



“A COMPARITIVE STUDY BETWEEN 25 GAUGE QUINCKE'S AND WHITACRE SPINAL NEEDLE IN SPINAL ANAESTHESIA IN OBSTETRICS PATIENTS”

Anaesthesiology

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ABSTRACT

Spinal anaesthesia is one of the most commonly used technique in anaesthesia. It is economical, safe, cost effective, easy, needs less sophisticated anaesthetic equipment, drugs, post operative care hence preferred over general anaesthesia and most popular because of its profound analgesia and muscle relaxation. Objectives of the present study were to know the success rate of lumbar puncture and ease of insertion between Quincke's and Whitacre needle and complication like post-dural puncture headache.

After ethical committee approval, informed consent will be taken from patients belonging to “American Society Of Anaesthesiology” ASA grade I & II, aged between 20-30years, scheduled for elective lower segment cesarean section surgeries which require spinal anaesthesia are selected by simple random sampling. They are made into two groups: group “Q” using Quincke's needle & group “W” Whitacre needles.

KEYWORDS

Respiratory rate, Respiratory system, Standard deviation, Spinal anaesthesia, Sub-acrachnoid block

INTRODUCTION

Primary objective:

To find out the success rate of lumbar puncture and ease of insertion between Quincke's and Whitacre needle.

Secondary objective:

Complication assessing like post-dural puncture headache

Study design: Prospective comparative study

Materials and methods

After ethical committee approval, informed consent will be taken from patients belonging to “American Society Of Anaesthesiology” ASA grade I & II, aged between 20-30years, scheduled for elective lower segment cesarean section surgeries which require spinal anaesthesia are selected by simple random sampling. They are made into two groups: group “Q” using Quincke's needle & group “W” Whitacre needles.

- Pre-anaesthetic checkup will be done prior to the surgery and routine investigations like complete blood count, random blood sugar, hemoglobin etc will be carried out.
- Written informed consent will be obtained from patient.
- Patient is kept nil per orally since midnight.
- Routine pre-medication will be given:

1. Tab. Ranitidine 150mg at night before surgery & in the morning of surgery
2. Tab. Lorazepam 1mg at night before surgery.

4. Procedure

- Blood pressure & Pulse oximeter
- ECG leads
- Face mask oxygen supplementation will be done before the procedure..
- IV line is secured
- Preloaded with ringer lactate fluid
- Patient is positioned. (lateral or in sitting)
- Under aseptic precautions spinal anaesthesia at L3-L4 inter space using 25G Quincke's needle or 25G whit acre needle & clear CSF flow is noted.
- Both groups are given same drugs and dose.

Source of data

Patients aged between 20-30years, scheduled for elective lower segment caesarian section surgeries which require spinal anaesthesia at Yenepoya Medical College, Mangalore.

Sample size: 100 patients

Calculated by statically approved & reference from Canadian journal (1995/42:8/PP706-10).

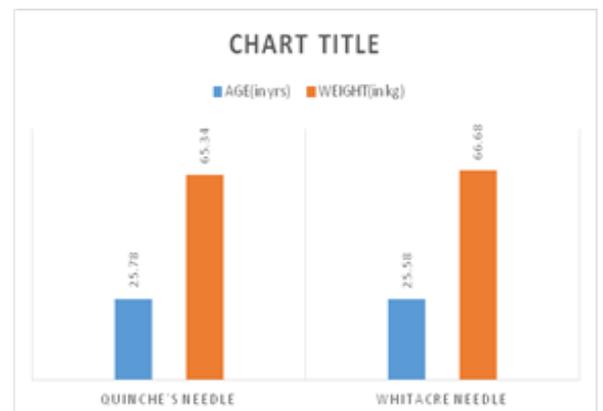
Patients requiring spinal anaesthesia are randomly selected by “closed envelope method” into two groups:

Group “Q”(50 patients using Quincke's-needle) and group “W” (50 patient using Whitacre-needle) between October 2013 to October 2015 at Yenepoya medical college.

Inclusion criteria

- Patients undergoing elective surgery under spinal anaesthesia.
- Female patients between 20 -30 years of age.
- ASA I & II.

	GROUP	N	Mean	Std. Deviation	t	df	P VALUE
AGE(in yrs)	QUINCKE'S NEEDLE	50	25.78	2.509	0.402	98	0.689
	WHITACRE NEEDLE	50	25.58	2.467			
WEIGHT (in kg)	QUINCKE'S NEEDLE	50	65.34	5.951	-1.204	98	0.232
	WHITACRE NEEDLE	50	66.68	5.153			



CHI SQUARE TESTS

Exclusion criteria

- ASA grade III & IV
- Local infection at the site of proposed puncture for spinal anaesthesia
- Patients with neurological deficits.
- Abnormal bleeding & clotting time or anti coagulation therapy.

Statistical analysis

The data obtained was tabulated and analyzed for rates, ratios & percentages.

- The Frequency test was used for number of attempts & failed spinal anaesthesia.
- Chi Square test was used for incidence of PDPH.
- P value less than 0.05 is considered statically significant.

DISCUSSION:

Spinal needles are of two types; that pierce the fibers and that splits the fibers when inserted. The former include the Quincke's and the later include Whitacre needle. In the present study Comparison of 25G Quincke's and 25G Whitacre needle in obstetrics patients with respect to number of attempts required to administer successful subarachnoid blockade (SAB) and in the incidence of post-dural puncture headache (PDPH).

The tip of Quincke's needle is cutting type and very sharp in nature can pierce the skin, subcutaneous tissue, ligaments quickly and finally when it pierces the dura, the introducer will have a click feeling.

The success of lumbar puncture has many factors like :

1. Patients built
2. Position of patient
3. Co-operation of the patient
4. Experience of the introducer
5. Type of needle

In the present study I have attempted to keep all the factors mentioned above except the type of needle. In Quincke's group the success of lumbar puncture was 96% and there was only 2 patient had failed spinal. The Quincke's needle being sharp cutting needle can be introduced easily and can be manipulated in different directions while doing lumbar puncture unlike Whitacre, which has got a introducer that makes it difficult for manipulation. Most of the Anesthesiologist routinely uses Quincke's needle and well versed in technique of lumbar puncture.

Whitacre needle also called pencil point needle. It is designed to spread the dural fibers and help reduce the occurrence of post dural puncture headache. Distinct "pop" is felt as the pencil point penetrates the dura. Precision-formed side hole helps directional flow of anesthetic agents and helps reduce the possibility of straddling the dura. Designed to track straight when advancing through ligaments toward the dura. Translucent window hub features contact clarity that helps allow visualization of CSF. It has got a introducer along with the needle that makes the manipulation difficult. The incidence of PDPH is less in case of Whitacre needle.

The mean age(in years) of patients in ,group A(Quincke needle 25.78 and for group B(Whitacre needle) is 25.58.The standard deviation for group A is 2.509 and group B is 2.467.The mean weight of patients (in kg) for group A(Quincke's needle) is 65.34 and for group B (Whitacre needle) is 66.68.The standard deviation for patients in group A is 5.951 and group B is 5.153.The P value for age is 0.689 and for weight is 0.232,hence it is not significant as the P value is above 0.05.

In group A (Quincke's needle) total of (50 patients) out of it 30 patients achieved subarachnoid block in first attempt(60%),in 15 patients achieved in second attempt(30%) and in 5 patients it took three or more attempts to achieve subarachnoid block(10%).

In group B(Whitacre needle) total of (50 patients) out which 25 patients achieved subarachnoid block in first attempt (50%),15 patient achieved in second attempt(30%) and in 10 patients it took three or more attempts to achieve subarachnoid block(20%).Hence Quincke's needle is better as compared to Whitacre in number of successful attempts.

In group A (Quincke's needle) total of 50 patients, 96% was successful

subarachnoid block (48 patients) and remaining 2 patients spinal anaesthesia was failure(4%). In group B (Whitacre needle) total of 50 patients, 92% was successful (46 patients) and remaining 8% was failed spinal anaesthesia (4 patients).

Pearson chi-square value is 0.709 and P value is 0.678. Failed spinal anaesthesia is less for Quincke's needle as compared to pencil point needle.

In group A 6% (3 patients) developed postdural puncture headache (PDPH) and 94% (47 patients) did not develop any PDPH. In group B 2%(1 patient) developed postdural puncture headache(PDPH) and 98% (49 patients) did not give any history of PDPH. Hence pencil point needle is better to beveled type of needle when comparing PDPH.

In our study comparison between 25G Quincke's & Whitacre needles the success rate was 96% for Quincke's type of needle and 92% for Whitacre group which was similar to Rungsima Saenhirunvatta et al (6), Bano F et al(21) , Shutt LE et al(22) who conducted a comparative study between newly-designed pencil-point and cutting-beveled needles in spinal anaesthesia

According to our study 25G Whitacre needle had less incidence of PDPH as compared to Quincke's group where PDPH was 6% which was considered higher, while Vallejo MC et al(14) in a study authors compared 22G Whitacre & 25G Whitacre & 26 Quincke's needle among 150 women undergoing elective caesarian section under spinal anaesthesia .Each group was compared for ease of insertion ,number of attempts of needle insertions, quality of subsequent analgesia and incidence of post operative complication study concluded that the use of 22G and 25G Whitacre needles is associated with low incidence of post dural puncture headache.

The belief that repeated unrecognized dural puncture may cause an increased incidence of PDPH has not been supported by this study.

In our study the number of failed spinal anesthesia is 4% in Quincke's type needle and 8% in Whitacre group, although Whitacre group has got increase incidence of failed spinal anaesthesia it is statistically not significant as P value is above 0.05. Similarly a study conducted by Hwang JJ et al(24) to examine the failed spinal anaesthesia in orthopedic patients reported 8.5% and 5.5% failed spinal anaesthesia using Quincke and Whitacre 27 G respectively. However, this difference was statistically not significant.

CONCLUSION

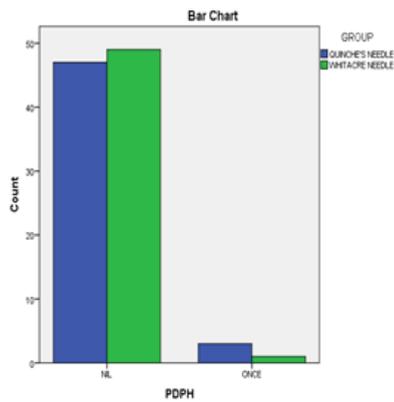
The study involved in finding out the ease of insertion and the number of attempt using Quincke & Whitacre needle in performing the lumbar puncture.

We have also studied the development of post-spinal headache between the two groups of needles and our conclusion is:

1. The ease of insertion is better in 25G Quincke's needle when compared with 25G Whitacre needle.
2. Considering the success rate of lumbar puncture Quincke's needle is better than the Whitacre needle.
3. The incidence of post-dural puncture headache is much less with Whitacre group.
4. As the study involves several factors related to patient position & co-operation, where the limitation of our study.

PDPH GROUP

Crosstab					
		GROUP			Total
		QUINCKE'S NEEDLE	WHITACRE NEEDLE		
PDPH	NIL	Count	47	49	96
		% within GROUP	94.0%	98.0%	96.0%
	ONCE	Count	3	1	4
		% within GROUP	6.0%	2.0%	4.0%
Total	Count	50	100		
	% within GROUP	100.0%	100.0%		



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