

# Study of various technical difficulties encountered during the administration of quicke's needle 22 and 26 for spinal anesthesia

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## Abstract

**Background:** Neuraxial blocks, such as spinal and epidural block, are common practice in anesthesia and are widely used for a number of surgical and endoscopic procedures. **Aims and Objectives:** To Study various technical difficulties encountered during the administration of Quicke's needle 22 and 26 for spinal anesthesia. **Methodology:** The present study was carried out at Dr. D.Y. Patil Medical College Pimpri, Pune. The study was carried out randomly chosen 150 patients over period of January 2016 - December 2018. The study material were both male (n=75) and Female (n=75), The patients with the written and explained consent; both male and Female equally and randomly allotted to Quicke's needle 22 and 26 for spinal anesthesia. Technical difficulty was considered with respect to no of attempts for successful spinal anesthesia and the appearance of post dural puncture headache (PDPH) was also accessed. The statistical analysis was done by Chi –square test and analyzed by SPSS 19 version software. **Result:** In our study we have seen that The majorly of the patients were in the age group of 30-35 were 38.66%, followed by 35-40 were 28.00%, 25-30 were 24.66%, 20-25 were 8.66%. The Males and Females were equal in the study i.e. 50% each. The average no. of attempts required for Quicke's needle 22 was 1.69 and for Quicke's needle 26 was 2.28, and hence the no. of attempts for successful Spinal anesthesia were significantly higher in Quicke's needle 26 as compared to Quicke's needle 22 ( $X^2=12.64$ ,  $df=3$ ,  $p<0.005$ ). The appearance of PDPH was significantly higher in Quicke's needle 22 as compared to Quicke's needle 26 ( $X^2=14.83$ ,  $df=1$ ,  $p<0.001$ ). **Conclusion:** It can be concluded that Quicke's needle 22 was superior with respect to ease of successful anesthesia as compared to Quicke's needle 26 but the PDPH was significantly associated more with Quicke's needle.

**Key Word:** Quicke's needle 22, Quicke's needle 26, Post Dural Puncture Headache (PDPH).

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## INTRODUCTION

Neuraxial blocks, such as spinal and epidural block, are common practice in anesthesia and are widely used for a number of surgical and endoscopic procedures.<sup>1</sup> Many

factors influence the anesthesiologist's decision to perform neuraxial anesthesia. The most important of them include the type of surgery, absolute or relative contraindications for neuraxial block, and better ability for management of postoperative pain. The anticipated difficulties of the neuraxial blockade and the provider's level of experience are of no less importance. Correct identification and cannulation of the epidural or subarachnoid space determine the success or failure of the technique. Multiple attempts and difficult access to the epidural or subarachnoid space is a frequent problem in operating theaters and may be hazardous for a patient. Traumatic placement of a needle and multiple attempts during a neuraxial blockade has been related to numerous complications. Some of them are transient, such as postdural puncture headache and transient neurological

symptoms.<sup>2</sup> However, severe incidents like trauma to neural structures or a spinal hematoma can cause permanent neurologic deficits and long-term disability.<sup>3-6</sup> Also, multiple punctures are associated with pain and patient discomfort.<sup>7</sup> Several factors associated with technically difficult neuraxial block were demonstrated in earlier studies. These factors primarily include age, gender, body mass index (BMI), and spine deformities. It has been suggested that either an alternative technique (general anesthesia or peripheral nerve block) should be considered for a patient if the anesthesiologist predicts some difficulties or a more experienced provider should take over a difficult procedure at an early stage.<sup>8</sup> Also, ultrasound may be useful in preoperative assessment of spine anatomy, especially if spine deformities are present.<sup>9,10</sup>

### MATERIAL AND METHODS

The present study was carried out at Dr. D .Y. Patil Medical College Pimpri, Pune. The study was carried out randomly chosen 150 patients over period of January 2016 – December 2018. The study material were both male (n=75) and Female (n=75), of age group of 20 to 40 years, belonging to ASA grade I to II, posted for elective surgeries below umbilicus. Each patients evaluated pre-anesthetically. Monitoring was done as per the standard protocol. The patients with the written and explained consent; both male and Female equally and randomly allotted to Quicke's needle 22 and 26 for spinal anesthesia. Technical difficulty was considered with respect to no of attempts for successful spinal anesthesia and the appearance of post dural puncture headache (PDPH) was also accessed. The statistical analysis was done by Chi –square test and analyzed by SPSS 19 version software.

### RESULT

**Table 1:** Age wise distribution of the patients

Age	No.	Percentage (%)
20-25	13	8.66
25-30	37	24.66
30-35	58	38.66
35-40	42	28.00
<b>Total</b>	<b>150</b>	<b>100.00</b>

The majorly of the patients were in the age group of 30-35 were 38.66%, followed by 35-40 were 28.00%, 25-30 were 24.66%, 20-25 were 8.66%.

**Table 2:** Sex wise distribution of the patients

Sex	No.	Percentage (%)
Male	75	50%
Female	75	50%
<b>Total</b>	<b>150</b>	<b>100%</b>

The Males and Females were equal in the study i.e. 50% each.

**Table 3:** Distribution of the patients as per the No. of Attempts for Spinal anesthesia

No. of Attempts	Quicke's needle 22	Quicke's needle 26	Total
1	25	10	35
2	35	42	77
3	8	15	23
4	2	8	10
<b>Total</b>	<b>75</b>	<b>75</b>	<b>150</b>

( $\chi^2=12.64$ ,  $df=3$ ,  $p<0.005$ )

The average no. of attempts required for Quicke's needle 22 was 1.69 and for Quicke's needle 26 was 2.28, and hence the no. of attempts for successful Spinal anesthesia were significantly higher in Quicke's needle 26 as compared to Quicke's needle 22 ( $\chi^2=12.64$ ,  $df=3$ ,  $p<0.005$ ).

**Table 4:** Distribution of the patients as per the appearance of post dural puncture headache (PDPH)

PDPH	Quicke's needle 22	Quicke's needle 26	Total
Present	35	13	48
Absent	40	62	102
<b>Total</b>	<b>75</b>	<b>75</b>	<b>150</b>

( $\chi^2=14.83$ ,  $df=1$ ,  $p<0.001$ )

The appearance of PDPH was significantly higher in Quicke's needle 22 as compared to Quicke's needle 26 ( $\chi^2=14.83$ ,  $df=1$ ,  $p<0.001$ )

### DISCUSSION

The size and the type of the needle are the most important risk factors<sup>1,4</sup>. The needles are classified according to their gauge and shape. A number is indicative of the needle gauge. The bigger the number, the thinner is the needle. The needles available are 18, 20, 22, 23, 25, 26 and 27 G. The needles ideal for spinal anesthesia are 25, 26 and 27 G (Kang *et al.*, 1992)<sup>11</sup>. These needles are also named after their constructor. The very first needle was made by and named after Corning in 1885. The other examples are Quincke, Bier, Brainbridge, Whitacre, Sprotte, Atraucan and Ballpen. The studies have shown the thinner the needle, the less risk for PDPH. However, it can give rise to increased failure rates of the SA as, the procedure would be more difficult (Shutt *et al.*, 1992; Sayeed *et al.*, 1993)<sup>12,13</sup>. The needles are also classified into two categories regarding their shape; cutting-point needles and pencil-point needles. The cutting-point needles result in disruption of the longitudinal fibers of the dura matter. On the other hand, the pencil-point needles just separate the fibers without cutting them resulting in a decreased rate of PDPH (Greene, 1926; Hart and Whitacre, 1951)<sup>14,15</sup>. Other adverse effects of SA are: postoperative back pain, hemodynamic change, paresthesia, shivering and vomiting. In our study we have seen that The majorly of the patients were in the age group of 30-35 were 38.66%, followed by 35-40 were

28.00%, 25-30 were 24.66%, 20-25 were 8.66%. The Males and Females were equal in the study i.e. 50% each. The average no. of attempts required for Quicke's needle 22 was 1.69 and for Quicke's needle 26 was 2.28, and hence the no. of attempts for successful Spinal anesthesia were significantly higher in Quicke's needle 26 as compared to Quicke's needle 22 ( $X^2=12.64$ ,  $df=3$ ,  $p<0.005$ ). The appearance of PDPH was significantly higher in Quicke's needle 22 as compared to Quicke's needle 26 ( $X^2=14.83$ ,  $df=1$ ,  $p<0.001$ ) It is similar to 1 M. Masoud Ghane <sup>16</sup> *et al* they found Performing SA is more difficult with thinner needles (27 G in comparison to 26, 25 and 26 G compared to 25 G). Therefore, the failure rates increase in the first attempt to insert the thinner needle making the PDPH rates fallaciously higher. As a result, the more the number of attempts to induct spinal anesthesia, the higher is the incidence of adverse effects.

## CONCLUSION

It can be concluded that Quicke's needle 22 was superior with respect to ease of successful anesthesia as compared to Quicke's needle 26 but the PDPH was significantly associated more with Quicke's needle.

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