

# ***Post-Dural Puncture Headache in the Parturient A Comparison of the Special Sprotte Epidural vs. the Tuohy Needle***

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## **I N T R O D U C T I O N**

Post-dural puncture headache (PDPH) is the most common significant morbidity following epidural placement. While *spinal* needle redesign has led to a dramatic decrease in PDPH, little is currently known about the potential impact of *epidural* needle design on the incidence of PDPH.

The atraumatic, tapered #18 g Special Sprotte epidural needle (Pajunk Corp) has been shown to reduce the incidence of backache at three days post-insertion. We hypothesized that this needle would also cause less trauma after unintentional dural puncture (DP).

This is the first report of a prospective randomized, blinded clinical trial to examine the effect of epidural needle design on PDPH after DP.

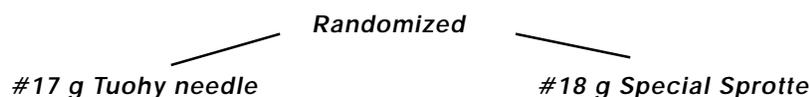
## **M E T H O D S**

### ***Study Population:***

ASA I or II parturients requesting lumbar epidural analgesia for labour.

Three study sites, all teaching centres with trainees at various levels.

*Informed consent obtained at time of request for analgesia.*



- Patient position, site of insertion & technique for loss of resistance were left to choice of operator.
- User satisfaction with the needle was graded by the operator after insertion by a VAS scale with 100 being very satisfied and 0 being very dissatisfied.
- Level of training of the operator was also noted (resident, fellow, staff).
- All patients were followed up at 24 to 48 hours by a blinded assessor either by telephone and/or hospital visit for occurrence of headache or neckache. If a headache were present patients were asked:
  - a) Does it get worse on sitting or standing?
  - b) Does it improve with lying down?

If patients answered positive to both questions, they were diagnosed to have a PDPH whether or not a DP had been noted at the time of epidural insertion. This subgroup was followed daily for seven days to assess headache severity (VAS 0-100), location, associated symptoms, use of analgesics and need for epidural blood patch.

## **S T A T I S T I C A L   A N A L Y S I S**

Statistical analysis was performed with the SAS program using a two-tailed Student's t-test for continuous demographic data and Chi square analysis for categorical data. User satisfaction was compared with the Wilcoxon two-sample test. The incidence of headache following DP and requirement for EBP was compared with Fisher's Exact Test. A p-value of less than 0.05 was considered to be significant.

## RESULTS

1067 women were recruited  
(Tuohy n= 528; Sprotte n= 539)

<b>Table 1 Demographic Data:</b>		
	<b>Sprotte</b>	<b>Tuohy</b>
<b>Height (cm)</b>	<b>162± 18.7</b>	<b>163± 16.5</b>
<b>Weight (kg)</b>	<b>78.4± 16.2</b>	<b>80.0± 18.2</b>
<b>Age (yrs)</b>	<b>30.6± 5.2</b>	<b>30.3± 5.4</b>

There was no difference between groups in the patient height, weight, age, parity, site of insertion, loss-of-resistance technique or type of syringe used to identify the space.

<b>Table 2 Incidence of Dural Puncture:</b>		
	<b>Sprotte</b>	<b>Tuohy</b>
<b>Number</b>	<b>14(2.6%)</b>	<b>11(2.1%)(NSD)</b>
<b>User Satisfaction (%)</b>	<b>66.2± 23.4**</b>	<b>83.7± 16.1**</b>
<b>**p&lt;0.001</b>		

There was no difference in the incidence of dural puncture between the two groups. However, the user satisfaction was significantly lower with the Special Sprotte needle. The reason for this, from written and verbal comments, was that the feeling of loss-of-resistance on entering the epidural space was not as pronounced as with the Tuohy needle.

## CONCLUSIONS

- There is a reduction in the incidence of PDPH after inadvertent DP with use of the #18g Special Sprotte epidural needle when compared with the #17g Tuohy needle.
- There was a trend to a reduction in severity of the PDPH as suggested by the 38.6% reduction in the need for epidural blood patch after PDPH caused by a Sprotte Needle. However, this was not statistically significant.
- User satisfaction was somewhat lower with the Sprotte needle since the loss-of-resistance is harder to detect than with the Tuohy needle.

### References:

Angle PJ, Halpern SH, Morley-Forster PK et al. SOAP abstracts 2000:A62

<b>Table 3 Incidence of Post-Dural Puncture Headache:</b>		
	<b>Sprotte</b>	<b>Tuohy</b>
<b>Yes</b>	<b>8(57%)*</b>	<b>11(100%)*</b>
<b>No</b>	<b>6(43%)</b>	<b>0</b>
<b>*p=0.0196</b>		

Twenty dural punctures were noted at the time of epidural insertion, 11 in the Sprotte group, 9 in the Tuohy group.

Ten patients (Tuohy=2, Sprotte = 8) developed PDPH at 24 hours post-epidural although no CSF was noted at insertion.

Five of these ten had initially been assigned to the Sprotte group but when difficulty was encountered in identification of the epidural space, the operator had switched to a Tuohy needle. Since no CSF was ever noted it was impossible to know which needle had caused the dural puncture. These five patients were eliminated leaving **25 dural puncture with known needles** for analysis.

<b>Table 4 Incidence of Epidural Blood Patch:</b>		
	<b>Sprotte</b>	<b>Tuohy</b>
<b>Yes</b>	<b>2(25%)</b>	<b>7(63.6%)</b>
<b>p=0.1698 (NSD)</b>		

The use of EBP was lower in the Sprotte group but this did not reach statistical significance.