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Comparison of Incidence of Post-Dural Puncture Headache (PDPH) in Patients Undergoing Lower Uterine Segment Caesarean Section (LSCS) among Different Batches of Residents

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Introduction

Spinal anesthesia seems to be particularly well suited for caesarean section because of simplicity of procedure and rapid onset of dense block. However, post-dural puncture headache has remained a well-recognized complication. Post-dural puncture headache (PDPH) was first described by August Bier in 1898 and classically presents as a postural headache following therapeutic or diagnostic interventions of the epidural or spinal space[1]. The overall incidence of post-duralpucture headache varies from 0.1%-36%. It may be mild, moderate or severe and debilitating headache, and may be associated with neurological symptoms. 60% of PDPHs will begin within 2 days of having adural puncture, 90% within 3 days, though it may occur up to 14 days later[2]. Classically PDPH is a bilateral fronto-occipital headache, radiating to the neck and shoulders, exacerbated within 15 minutes of standing or sitting, is aggravated by coughing or straining and is alleviated within 30 minutes of recumbency, and further so by lying prone.[3,4]

Materials and Methods

The study was under taken at VIR SURENDRA SAI INSTITUTE OF MEDICAL SCIENCES AND RESEARCH, BURLA, SAMBALPUR, ODISHA, a tertiary referal center in western Odisha. Patients of ASA grade I & II of age group 20 to 50 yrs. Pregnant Females with single uncompromised foetus and uncomplicated pregnancy posted for emergency or elective LSCS under spinal anaesthesia were considered .This was a cross sectional double blind study from January 2017 to March 2017

Exclusion Criteria

1) Patient refusal
2) Local abcess or infections
3) Known history of migraine or tension headache
4) CNS disorders
5) Neuromuscular diseases (eg. myopathies and neuropathies)
6) On anticoagulant therapy
7) Vertebral anomaly

Patients were divided into 3 groups

Group I (n=42) = In which spinal anaesthesia was given by 1st year residents

Group II (n=42) = In which spinal anaesthesia was given by 2nd year residents

Group III (n=42) = In which spinal anaesthesia was given by 3rd year residents

Spinal anesthesia was performed by using 25 gauge Quincke needles, at L3-L4 or L4-L5 interspaces with patients in the lateral position. All the patients received a standard local anesthetic consisting of hyperbaric Bupivacaiene 0.5% 2 ml injected over 20 seconds. At the end of surgery, all vitals were monitored. A proforma was given to a shift of staff nurses who were explained about the study. As soon as there was a complaint of headache, all patients were subjected to a postural change, made to sit for a minimum period of 15-minute as per International headache society guidelines to notice any worsening of pain. If it worsens within the time frame, it was defined as PDPH and entered. If there was no postural change, it was designated as other headache. The patients were followed up for 3 days at 6,24,36,48 and 72 hrs.

Observation

Clinical observation of all 126 cases were done, and all admitted and underwent surgery in the Dept of obstetrics and gynaecology, at virsurendrasai institute of medical sciences and research, Burla. Observation regarding headache, nausea, vomiting and attempts at lumbar puncture for spinal anaesthesia. The severity of headache was designated by a simple verbal system as shown in table

Table-1 Headache Severity Score

Score	Severity
0	Nil
1	Mild
2	Moderate
3	Severe

Table-2 Categorisation of symptom

CATEGORY	SIGN & SYMPTOM
MILD	**Postural headache with slight restriction of daily activity** **Not bedridden** **No associated symptoms** **Responds well to non-opiate analgesics**
MODERATE	**Postural headache with significant restriction of activity** **Bedridden in some part of day** **With or without associated symptoms** **Requires addition of opiate derevatives**
SEVERE	**Postural headache with complete restriction of activity** **Bedridden all the day** **Associated symptoms present** **Not responsive to conservative management**

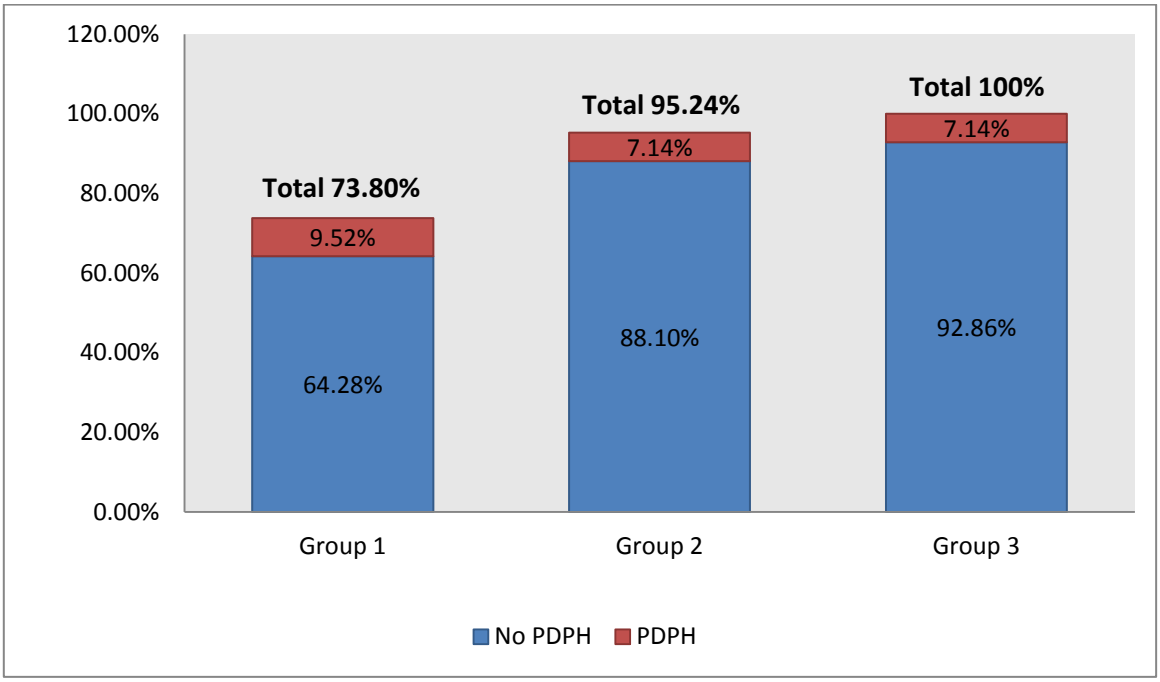
Table 3 Incidence, onset and severity of headache

Parameters	**Group I (n=42)**	**Group II (n=42)**	**Group III (n=42)**
Incidence	13	5	3
Onset			
• 6 hrs	-	-	-
• 24 hrs	-	-	-
• 36 hrs	4	1	0
• 48 hrs	7	3	2
• 72 hrs	2	1	1
Severity			
• Mild	8	4	2
• Moderate	3	1	1
• Severe	2	0	0

Table 4 Incidence of PDPH and side effect to number of attempts

	Group I (n=42)		**Group II (n=42)**		**Group III (n=42)**	
Attempts	No. of cases	PDPH	No. of cases	PDPH	No. of cases	PDPH
• 1st attempt	31	4	40	3	42	3
• > 1 attempt	11	9	2	2	0	0
Side effects						
Nausea & Vomiting	8	2	3	0	1	0

Incidence of PDPH



Results

Overall incidence of PDPH among group I (1st yr residents) [13/42 (31%)] was significantly higher than among group II (2nd yrs) [5/42 (12%)] and group III (3rd yrs) [3/42 (7%)]. Post spinal puncture headache has got highly significant association with spinal anaesthetic procedure done by less experienced hands (1st yrs) Severity of headache was higher in Group I, incidence of nausea and vomiting were also higher in Group I.

Discussion

Classically PDPH is a bilateral fronto-occipital headache, radiating to the neck and shoulders, exacerbated within15 minutes of standing or sitting, is aggravated by coughing or straining and is alleviated within 30 minutes of recumbency, and further so by lying prone[6]

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.[7]The pathogenesis of PDPH remains unclear but is thought to be caused by CSF leakage into the epidural space via a tear in the duramater. CSF loss leads to a reduction in intracranial pressure and downward traction on pain-sensitive intracranial structures, including veins, meninges and cranial nerves, resulting in a headache that is classically worse in the upright position. The fall in intracranial pressure may also cause compensatory cerebro-vascular venodilation and this may contribute to the Development of the headache.

PDPH is more likely following dural puncture with a larger gauge 'cutting' tipped needle (see later) or after multiple attempts at spinal block which might result in a number of dural tears ('pepper potting' of the dura), increasing the chance of a CSF leak. The cardinal features of PDPH as defined by the International Headache Society are a headache that PDPH is primarily a clinical diagnosis however if there is concern that the headache may be related to more serious intracranial pathology then diagnostic imaging should be considered early and MRI may demonstrate diffuse dural enhancement and brain descent. develops within 7 days of dural puncture and disappears within 14 days

Conclusion

We conclude that owing to decrease in number of attempts to reach sub-arachnoid space and proper maintenance of direction of bevel of the needle.

The Incidence and severity of PDPH decreases with increased level of competency amongst the residents.

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