary care hospital. Twenty patients were interviewed with a prestructured and pretested proforma (Annexure). The patients observed for

the study were between 20 and 40 years of age; 10 posted for emergency and the other 10 for elective (Lscs) lower segment cesarean section, with weight below 80 Kg, and (Asa) American Society of Anesthesiologists I or II grade. Patients with any comorbidities, recurrent headaches, obesity, and spine deformity were excluded.

In the pre-operative area after taking informed consent for procedure and participation, they were asked questions that contained the baseline information regarding name, age, weight, type of case, pre-operative nil by mouth status, pre-loading, and vitals containing blood pressure (BP) and heart rate (HR) were checked and noted. After pre-operative assessment, the patient was shifted to the operation theater.

In operation theater, all patients received standard monitoring including a 5-lead electrocardiogram, noninvasive blood pressure, and SpO<sub>2</sub>, and a 26 G Quincke spinal needle was used to administer a subarachnoid block in a sitting position with the bevel oriented parallel to the long axis of the spine. All procedures were performed by an accomplished anesthesiologist. parameters such as, approach-median or paramedian, no. of pricks-1 or more than 1, co-loading, level at needle is inserted-L2 L3, L3 L4, L4 L5, local anesthesia given, blood pressure and heart rate were observed and noted.

In the post-operative area, the patients were asked if they were having PDPH pain, if yes. then what onset, elevating and relieving factors, such as headache duration of headache, site of pain if it was fronto-occipital, unilateral, bilateral, or headache associated with neck 7 eyes and nil by mouth status. The patients were under observation for 4 days post-operation and to the time of discharge.

The primary outcome was to study the incidence of PDPH between elective and emergency LSCS using only a 26 G spinal needle. The secondary outcome of this study was to analyze the casual factors/determinants such as adequate preloading of fluids, size of spinal needle, number of pricks, and technique of lumbar puncture effects on the incidence of PDPH.

## Results

Twenty pregnant women who met the requirements were included in the study. Out of these, 10 were posted for elective LSCS and the other 10 for emergency LSCCS.

The incidence of PDPH was found only in 2 patients out of 10 patients posted for emergency LSCS.

No incidence of PDPH was found in the rest 10 patients posted for elective LSCS [Tables 1-6].

**Table 1: Incidence of PDPH with a comparison between elective and emergency LSCS**

Type of Sx	PDPH	No PDPH	Total
Elective	0	10	10
Emergency	2	8	10
Total	2	18	20

**Table 2: Age group having PDPH**

Age group	F	PDPH	No PDPH
20–30	8	2	6
31–40	2	0	2
Total	10	2	8

**Table 3: Nil my mouth hours affecting the incidence of PDPH**

Nil by mouth	F	PDPH	No PDPH
≤6 h	5	0	5
≤8 h	3	0	3
≤10 h	2	2	0
Total	10	2	8

**Table 4: At which level subarachnoid block was given**

Level	F	PDPH	No PDPH
L2-L3	6	2	4
L3-L4	4	0	4
L4-L5	0	0	0
Total	10	2	8

**Table 5: Duration of headache during PDPH**

Duration of headache	F	PDPH	No PDPH
Intermittent	2	2	0
Continuous	0	0	0

**Table 6: Site of headache during PDPH**

Site of pain	F	PDPH	No PDPH
Fronto-occipital	0	0	0
Unilateral	0	0	0
Bilateral	0	0	0
Headache associated with neck and eyes	2	2	0

## Factors Involved in PDPH (Emergency Cases)

In this Figure 1, the younger age group of 20–30 years had a frequency of 8 patients out of 10, in which 2 patients showed up with the incidence of PDPH.

The age group of 31–40 years had a frequency of 2 patients out of 10; none of them had any incidence of PDPH.

This Figure 2 shows that with less than equal to 10 h had a frequency of 2 patients and both had the incidence of PDPH. This shows that the patient is dehydrated, which can increase the chances of PDPH and can be a factor for PDPH.

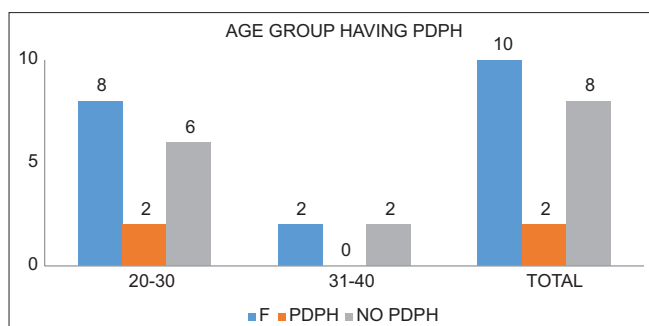


Figure 1: Age group having PDPH after data collection<sup>[6]</sup>

No PDPH was found in less than equal to 6 and 8 h of nil by mouth.

This study shows that out of 10 patients posted for emergency LSCS, 2 patients received more than 1 prick who further experienced PDPH. This may be because as the number of attempts increases, the likelihood of repeatedly penetrating the dura mater increases the volume of CSF leak and enhances the risk of infection. Increasing the likelihood, that PDPH and CSF hypotension may occur.

In 6 patients at L2 L3 level, the block SAB was given, out of which 2 patients had an incidence of PDPH. In patients given spinal anesthesia at levels L3 L4, 4 had no PDPH.

This study shows that out of the 10 patients posted for emergency LSCS, 2 had the incidence of PDPH with time, 1 patient had the onset when she was admitted and on the first day after getting operated and another patient had it on the second and fourth days of after getting operated.

This study shows that of 10 patients posted for emergency LSCS, 2 had the incidence of PDPH with intermittent matter.

Out of the 10 patients posted for emergency LSCS, 2 had the incidence of PDPH associated with the neck and eyes.

## Discussion

According to previous research, the incidence of PDPH specifically with Quincke–Babcock cutting-beveled spinal needles is higher in comparison with pencil-point spinal needles. There was no specific study on PDPH with only 26 G Quincke–Babcock spinal needle looking into the parameters such as to observe that the patient is hydrated or not in the pre-intra-post-operative period, approach with median or paramedian, number of pricks, levels L1–L2, L2–L3, L4–L5, administration of local anesthetic before inserting the spinal needle. This study was to see the incidence of PDPH between

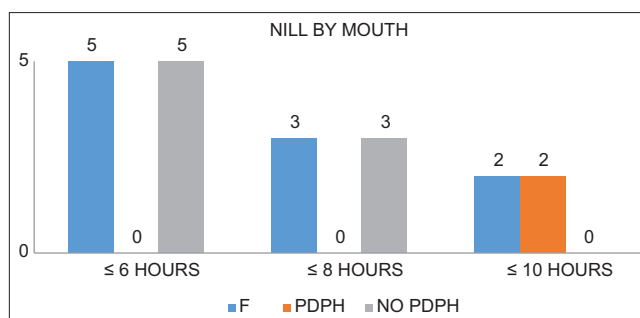


Figure 2: Nil by mouth with relation to incidence of PDPH<sup>[7]</sup>

elective and emergency LSCS using only the 26 G spinal needle.

The aim of this study was to learn about the incidence of PDPH between elective and emergency LSCS using the 26 G Quincke spinal needle in full-term pregnant patients.

Our findings showed:-

1. On comparing elective and emergency LSCS cases, the prevalence of PDPH was only in emergency LSCS patients.
2. The factors involved in causing PDPH only in emergency LSCS cases included:-

### Age group having PDPH

The given graph represents the incidence of PDPH in two age groups, 20–30 years and 31–40 years. Out of 10 patients in the study, 8 belonged to the age group of 20–30 years, and 2 of them showed an incidence of PDPH. The remaining two patients were in the age group of 31–40 years, and none of them had any incidence of PDPH.

From this data, we can infer that the incidence of PDPH is higher in the age group of 20–30 years as compared to the age group of 31–40 years. The age group of 20–30 years had 80% of the total patients and had a PDPH incidence rate of 25% (2 out of 8). In contrast, the age group of 31–40 years had only 20% of the total patients and had a PDPH incidence rate of 0% (0 out of 2).

This difference in the incidence of PDPH between the two age groups may be attributed to various factors such as the anatomical differences in the spinal cord and the vertebral column, the size of the needle used for the dural puncture, the level of expertise of the person performing the procedure, the position of the patient during the procedure, and other individual patient-related factors.

On review of previous studies, In light of young age and sex, women who undergo cesarean sections are



particularly at risk. The tone of the cerebral arteries can be affected by high amounts of estrogen in women, which increases the vascular distension response to CSF hypotension.<sup>[6]</sup>

However, it is important to note that the sample size of the study was small (10 patients), and therefore, the results may not be generalized to the larger population. A larger sample size is needed to confirm the findings and draw definitive conclusions.

#### **Nil by mouth affecting PDPH**

The given graph represents the incidence of PDPH in patients based on the duration of fasting before the procedure. The data show that patients who fasted for less than or equal to 6 h or less than or equal to 8 h had no incidence of PDPH. However, patients who fasted for less than or equal to 10 h had a frequency of 2 patients, and both had the incidence of PDPH.

From this data, we can infer that fasting for less than or equal to 6 or 8 h before the procedure may not be a risk factor for developing PDPH. However, fasting for more extended periods, such as 10 h or more, can decrease the CSF pressure and may increase the risk of PDPH. It is important to note that the sample size is small (only 2 patients) for patients who fasted for 10 h, and therefore, the results may not be generalized to the larger population.

However, it is generally recommended that patients should fast for a certain duration before undergoing spinal anesthesia or any other invasive procedure. Fasting is performed to reduce the risk of aspiration of stomach contents and ensure that the stomach is empty, which can facilitate the procedure. The duration of fasting may vary depending on the type of procedure, the patient's medical history, and other individual factors.

In conclusion, the data suggest that fasting for less than or equal to 6 or 8 h before spinal anesthesia or other invasive procedures may not increase the risk of PDPH. However, fasting for more extended periods, such as 10 h or more, may be associated with an increased risk of PDPH. Further studies with a larger sample size are needed to confirm these findings and establish definitive guidelines for fasting before the procedure.

#### **Multiple numbers of pricks**

The graph represents the incidence of PDPH in patients who underwent emergency LSCS and the number of needle pricks they received during the procedure. The data show that out of 10 patients, 2 patients received more than one needle prick

during the procedure and both of them experienced PDPH. The remaining eight patients received only one needle prick during the procedure, and none of them experienced PDPH.

The study suggests that patients who received more than one needle prick during emergency LSCS had an increased risk of developing PDPH compared to patients who received only one needle prick. The possible reason for this could be that repeated needle pricks could cause more damage to the dura mater, leading to a greater likelihood of CSF leakage and subsequent PDPH.

It is essential to note that the sample size in this study is small (only 10 patients), and therefore, the results may not be generalized to the larger population. Further studies with a larger sample size are needed to confirm these findings and establish definitive guidelines for the number of needle pricks during the procedure.

In conclusion, the data suggest that patients who received more than one needle prick during emergency LSCS may have an increased risk of developing PDPH. It is important to take precautions to minimize the risk of PDPH, such as avoiding multiple needle pricks, using smaller gauge needles, and implementing proper post-procedure care. Further research is needed to establish clear guidelines for minimizing the risk of PDPH in emergency LSCS patients.

The study revealed that the patients having PDPH after emergency LSCS were 2 out of 10, they underwent multiple pricks during the spinal needle insertion. This may be because more attempts increase the possibility of repeatedly penetrating the dura mater, which increases the volume of CSF leak and elevates the risk of developing CSF hypotension and PDPH.<sup>[6]</sup>

#### **Onset of Headache**

The given graph represents the incidence of PDPH in patients who underwent emergency LSCS. Out of the 10 patients who underwent the procedure, 2 patients experienced PDPH. The onset of PDPH was observed in these patients at different times, with one patient experiencing it on the day of admission and the first day after the operation, while the other patient had PDPH on the 2<sup>nd</sup> and 4<sup>th</sup> days after the operation.

PDPH is a known complication of LSCS and is caused by leakage of cerebrospinal fluid (CSF) through the dural puncture site. It is a type of headache that is typically severe, dull, and located in the front or back of the head, often with neck pain and nausea. The onset of PDPH can vary from immediate to several days after the procedure, and the severity and duration of symptoms can also vary.<sup>[9]</sup>

The onset of PDPH in the two patients in this study suggests that they may have had a larger dural puncture site, which resulted in a greater CSF leak and a higher risk of PDPH. It is also possible that other factors, such as patient age, sex, and medical history, may have contributed to the development of PDPH.

To prevent and manage PDPH, various strategies can be used, such as early detection and treatment of symptoms, conservative measures such as bed rest and hydration, and medications such as caffeine, acetaminophen, and nonsteroidal anti-inflammatory drugs (NSAIDs). In some cases, an epidural blood patch (EBP) may be required, which involves injecting the patient's own blood into the dural puncture site to seal the leak and relieve symptoms.<sup>[10]</sup>

In conclusion, the data suggest that PDPH is a potential complication of emergency LSCS, and early detection and management are crucial to prevent further complications. Further studies with larger sample sizes and more detailed patient information are needed to identify the risk factors for PDPH and develop effective prevention and management strategies.

### Duration of headache during PDPH

The given graph represents the incidence of PDPH in patients who underwent emergency LSCS. Out of the 10 patients who underwent the procedure, 2 patients experienced PDPH in an intermittent manner, meaning they had episodes of headache that were not continuous. None of the patients had a continuous PDPH.

PDPH is a known complication of LSCS and is caused by leakage of CSF through the dural puncture site. It is a type of headache that is typically severe, dull, and located in the front or back of the head, often with neck pain and nausea. The onset of PDPH can vary from immediate to several days after the procedure, and the severity and duration of symptoms can also vary.

The intermittent nature of PDPH observed in the two patients in this study suggests that the severity of their symptoms may have been milder and less frequent than a continuous headache. However, it is important to note that even intermittent PDPH can significantly affect the patient's quality of life and can delay their recovery from the procedure.

To prevent and manage PDPH, various strategies can be used, such as early detection and treatment of symptoms, conservative measures such as bed rest and hydration, and medications such as caffeine, acetaminophen, and

nonsteroidal anti-inflammatory drugs (NSAIDs). In some cases, an epidural blood patch (EBP) may be required, which involves injecting the patient's own blood into the dural puncture site to seal the leak and relieve symptoms.<sup>[11]</sup>

In conclusion, the data suggest that even though only 2 patients experienced PDPH in an intermittent manner, PDPH is a potential complication of emergency LSCS that can significantly affect the patient's quality of life. Early detection and management are crucial to prevent further complications. Further studies with larger sample sizes and more detailed patient information are needed to identify the risk factors for PDPH and develop effective prevention and management strategies.

### Site of headache during PDPH

The given graph represents the incidence of PDPH in patients who underwent emergency LSCS. Out of the 10 patients who underwent the procedure, 2 patients experienced PDPH that was associated with neck and eye pain. None of the patients had PDPH at the fronto-occipital, bilateral, or unilateral regions.

PDPH is a known complication of LSCS and is caused by leakage of CSF through the dural puncture site. It is a type of headache that is typically severe, dull, and located in the front or back of the head, often with neck pain and nausea. However, in some cases, PDPH can be associated with other symptoms such as neck and eye pain, which can be indicative of increased intracranial pressure.

The fact that both patients with PDPH in this study had associated neck and eye pain suggests that their symptoms may have been more severe and complex than just a headache. It is important to note that PDPH can have different presentations in different patients, and the severity and duration of symptoms can also vary.

The absence of PDPH in the fronto-occipital, bilateral, or unilateral regions suggests that the leakage of CSF through the dural puncture site was not widespread and was restricted to a certain area. This may have contributed to the specific symptoms observed in the two patients with PDPH.

To prevent and manage PDPH, various strategies can be used, such as early detection and treatment of symptoms, conservative measures such as bed rest and hydration, and medications such as caffeine, acetaminophen, and nonsteroidal anti-inflammatory drugs (NSAIDs). In some cases, an EBP may be required, which involves injecting the patient's own blood into the dural puncture site to seal the leak and relieve symptoms.

In conclusion, the data suggest that PDPH associated with neck and eye pain is a potential complication of emergency LSCS that can significantly affect the patient's quality of life. Early detection and management are crucial to prevent further complications. Further studies with larger sample sizes and more detailed patient information are needed to identify the risk factors for PDPH and to develop effective prevention and management strategies.

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#### Conflicts of interest

There are no conflicts of interest.

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