



Research Article

INCIDENCE OF POST DURAL PUNCTURE HEADACHE WITH DIFFERENT SIZE QUINCKE SPINAL NEEDLES IN PARTURIENTS UNDERGOING CAESEREAN SECTION

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A B S T R A C T

Background: The most common, nagging and inconveniencing complication of spinal anesthesia is Post Dural Puncture Headache, which is very distressing and debilitating for the patient. Onset is usually within three days and worsens when the patient assumes erect posture. Pain is usually occipital or frontal, occasionally nuchal, radiating to neck and shoulders and dragging in nature. Headache is usually self limiting and disappears within a week. The aim of this study was to compare the incidence, intensity and severity of PDPH with different size Quincke spinal needles (25 G, 26 G and 27 G), in parturients undergoing elective Lower Segment Caesarean Section under Spinal anesthesia. **Methodology:** 150 patients belonging to ASA I and II in the age group 20 to 35 years, undergoing elective LSCS were included in the study. They were randomly allocated into 3 groups, depending upon the size of the spinal needle used - Group I-25G, Group II-26G, Group III-27G. The number of attempts made to locate the subarachnoid space was noted. The patients were followed up in the ward till discharge and the incidence, intensity and severity of PDPH was assessed. **Results:** The intensity of pain was assessed by Visual Analogue Scale in patients with symptoms suggestive of PDPH. The incidence, severity and intensity of PDPH were recorded and statistically analysed using 't' test and Chi square test. From our study, we find that in young obstetric patients, the incidence of PDPH is more with large bore spinal needles and multiple dural punctures. **Conclusion:** We conclude from our study the incidence, intensity and severity of Post dural Puncture Headache are more with large bore Quincke spinal needles. Hence we recommend the use of fine bore needles of 27 G or less for caesarean sections to minimize the incidence of PDPH.

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INTRODUCTION

Spinal anesthesia was developed in the late 1800's with the work of Wynter, Quincke and Corning. In 1898, it was the German Surgeon Karl August Bier who introduced spinal anesthesia into clinical practice. Bier also gained first hand experience of the disabling headache related to dural puncture by trying spinal on himself.

The most common, nagging and inconveniencing complication of spinal anesthesia is Post Dural Puncture Headache (PDPH), which is very distressing and debilitating for the patient. This untoward complication is a challenging and frustrating task for the anaesthesiologist.

In 1902 it was Sicard, who suggested the leakage of Cerebrospinal fluid (CSF) into the extradural space might be the cause of Post Dural Puncture Headache. PDPH is used conventionally to denote "after" puncture¹, but the term "Post dural" mimics the word "peridural" and should mean "behind the dura"¹⁰. The synonyms for PDPH are

1. Post spinal Headache
2. Post spinal Cephalgia

PDPH may occur after deliberate or accidental dural puncture with epidural needle. Onset is usually within three days and worsens when the patient assumes erect posture i.e. sits or stands. Pain is usually occipital or frontal, occasionally nuchal, radiating to neck and shoulders - dragging in nature and associated with stiffness of the neck⁸. The temporal and vertex areas are reported less commonly as a site of discomfort.

The headache has been described in various forms such as a feeling of heaviness, constricting band, vacuum like and lead weight, searing and spreading like hot metal. Cranial nerve palsies are not uncommon. The causative leakage of CSF into epidural space is 10 ml/hr and healing may take place up to 3 to 4 weeks. 90 % of headaches will occur within three days of the procedure and 66 % start within the first 48 hours. Rarely the headache develops between 5 and 14 days after the procedure. Headache is usually self limiting and disappears within a week.

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Aim

The aim of this study was to compare the incidence, intensity and severity of PDPH with different size Quincke spinal needles (25 G, 26 G and 27 G), in parturients undergoing elective Lower Segment Caesarean Section (LSCS) under Spinal anesthesia.

MATERIALS AND METHODS

After obtaining ethical committee clearance from the institution and informed consent from the patient the study was done. 150 patients belonging to ASA I and II in the age group 20 to 35 years, undergoing elective LSCS were included in the study. They were randomly allocated into 3 groups, depending upon the size of the spinal needle used - Group I -25 G, Group II - 26G, Group - III - 27G.

Inclusion criteria

1. All parturients belonging to ASA I and ASA II
2. Parturients with no systemic diseases like hypertension, diabetes, thyroid

Exclusion criteria

1. All patients who had general contraindications for spinal anesthesia
2. Patients with previous history of headache of any etiology were excluded

All parturients undergoing elective LSCS were premedicated with Tablet Ranitidine 150 mg and Tablet Metoclopramide 10 mg orally the previous night and 2 hours before surgery. An intravenous access was established with 18 G cannula in the preoperative room and the patients were preloaded with 10 ml/kg body weight Ringer’s lactate solution over 20 to 30 minutes prior to spinal blockade. The patients were monitored with baseline readings of ECG, non invasive blood pressure, pulse rate, oxygen saturation and urine output when shifted inside the operating room and continuous monitoring was done.

The parturient was positioned in right lateral position; sterile draping was done after cleaning back with 10% povidone iodine and 70% alcohol and Subarachnoid blockade was attempted. The bevel of the Quincke spinal needle was kept facing the ceiling. After establishing the free flow of CSF, 0.5 % Bupivacaine Heavy 2 ml was injected intrathecally. Patients were turned supine and oxygen supplementation given with Hudson’s mask till the delivery of the baby. Systemic hypotension was treated with intravenous fluids and vasopressors when indicated.

The number of attempts made to locate the subarachnoid space was noted. Any attempt to redirect or reposition the needle after one or more attempts to locate the subarachnoid space with the spinal needle was considered as multiple attempts. Intra operative vital signs were recorded and the patients were shifted to the recovery room after the completion of the procedure. The hydration status was maintained in all the patients and they received Inj. Ketorolac sodium eighth hourly and Inj.Pethidine hydrochloride 10 mg when needed for post operative pain relief.

The patients were followed up in the ward till discharge. At each visit the following questions were asked:

1. Do you have headache, if yes where is it located - occipital or frontal?
2. What is the nature of the headache /
3. Is it relieved on lying down?
4. Any posture like sitting, standing or erect posture aggravating the headache?
5. Does it worsen on coughing, sneezing or straining?
6. Is it accompanied by any other symptoms?
7. When did you first sit up after surgery and when was the ambulation started?

Patients were diagnosed to have PDPH when the following criteria are present,

1. Onset within 3 days
2. Site-Occipital or Frontal
3. Dragging type pain
4. Aggravating factor-sitting, standing, erect posture, coughing, straining or sneezing
5. Relieving factor-lying down or supine posture
6. Associated symptoms-nausea, dizziness, neck stiffness, tinnitus, auditory and visual hallucinations

For the patients who complained of symptoms suggestive of PDPH, the intensity of pain was assessed by Visual Analogue Scale (VAS) as mild, moderate and severe. The scale was graded from 0 to 10, which measures the subjective intensity of pain the patient experiences. The incidence, severity and intensity of PDPH were recorded and statistically analysed using ‘t’ test and Chi square test.

Score	Intensity of pain	Features of PDPH
0 -3	Mild	<ul style="list-style-type: none"> • Slight restriction of physical activity • Patient not confined to bed • Occipital or frontal headache with postural variation • No associated symptoms* • Restricted physical activities which forces the patient to be confined to the bed for part of the day
4 - 6	Moderate	<ul style="list-style-type: none"> • Associated symptoms not usually present*
7 - 10	Severe	<ul style="list-style-type: none"> • Patient bedridden for the whole day and makes no attempt to raise her head or is unable to stand • Associated symptoms present*

*Associated symptoms include:

- Nausea, vomiting, nuchal pain, neck stiffness and paraesthesia
- Ocular disturbances - double vision, blurring of vision, difficulty in focusing and photophobia
- Auditory disturbances - dizziness, tinnitus and reduced hearing

OBSERVATIONS AND RESULTS

The study was undertaken on 150 ASA Grade I and II parturients undergoing elective LSCS with different size Quincke spinal needles and the incidence, intensity and severity of PDPH were noted.

Table 1 Age Distribution

Age	Group -I		Group -II		Group - III	
	N	%	N	%	n	%
21 - 25	16	32	20	40	13	26
26 - 30	21	42	23	46	25	50
31 - 35	13	26	7	14	12	24

n-Number of patients

needles and it was not affected by the type of the needle chosen.

The intensity of headache experienced by the patients on different days was measured by VAS and was found to be not statistically significant. The duration of headache was for a maximum period of 6 days in our study. None of our patients had the headache beyond the first week. The largest follow up of PDPH is still that of Vandam and Dripps²⁰ who reported that 72 % headaches resolved within 7 days and 87 % had resolved in 6 months.

In our study, majority of patients had the onset of PDPH within 24 - 48 hours which was similar to Reynolds *et al*¹⁶ with 90 % onset of headache within three days of the procedure. Leibold⁹ *et al* in their study showed 66 % headache started within first 48 hours.

The severity of PDPH was graded as mild, moderate and severe according to our study and the reason for increased severity in Group II (26 G) as compared to Group I (25 G) may be due to patient factors and multiple punctures attempted in this group¹². Pan *et al*¹³ reported an incidence of 4% and 3.9% of PDPH respectively after spinal anesthesia for postpartum tubal ligation with 26-G Atraucan. With 27 G needles in Group III patients all patients had only mild headache. From the statistical analysis, p value is significant at 0.01 level and we infer that there was a strong association between the severity of PDPH and the use of large bore needles.

The intensity and severity of the PDPH was statistically analysed using 't' test and chi square test respectively and was concluded that the intensity of pain experienced between 25 G and 27 G was much significant. The severity of pain was much significant at 48 - 72 hrs using chi square test and this indicates that there is an association between the large bore needles and severity of pain.

Mihic DN¹¹ in his review on PDPH in relation to the direction of the needle bevel hypothesized that splitting rather than cutting the longitudinally directed duramater fibres resulted in lower incidence of PDPH. Recent electron microscopic studies by Reina *et al*¹⁵ showed that the dural fibres doesn't run longitudinally but they are criss-cross; hence the direction of the bevel of the needle does not really matter at all while making the lumbar puncture.

In our study, the patients having PDPH were treated with simple conservative measures like strict bed rest, supine or comfortable position, liberal intake of fluids, intravenous fluids and analgesics. None of the patients with PDPH required epidural blood patch. Jones RJ⁷ states that there is no clinical evidence to support the maintenance of supine position before or after the onset of the headache as a means of treatment.² Though prone position has been advocated, it is not a comfortable position to lie down by the patient. The prone position raises the intra abdominal pressure which is transmitted to the epidural space and this is said to reduce the CSF leak from spinal space into epidural space, thereby reducing the headache.

CONCLUSION

We conclude from our study the incidence, intensity and severity of Post dural Puncture Headache are more with large bore Quincke spinal needles. Hence we recommend the use of

fine bore needles of 27 G or less for caesarean sections to minimize the incidence of PDPH.

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