

Comparison of Quincke and Pencil-point bevels in 25-G needles regarding post dural puncture headache in Caesarean Section

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Objective: To compare two types of spinal needles for incidence of post dural puncture headache (PDPH) after Caesarean Section under spinal anaesthesia. **Design:** A comparative observational study. **Place and duration of study:** This study was conducted at Jinnah Hospital Lahore from March 2004 to August 2004. **Material and Methods:** Twenty five parturient planned to undergo elective caesarean section under spinal anaesthesia were randomly assigned to one of two groups. Group P was anaesthetized using pencil point needle while group Q utilized Quincke needle. **Results:** Both groups were observed for post dural puncture headache for three days.

Key words: Post dural puncture headache, spinal anaesthesia, pencil point needle, Quincke needle and caesarean section.

History of post dural puncture headache appears to be as old as spinal anaesthesia itself. Ever since Bier surmised that headache was due to excessive loss of cerebrospinal fluid, the efforts to prevent it are underway¹. Caesarean sections are increasingly being done under spinal anaesthesia. The parturient are considered to be at particularly high risk of post dural puncture headache². The small gauge needles which result in small dural rents have been shown to decrease the incidence of post dural puncture headache³. However, dural punctures with needles as small as 26-G have resulted in 3-10% incidence of PDPH⁷. These findings led the researchers to explore the needle design as possible cause of PDPH^{3,4}. Over the years, since Bier and Quincke, a large number of needle designs have been introduced. Quincke type is the standard design with cutting tip and end injection. Pencil point (Whitacre) tip is blunt, non-cutting and side injection. Its orifice is about 0.5mm from the needle tip. The 25- gauge needles of Quincke type were compared with pencil point ones for the incidence of post dural puncture headache in this study.

Material and methods:

Fifty parturients of ASA I & II category were randomly assigned to receive spinal anaesthesia for elective caesarean section using either Quincke (Q- group) or pencil point needle (P-group). Both the needles were of 25- gauge. All the blocks were performed in sitting posture after receiving 1.5 liters of ringer lactate solution. 2 ml of 0.75% Bupivacaine was used as local anaesthetic for sub arachnoid blocks. After surgery patients were shifted to wards where they were interviewed for three post operative days regarding post dural puncture headache. The degree of headache on assuming erect posture was graded as follows:

P₀ .No pain

P₁ Mild pain requiring no treatment

P₂ Moderate pain treated with non-steroidal anti-inflammatory drugs and caffeine containing analgesics.

P₃ Severe pain not responding to above treatment and warranting epidural blood patch.

Statistical analysis: Data was analyzed on SPSS. Chi-square, K-repeated samples and K-related samples tests were applied to assess the statistical significance of differences in the incidence of post dural puncture headache.

Criteria for exclusion: The patients with history of migraine and cluster headache and those requiring more than one dural punctures were excluded from the study.

Results:

Table: 1 Demographics

	Group-P	Group-Q	p value
Mean age(years)	27.00	27.12	0.057
Mean weight(kg)	71.00	74.416	0.005

Table: 2. Pain Score

Pain	Group-P	Group-Q	p value
Nil	23	19	0.077>0.05
Mild	1	4	0.017<0.05
Moderate	1	2	0.002<0.05
Severe	0	0	

There was no difference regarding age between group-Q and group-P. However group-Q had significantly higher weight (table.1).

Headache: In group-P only one patient experienced mild headache while in group-Q four patients experienced it (p=0.017). In group-P just one patient experienced moderate headache against two in group-Q (p=0.002). In both categories of headache group-Q had significantly more headache as compared to group-P. No patient in either group had severe headache. In group-P 23 out of 25 and in group-Q 19 out of 25 remained without headache (p=0.077) (table.2).

Discussion:

The results of the present study suggest 16% incidence of post dural puncture headache in parturient. This is in agreement with the contemporary literature (8, 9, and 10). Those affected had either mild or moderate degree of headache according to the laid down criteria. None of the

parturient had severe headache warranting epidural blood patch. The difference in incidence of headache between two groups is due to the needle tip design difference as the size was the same. Significantly higher incidence of PDPH with Quincke needle as compared to pencil point needle is in accordance with international literature (4, 5). The needle tip design could be responsible for more CSF leakage in Quincke type needle. Recently in an in vitro study (6) 25-G Quincke and pencil point needles were used to puncture cadaveric dural sacs. The holes thus produced were evaluated using scanning electron microscopy. The results showed no difference in cross sectional area of holes. There was however difference in morphology of lesions. The pencil point needles produced coarse lesions with significant tearing of dural fibers resulting in inflammatory reaction in the edges of the holes. This inflammation could be responsible for the early closure of dural holes and lesser leakage of CSF through holes produced by pencil point needles. The same work showed that lesions produced by Quincke needles were clean U-shaped flaps which by virtue of their valvular nature lead to more CSF leakage resulting in higher incidence of PDPH. In this study, parturient could not be followed for more than three days because of discharge of patients after that period and no way of communication with them after that.

In light of above we recommend pencil point needle for spinal anesthesia in parturient for caesarean section.

Conclusion:

Incidence of PDPH in parturient undergoing caesarean section under spinal anaesthesia is significantly less with pencil point needles as compared to Quincke needles.

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