

## STUDY OF THE INCIDENCE OF POST DURAL PUNCTURE HEADACHE (PDPH) AND POST DURAL PUNCTURE BACKPAIN (PDPB) IN POST CESAREAN FEMALE

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### Abstract

**Background:** Spinal anesthesia seems to be particularly well suited for caesarean section because of rapid onset of dense block that is achieved, moreover, failures are very infrequent. Post-dural puncture headache and Post dural backache has become a well-recognized complication. It is inferred that Post dural puncture headache and back pain are the two most important determinant factors for patient satisfaction after spinal anesthesia. Hence we must know these factors responsible for these complications. **Materials and Methods:** This was a prospective, observational study which took place in Dr Sushila Tiwari Government Hospital. It was conducted in 150 patients with physical status ASA II. The spinal anesthesia was performed to all patients by anesthesiologists having experience <3 and >3 years respectively. Quincke needles was used. In the postoperative period, patients were observed in the post-anesthetic care room for 1–2 h. The patients were kept on bed rest for 24h. A questionnaire concerning PDPH and PDPB by each patient and an interviewer. **Result:** Incidence of post-dural puncture headache (PDPH) and of post-dural puncture backache (PDPB) in post caesarean females receiving spinal anaesthesia was 15.3% and 6% respectively. Mean age of the study cases was 25.7 years with half of the females (50.7%) in the age range of 21 to 25 years. Mean time of onset of PDPH was 1.26 days while the mean duration for the same was 5.3 days (range – 4 to 9 days). Mean time of onset of PDPB was 6.21 days while the mean duration for the same was 21.6 days (range – 9 to 45 days). **Conclusion:** From this study it was concluded that post-dural puncture headache affects one in six females undergoing spinal anesthesia for caesarean section while post-dural back pain affects one in fifteen females.

## INTRODUCTION

Spinal anesthesia was developed with the work of Wynter, Quincke and Corning.<sup>[1]</sup> However, Karl August Bier, a German surgeon was the first person to give spinal anesthesia deliberately using 3 ml of 0.5% cocaine.<sup>[2]</sup> Later Hildebrandt and Bier performed spinal anesthesia on each other and they experienced the clinical symptoms of Post Dural Puncture Headache (PDPH).<sup>[3]</sup> It may be mild or severe and debilitating headache. It may be associated with nausea (up to 60% of cases), vomiting, hearing loss, tinnitus, vertigo, dizziness and paraesthesia of the scalp. Photophobia, diplopia,

and blindness have also been described. Factors increasing the incidence of post-dural puncture headache are female gender, pregnancy, younger age, history of headache prior to the dural puncture, beveled needle, larger needle and the number of attempts.<sup>[4]</sup> Post-dural puncture backache (PDPB) is characterized by continuous pain around the site of spinal puncture without any irradiation.<sup>[5]</sup> Rarely, the pain may persist for more than four weeks and becomes permanent because of nerve injury during spinal needle insertion.<sup>[6]</sup>

## MATERIALS AND METHODS

### Inclusion Criteria

1. All post cesarean female receiving spinal Anesthesia.
2. Singleton uncomplicated pregnancy with normal foetal heart rate at the time of surgery
3. Patients with physical status ASA II
4. Patients aged between 18-35 years.

### Exclusion Criteria

1. Patient Refusal for consent.
2. Uncooperative females.
3. All post cesarean female receiving General Anesthesia

A Prospective, observational Study was conducted in Department of Anaesthesiology and Critical Care, Dr.Sushila Tiwari Government Hospital, Haldwani, Uttarakhand . Study included 150 women aged 18-37 years, term females with single uncompromised fetus and uncomplicated pregnancy posted for lower uterine cesarean section during the proposed duration of study. All the patients were visited a day before surgery and described about the study, study procedure and potential benefits and risks. They were assured that procedure of this study would not enhance the chance of post-dural headache or backache other than as possible by chance. All patients were subjected to a thorough and detailed demographic history and history of any chronic pain. The spinal anesthesia was performed to all patients by two experienced anesthesiologists having experience <3 and >3 years respectively using 25 and 26 G Quinckes spinal needle. All the procedures related to Anesthesia and surgery were carried out as per standard hospital protocol and noted down in a pre-formed case record proforma. In the postoperative period, patients were observed in the post-anesthetic care room for 1–2 h. The patients were kept on bed rest for 24 h. A questionnaire concerning PDPH was completed on the Day 1, 2, 3 and day 5 by each patient and an interviewer. Patients were interviewed by anesthesiologist about headache, back pain, and any other complaints. PDPH was defined as by the 'headache occurring within 5 days after lumbar puncture, and being aggravated when standing or sitting and relieved when lying flat' according to the definition of the International Classification of Headache Disorder, 3rd edition. The intensity of PDPH was classified as mild, moderate, and severe headache postoperatively by a NRS scale. On the

scale, 0 is the absence of headache, 1–3 is mild pain, 4–6 is moderate pain, and 7–10 is severe pain (disabling; unable to perform daily activities). PDPH was treated with bed rest, IM Diclofenac 75mg/3ml, good hydration, paracetamol (1gm twice or thrice daily). The intensity of back pain was classified as mild, moderate, and severe back pain postoperatively by a NRS scale. On the scale, 0 is the absence of back pain, 1–3 is mild back pain, 4–6 is moderate back pain, and 7–10 is severe pain. Back pain or radiation to upper thigh was enquired on day 1 and day 5 after spinal Anesthesia, then at 1 and 3 months after spinal Anesthesia, if back pain still persists at 3 months period then further questions were enquired after 6 month, 9 months & 12 months by telephone call.

## RESULTS

In present study, incidence of post-dural puncture headache (PDPH) in post cesarean females receiving spinal anesthesia was 15.3%.

Mean time of onset of PDPH was 1.26 days while the mean duration for the same was 5.3 days (range – 4 to 9 days).

In 14 out of 23 cases (60.9%), PDPH was of mild severity while in 9 cases (39.1%), it was of moderate severity.

In present study, incidence of post-dural puncture backache (PDPB) in post cesarean females receiving spinal anesthesia was 6%.

Mean time of onset of PDPB was 6.21 days while the mean duration for the same was 21.6 days (range – 9 to 45 days).

Incidence of PDPH was significantly higher in cases where large bore 25G needle was used as compared to small bore 26G needle (20.5% vs 9%;  $p < 0.05$ ).

No association was observed between needle size and incidence of PDPB. The incidence in 25 G and 26 G was 8.4% and 3% respectively ( $p = 0.16$ ).

No association was observed between level of needle insertion and incidence of PDPH ( $p = 0.06$ ) and incidence of PDPB ( $p = 0.18$ ).

No association was observed between incidence of PDPH ( $p = 0.36$ ) and PDPB ( $p = 0.69$ ) with median or paramedian approach.

PDPB was observed to be more in cases where two attempts were required for successful needle insertion as compared to one attempt (23.5% vs 3.8%;  $p < 0.01$ ).

**Table 1: Distribution of study groups as per age group**

Age (yrs)	N	%
<=20	9	6.0%
21-25	76	50.7%
26-30	45	30.0%
31-35	14	9.3%
> 35	6	4.0%
Total	150	100.0%
Mean - 25.7 +/- 4.2 years		

**Table 2: Distribution of study groups as per incidence of post-dural puncture Headache (PDPH)**

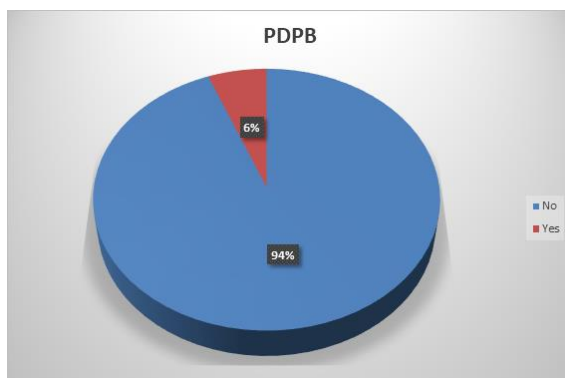
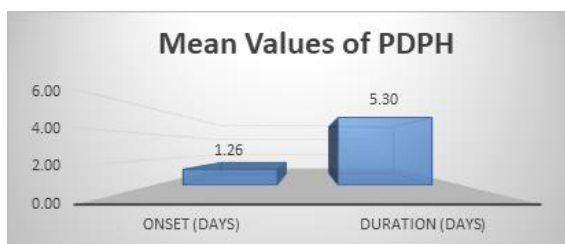
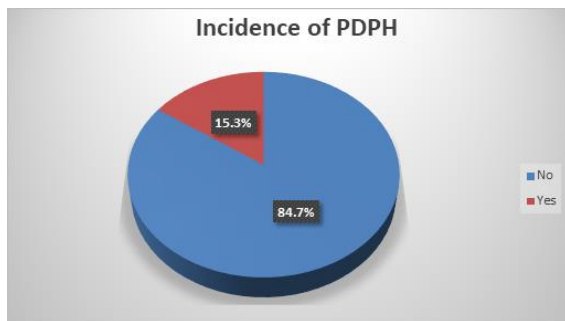
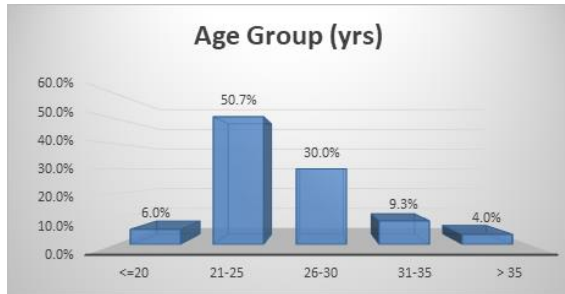
PDPH	N	%
No	127	84.7%
Yes	23	15.3%
Total	150	100.0%

**Table 3: Distribution of study groups as per onset & duration of PDPH**

PDPH	Mean	SD
Onset (days)	1.26	0.44
Duration (days)	5.30	1.60

**Table 4: Distribution of study groups as per incidence of post-dural puncture backache (PDPB)**

PDPB	N	%
No	141	94.0%
Yes	9	6.0%
Total	150	100.0%



## DISCUSSION

In present study, we aimed to estimate the incidence and factors associated with post-dural puncture headache (PDPH) and post-dural puncture back pain (PDPB) in females undergoing cesarean section under spinal anaesthesia. Study included a total of 150 females posted for elective lower uterine caesarean section with mean age of 25.7 years where half of the females(50.7%) were in the age range of 21 to 25 years. Out of the total 150 cases, 56.7% were primi-parous while 43.3% were multi-parous. In our study, we observed that incidence of post-dural puncture headache (PDPH) was 15.3%. Since the introduction of spinal anaesthesia in obstetrics, post-dural puncture headache has also become a well-recognized complication. The overall incidence of post-dural puncture headache varies from 0.1% - 36%.<sup>[7]</sup> Shaikh JM et al.<sup>[8]</sup> study observed that frequency of PDPH following spinal cesarean section as 6.1%. Dandona S et al,<sup>[9]</sup> in a similar study observed overall incidence of PDPH of 100 CS patients as 17%. Syed S et al,<sup>[10]</sup> in another similar study observed overall incidence of PDPH as 14.67%. Usmani S et al,<sup>[11]</sup> study observed the incidence of PDPH as 18%. Mean time of onset of PDPH was 1.26 days while the mean duration for the same was 5.3 days (range – 4 to 9 days). In 14 out of 23 cases (60.9%), PDPH was of mild severity while in 9 cases (39.1%), it was of moderate severity. The incidence of PDPH was significantly higher in cases where large bore 25G needle was used as compared to small bore 26G needle (20.5% vs 9%; p <0.05). No association was observed between incidence of PDPH and level of needle insertion, type of surgical approach (median/ para-median) or number of attempts. Incidence of post-dural puncture backache (PDPB) in post caesarean females receiving spinal anaesthesia was 6%. In a study done in Chicago, USA, 9-10% of the study participants had postoperative back pain after SA.<sup>[12]</sup> In a multicenter prospective study in Europe, back pain was the leading complaint among other post-lumbar puncture complaints with an incidence of 17%.<sup>[13]</sup> Kandg and colleagues noted 18-20% incidence of postoperative back pain in patients undergoing spinal anaesthesia.<sup>[14]</sup> Incidence of

PDPB in the study by Tarkkila and colleagues was 18% patients.<sup>[15]</sup> Acute postspinal backache starts within a week after dural puncture and usually resolves within one to two weeks without any treatment. Rarely, the pain may persist for more than four weeks and becomes permanent because of nerve injury during spinal needle insertion.<sup>[13]</sup> In present study, we observed that mean time of onset of PDPB was 6.21 days while the mean duration for the same was 21.6 days (range – 9 to 45 days). PDPB was observed to be more in cases where two attempts were required for successful needle insertion as compared to one attempt (23.5% vs 3.8%;  $p < 0.01$ ). No association was observed between incidence of PDPH and PDPB with type of needle, level of needle insertion or type of surgical approach (median/ para-median).

## CONCLUSION

From this study it was concluded that post-dural puncture headache affects one in six females undergoing spinal anesthesia for cesarean section while post-dural back pain affects one in fifteen females. In most of the cases the headache is mild and relieved within a week while back pain lasts for a month in most cases. Significant factors for the development of PDPH was large bore cutting type of spinal needle (25G Quincke) while for back pain, it was increased number of attempts for spinal anesthesia.

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