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Comparison of 26 Gauge Quincke versus Whitacre Needles For Incidence of Post Dural Puncture Headache in Obstetric Patients

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Abstract

The incidence of PDPH with the use of two different spinal needles was studied in this randomized control trial. The study comprised of sixty patients belonging to ASA PS Grade I/II who were randomly allotted to two groups of thirty each. Group-I was using the 26G Quincke spinal needle and Group-II was using the 26G Whitacre spinal needle in patients undergoing elective caesarean section. With the data obtained there was a statistically significant rate of decrease in the incidence of PDPH in patients belonging to Group-II compared to those of Group-I.

Keywords: PDPH, spinal needles, Hypovolemia, Ephedrine and 25G Quincke.

1. Introduction

The term spinal anaesthesia was coined in 1885 by Leonard Corning.[1] Corning performed two procedures but never mentioned about the escape of cerebrospinal fluid. Two other authors, August Bier and Theodore Tuffier described authentic spinal anaesthesia with the mention of cerebrospinal fluid and regarding the injection of cocaine for spinal anaesthesia. Heinrich Quincke described the technique of lumbar puncture and he proposed that it was most safely performed at the level of L3-L4 interspace. Professor Bier and Dr.Hildebrandt performed lumbar puncture on each other and demonstrated the incidence of post dural puncture headache (PDPH) due to the loss of large volumes of CSF. And so historical reference to PDPH was recorded by August Bier in 1899.

Patients who have a devastating, occasionally life-threatening complication after a spinal tap occurs after a dural puncture: 36.5% of those who get headaches may get PDPH after puncture. Can start as soon as a few hours after the procedure is completed and last two weeks or even up to two weeks after the procedure has finished. it has been associated with nausea, fatigue, dizziness, ringing in the ears, and impaired hearing and blurred vision leakage of CSF via the dural puncture site is greater than the generation of new CSF. the best course of action to take in order to counteract the negative effects of PDPH, so the puncture hole had to be made smaller This was also advised by the experts: the use of

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smaller gauge needles. demonstrate that the importance of Cruickshank and his colleagues discovered that their investigation results indicate that there is little to no spinal leak using a 29G needle. Enlightenment and spiritual growth and increased (these words have in common the idea of enlarging or broadening) But the functional problems experienced with the CSF stem from the hub (the lack of feel, and the risk of bending while using it) seems relatively sluggish, and even here a rapid administration of CSF has been successfully accomplished. [When it comes to] spreading out (and drawing) Quincke needles, 25G is extremely common due to its relative ease of use. However, the chances of becoming infected with this virus are much higher (at least 25% due to) to the use of a 25G needle.

Transection was first described by Dutch ophthalmologist Hendrik van Quincke (in or name) the Younger in 1852 and expanded upon by his son Willem in 1888 fibers on the other hand, the pencil point needle (non-abrasive) is used to isolate the dural fibers. Caesarectomy is performed under the arachnoid block due to its benefits over general anesthesia and it is performed worldwide. The most important disadvantage is PDPH. take her for granted, take her for a ride An obstetrics claims fifteen percent of the outstanding claims, it was found in a 1999 survey of obstetrics claims that PDPH was the third most frequent justification for the creation of them all. as parturients with only one operation to be increased when taking into consideration that into account the prevalence and magnitude of phacogenicen in that particular among only elective caesans (SPINAL ANAesthesia, EXPANDED PATIENTS).

2. MATERIALS AND METHODS

60 patients below ASA score 1 and 2 will agree to have their Caesarean section performed on them, who have given their permission to be included in this project with full knowledge of their condition. the people not interested in the analysis, draw of names will be made to do two procedures. Allocation into two classes will be done using sealed and opaque drawers (both 26G cutting and non cutiing procedures) by someone who is not participating in the research (who is referred to as "personnelios", respectively).The criteria
for the experience of the anaesthetist will be standardized. Types of needles to be used will be Quincke and Whitacre. Postoperatively patients will be followed up for seven days for incidence and severity of headache.

Inclusion criteria:

- Patient age group 17-35 years
- ASA PS Grade I and II
- Elective Procedure
- Singleton uncomplicated pregnancy of gestational age more than 37 weeks

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Exclusion Criteria:

- Patient refusal
- ASA PS Grade III & IV
- Emergency procedure
- Pregnancy Induced Hypertension/ Pre-eclampsia
- Cardiovascular disorders
- Hypovolemia/ shock
- Patients with neurological disease/deficit
- Infection at the site of insertion
- Anti-coagulation therapy/ history of bleeding diathesis
- History of migraine/ occipital neuralgia
- Abnormal spine
- Failure of spinal anaesthesia and administration of general anaesthesia

MATERIALS REQUIRED:

- Monitors
- Intravenous cannula (18G)
- 26G Quincke and 26G Whitacre spinal needles

General Anaesthesia drugs in case of inadequate blocks Informed and written consent was obtained from all patients selected for the study. Patients were allocated into two groups by randomisation. Group-I patients received spinal anaesthesia with 26G Quincke needles. Group-II patients received spinal anaesthesia with 26G Whitacre needles. Detailed history was obtained & general and systemic examinations were conducted. Routine blood (complete blood count, random blood sugar, serum urea, creatinine, bleeding time, clotting time and serology) and urine (sugars and albumin) investigations were done.One hour before the procedure, Injection Ranitidine 50mg and Injection Metoclopramide 10mg were administered intravenously in a slow manner. Patients were preloaded with 500mL Ringer Lactate.

ANAESTHETIC PROCEDURE:

On arrival at the operating room, monitors including Pulse Oximetry, ECG and Non Invasive Blood Pressure were connected to the patient, the baseline values were recorded. Under strict aseptic precautions, subarachnoid blockade was administered in the sitting position. The needle was introduced

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by midline approach in the L2 -L3 or the L3-L4 interspace. After free flow of cerebrospinal fluid, 2mL of 0.5% hyperbaric bupivacaine was injected into the subarachnoid space. On withdrawal of the needle, the patient was made to lie in the supine position with a left uterine displacement. The level of sensory blockade was assessed. Vital were recorded immediately and from then on for every three minutes till the end of the procedure. In case of inadequate blockade, General Anaesthesia was administered. Any fall in blood pressure of more than 30% below the baseline was treated with intravenous fluids and Injection Ephedrine 6mg IV in an incremental manner. Patients were given Injection Oxytocin 10 units IM, 10 units IV after the delivery of the baby. Every patient was given at least 1L of crystalloid intra-operatively and followed by post-operative intravenous fluids at 1.5mL/kg/hr until oral fluids were started.

The PDPH and its severity will be assessed as per criteria given in Table 1.

Criteria for PDPH	
1.	Following mobilization, I developed a headache.
2.	Coughing, sneezing, or straining in an upright or seated posture aggravates the condition.
3.	Soothed by lying [on one's] their stomach and gazing up at the ceiling
4.	Dominant in the occipital, dorsal, or all over the brain
Criteria for Severity of PDPH	
No pain	no more intense action or attention needed
Mild	
Moderate	milder and frequent medication is enough to keep the pain under control.
Severe	Restricted to bed as a result of having anorexia, she couldn't take care of her newborn son

Table 5: PDPH and its severity assessment.

The post-operative patients were monitored for seven days after their procedures were completed. acute and chronic aggravating factors with regard to the origin and length of the headache were found. On the first post-operative day, both patients were able to walk around the ward. Many suffering from headache

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received bed rest, plenty of water, and an injection of Paracetamet | The rest of the patients who had headaches were treated symptomatically with Paracetamet. Then, the second group was given caffeine-phosphate injections.

3. Results

A random sample of 60 patients undergoing elective caesarean section under spinal anesthesiawas selected. Patients were randomized using the "chit-in-box" method where the subjects had to pick a chit from a box of 60 chits (30 each marked as Quincke (Q) and Whitacre (W)) making sure that the chit was not replaced once taken out. The data was expressed as Mean and Standard Deviation. Paired test and Chi-square test was used to determine the statistical significance betweenthe groups. A P value $\leq$ 0.05 was considered statistically significant. The demographic profile between the groups were compared in distribution of age , weight and height.

Group one: 26 gauge Quincke spinal needle Group two: 26 gauge Whitacre spinal needle.

AGE

AGE (in years)	GROUP I	%	GROUP II	%	P Value
18 – 25	11	37	10	34	0.616
26 – 30	13	43	13	43	
31 – 35	6	20	7	23	
TOTAL	**30**	**100**	**30**	**100**	
MEAN	**27.03**		**26.87**		
SD	**4.40**		**4.67**		

Table 6 : Statistical significance of age

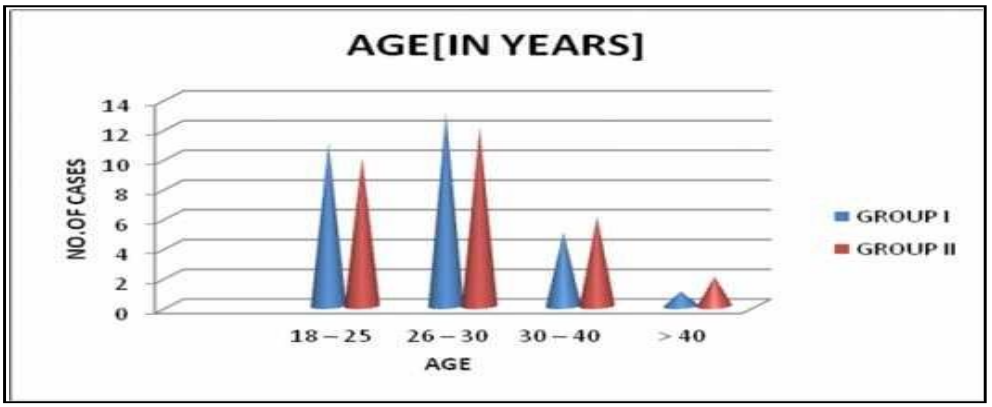

Figure 13: Comparison of the age distribution

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Among the cases, in Group I 37% belong to the age group 18 – 25 years, 43 % belong to 26 – 30 years and 20 % belong to 31 – 35 years. In Group II 34% belong to the age group 18 – 25 years, 43 % belong to 26 – 30 years and 23 % belong to 31 – 35 years (Table 6, Figure 13) .It is significant from the above table that in both the groups the majority of the child bearing age group lies between 26 – 30 years.There was no statistically significant difference found in age between the two groups. (paired t test applied, P Value ≥ 0.05).

HEIGHT

HEIGHT (in cms)	**GROUP I**	**%**	**GROUP II**	**%**	**P Value**
< 150	1	03	2	07	
151 – 155	15	50	14	46	
156 – 160	13	44	13	44	
> 160	1	03	1	03	
TOTAL	**30**	**100**	**30**	**100**	
MEAN	**155.07**		**154.80**		0.718
SD	**3.83**		**3.98**		

Table 7 : Statistical significance of height

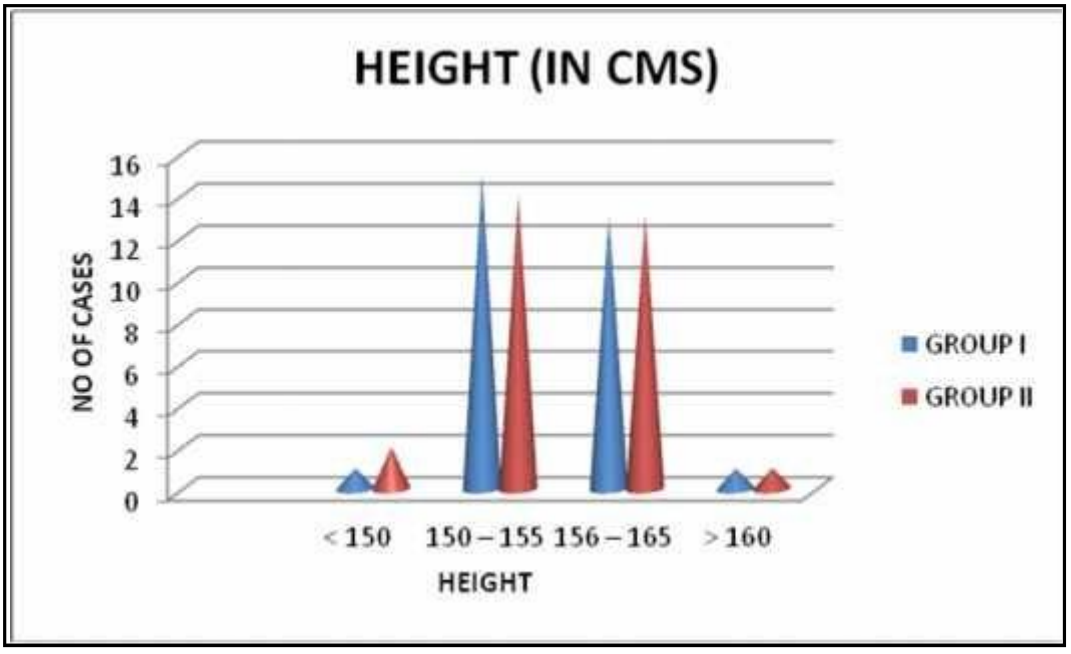

Figure 14: Comparison of the height distribution

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Among the cases, in Group I 3% are in the height lesser than 150 cms, 50 % belong in the range 150 – 155 cms, 44 % belong in the range 156 – 160 cms and 3 % are above 160 cms. In Group II 7% are lesser than 150 cms, 46 % belong in the range 150 – 155 cms, 44 % belong in the range 156 – 160 cms and 3 % are above 160 cms (Table 7, Figure 14).It is significant from the above table that in both the groups the majority of

the cases possess a height in the range 150 – 155 cms. There was no statistically significant difference found in height between the two groups. (paired t test applied, P Value > 0.05).

4. Discussion

Studies in the caesan division literature have looked at various factors pertaining to the prevalence of the PDSH, including those done by Quincke and Whitacre and by research on various types of patients. Anesthetized PS/OB patients who were in Grade I or II labor pain who were electively sectioned for caesarened with spinal anesthesia were the subjects of this study. In regard to the high PDPH occurrence, the most significant factor is the type of needle gauge used as well as the type of hydrographobic and hydration solution (deformable)tubular porosity, which are common.

an extensive upper and lower limb at risk of PDPH, Anirban Pal et al. (19) tried to determine if the Whitacre needle is an advantageous over Quincke needles, used widely in the former [i. Used commonly], and they discovered that they perform differently on different tissue, leading to improved results. Caesarean sections performed on 320 women between the ages of 20 and 36, who were randomly divided into two subarachnoid Category B and C, and all received an ASA I dosage were included in this study. Group Whitacre exhibited an increase in the prevalence of the use of PDPH by five percent, while group Quincke exhibited a decrease by 28.12 percent, and the disparity was statistically important (P<0.001). We have an approximate figure for the estimated 11.66% of patients in our sample that had perfor this research showing that there are people with mental retardation that suffer from PDPH (7 out of 60). Incidence of PDPH in group Quincke is 6% (6 out of 30). In the other group, Whitacre incidence was 3.33% (30 out of 300 or 20% total out of 300). (1 out of 30). The statistical variation in the study found in the frequency of PH was statistically significant (P=0.011). Via an analysis by Professor Jan Mohammad Shaikh and his associates, [and others], in 2008, the onset, duration, and seriousness of headaches were investigated. of the patients who reported having headaches, 10 were fronto- or backof-head (i.e., at the back of the head and at the occiput-Fronto n) and 4 had reported headaches (i.e., headaches in the back of the head). pain spread across the occipital and radiating fronts around the front and the top of the head to the back It got worse when he was straining, but it was greatly alleviated while he was lying down. For certain people, it was often synonymous with fatigue and vomiting. Day One or

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Two is most often the day of the onset of headaches. Within three days after the surgery, approximately 75% of the patients' experiences took place in the acute phase and after six days approximately 85% of patients' experiences took place in the chronic phase First-day]Hospitalization headache was the usual symptom [expected] in the sample but seven had to endure headaches following their procedures on the second day [period of treatment in this research]

(between 48 hours and 80 hours, between 8 and) 5 groups received the Median Operating Pressure technique. In a study by Lynch et al., the length of the headache was 48 hours (range 24 to 64) on the lower side and 57.5 hours (7 and 25 groups) on the upper side) using the Median Operating Pressure technique. And in our study, the length of PDPH was 48 hours for the four patients, while for three patients it was between 48 and 72 hours. Pintailing patients have a moderate to extreme condition, in which they would stay in hospital; while the patient was held in a bed, their condition ranged from pining to precarious to severe. Brownridge et al conducted a study which found that the levels of disability were mild in 8% of cases, and that it was seen in 3.2% of the cases to be moderate, and that disability was seen in 2.3% of their patients. In the study, four patients, the severity of the disease had little effect on their activities. However, two patients experienced mild forms of the disease, while the other two patients developed serious disease, and a third was bed-bound with the accompanying nausea and vomiting. this patient was unable to give the baby the bottle in a sitting posture Though I still feeling the effects of the hangover, the a glass of water, an analgesic, and some coffee did wonders for the pain. There was no substantial change in heart rate, in all types of healthy patients, in the absence of any significant decrease in mean arterial pressure.

But, operators found it difficult to use Quincke needles, because of their lack of experience. As expanding on the use of pencil point needles is factored in, one such cost-limiting aspect remains to be the price of the needle.

5. CONCLUSION

After the participation of these sixty patients in the caesarean section study, it was determined that the probability of a woman being pregnant when undergoing caesan was significantly lower with a choice of using a Pencil-Point needle (or "21G") than a Quincke needle (which found 26 cases in sixty patients in sixty patients).

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Ethical approval: The study was approved by the Institutional Ethics Committee

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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