

# Incidence of Back Pain After Lumbar Epidural Anaesthesia for Non-Obstetric Surgery – A Preliminary Report

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## Summary

This prospective survey attempted to study the incidence of post-operative back pain after lumbar epidural anaesthesia for non-obstetric patients and the correlation of this symptom with various contributing factors. One hundred and five patients who were given lumbar epidural anaesthesia as the sole anaesthesia for non-obstetric surgery were studied. The choice of equipment, number of attempts at giving the injection, duration of surgery and position of patient during surgery were documented.

One week post-operatively, the patients were asked whether they recalled any back pain. The nature, duration and severity of the back pain was documented. Statistical analysis was achieved by using Chi-squared test.

Twenty-eight patients recalled "injection site tenderness" post-operatively. The pain was mild to moderate in severity and lasted up to 4 days. None of the studied patients had post-operative "backache". The pain showed no significant correlation with needle size, technique of injection, use of epidural catheter, patient's position during surgery, duration of surgery and number of attempts made during epidural injection.

**Key Words:** Epidural anaesthesia, Non-obstetric surgery, Post-operative back pain, Injection site tenderness, Backache

## Introduction

Post-operative backache is a relatively common minor post-operative complication. Its aetiology is probably multifactorial but if these patients received spinal anaesthesia or epidural anaesthesia for the operation, the natural "cause and effect" reaction of many patients and surgeons will attribute the backache to the spinal and epidural injections.

As epidural anaesthesia involves the use of a larger needle than in the case of spinal anaesthesia, the incidence of backache after epidural anaesthesia might be expected to be higher than that after spinal anaesthesia. Reported incidence of backache after

epidural anaesthesia ranged from 2.41% to as high as 30%<sup>1, 2, 3</sup> but precise definition of backache was often not clear.

As many of the recent studies have concentrated on the incidence of backache after epidural injection among obstetric patients, the following prospective survey was designed to study the incidence of back pain after lumbar epidural anaesthesia for non-obstetric surgical patients and the relationship of back pain with its various contributing factors including size of epidural needle, technique of injection, use of an epidural catheter, duration of surgery, position during surgery and the number of attempts at establishing the epidural anaesthesia.

## Materials and Methods

This prospective survey was approved by the Hospital Ethics Committee. It was conducted over a period of 7 months from May 93 to November 93. Verbal consent was obtained from patients who received lumbar epidural anaesthesia as the sole anaesthetic technique for their surgery to participate in the survey. All patients were informed that they would be reviewed one week after surgery regarding any post-operative problems related to epidural anaesthesia. Back pain was not specifically mentioned at this stage of the survey. Patients with history of backache were excluded from the survey.

The epidural injection was administered by 2 consultant anaesthetists, 3 registrars and 5 trainee medical officers in the Department. The choice of equipment and technique of injection was decided by the individual anaesthetist. The size of epidural needle, technique of injection (midline or paramedian approach), use of epidural catheters, number of attempts (single or multiple), duration of surgery (longer or shorter than 60 minutes) and position of patients during surgery were recorded. All patients had 5 ml 1% Lignocaine infiltrated subcutaneously as local anaesthetic prior to epidural injection. The local anaesthetic agent used for epidural anaesthesia was either 1.5% Lignocaine or 0.5% Bupivacaine.

One week after the surgery, all the patients were visited in the ward or contacted by phone by the author who was blinded to the technique of injection, size of needle, use of epidural catheter, the number of attempts made and the position of patients during surgery. They were asked specifically about whether they experienced any post-operative back pain during the past one week. The duration and severity of the back pain was documented. The pain was defined as "mild" if the patient was aware of the pain but was not bothered by it. If the patient was bothered by the pain but did not require any medication, the pain was graded as "moderate". The pain was graded as "severe" if the patient required medication for analgesia.

An attempt was also made to ask the patient to locate the site of back pain. If the pain was localized over the site of injection with tenderness on palpation, it

was described as "injection site tenderness". Otherwise, the pain is defined as a "backache".

Chi-squared Test was used to test the statistical significance of the correlation between the incidence of back pain and various causative factors. A p value of less than 0.05 was considered as significant.

## Results

During the survey period, 114 patients were given epidural anaesthesia for surgery. However, in 7 cases, the epidural anaesthesia administered failed to produce adequate operating condition, thus making it necessary to administer general anaesthesia. 1 patient had accidental dural puncture and spinal anaesthesia was given instead. In 1 patient, the anaesthetist failed to locate the epidural space as the patient was grossly obese and the procedure was abandoned. Thus, 9 patients were excluded leaving 105 patients in the survey.

All patients were admitted for elective surgery. They were either ASA I or ASA II. There were 95 male patients and 10 female patients. The age of the patients was  $34.97 \pm 12.11$  years (Mean  $\pm$  SD) and ranged from 18 to 81 years old. The weight was  $67.74 \pm 9.65$  kg (Mean  $\pm$  SD) and ranged from 42 to 85 kg. Sixty-four patients had orthopaedic surgery, 6 patients had urological surgery and the remaining 35 patients had other forms of general surgical procedures.

Table I shows the incidence of back pain recalled when the patients were reviewed one week after the operation.

**Table I**  
**Incidence of back pain recalled**

	Number	Percentage
Back pain recalled	28	26.7%
No back pain recalled	77	73.3%
Total	105	100%

Table II shows the relationship between the incidence of back pain and size of the Tuohy needles used, technique of injection, use of epidural catheters, duration of surgery, number of attempts made to locate the epidural space and the patients' positions during surgery. There was no significant difference between the incidence of back pain with the above mentioned factors studied.

All the 28 patients who recalled back pain had "injection site tenderness". The pain was described as mild in 22 cases and moderate in 6 cases. The

duration of pain in all 28 cases were shorter than 4 days. None of the 105 patients surveyed recalled "backache" post-operatively.

**Discussion**

Backache, an annoying but relatively minor complaint may follow spinal, epidural or paravertebral block. However, it is well known that backache may also follow surgery performed under general anaesthesia<sup>3,4</sup>.

The cause of post-operative backache is likely to be

**Table II**  
The relationship between incidence of back pain and various contributing factors

	With back pain (n = 28)	Without back pain (n = 77)	Total (n = 105)	Statistical Significance
Size of needle				
16 gauge	16 (26.7%)	44 (73.3%)	60 (100%)	Not Significant
18 gauge	12 (26.7%)	33 (73.3%)	45 (100%)	
Technique of injection				
Midline	15 (26.8%)	41 (73.2%)	56 (100%)	Not Significant
Paramedian	13 (26.5%)	36 (73.5%)	49 (100%)	
Use of epidural catheter				
Yes	10 (25.6%)	29 (74.4%)	39 (100%)	Not Significant
No	18 (27.3%)	48 (72.7%)	66 (100%)	
Duration of surgery				
< 60 minutes	21 (28%)	54 (72%)	75 (100%)	Not Significant
> 60 minutes	7 (23.3%)	23 (76.7%)	30 (100%)	
Number of attempts to locate the epidural space				
Single	19 (22.9%)	64 (77.1%)	83 (100%)	Not Significant
Multiple	9 (40.9%)	13 (59.1%)	22 (100%)	
Position during surgery				
Supine	25 (27.2%)	67 (72.8%)	92 (100%)	Not Significant
Prone	1 (25%)	3 (75%)	4 (100%)	
Lithotomy	2 (22.2%)	7 (77.8%)	9 (100%)	

multifactorial. Tuohy needle insertion would be expected to cause mild post-epidural anaesthesia back pain<sup>5</sup>. Trauma induced by the epidural needle can result in haematomas or tears in ligament or periosteum. A different cause of backache could be muscle relaxation that follows regional or general anaesthesia leading to loss of muscle tone which normally supports the lumbosacral curvature of the vertebral column. Unsupported movements of the vertebrae stress the ligaments and connective tissues of the intervertebral joints and may lead to backache in the post-operative period. Based on this assumption, the use of an inflatable wedge during surgery to support the lumbosacral vertebrae after induction of general anaesthesia has successfully reduced the incidence of post-operative backache from 38% to 8.5%<sup>4</sup>.

Longer surgical procedures stretch the ligaments for longer duration to increase the incidence of post-operative backache. Similarly, lithotomy position stretches the ligaments and connective tissues more than supine position and will therefore be likely to result in a higher incidence of post-operative backache<sup>6</sup>.

When administering epidural anaesthesia, the use of the paramedian approach has been thought to decrease the incidence of backache as the needle is directed away from the midline supraspinous and interspinous ligaments. It is also likely that the use of a smaller needle is associated with lower incidence of backache<sup>7</sup>.

In the survey conducted, 28 patients (26.7%) recalled back pain when contacted one week post-operatively. There was no significant correlation between incidence of back pain and position of patient during surgery. Surgery lasting longer than 60 minutes did not significantly increase the incidence of post-operative back pain as suggested by previous authors<sup>6</sup>.

There was again no significant correlation between incidence of back pain and size of epidural needle, technique of injection, and the use of epidural catheter.

Multiple attempts during administration of epidural anaesthesia did not significantly increase the incidence of post-operative back pain.

In view of the small size of the population studied, the correlation of the incidence of post-operative back pain and needle sizes, technique of injection, use of epidural catheters, duration of surgery, position during surgery and the number of attempts to locate the epidural space cannot be clearly established in this study.

As this study only covered the first week after surgery, patients who only recalled significant back pain later in the post-operative course were omitted from the survey. This omission may have significant influence on the results of the study.

## Conclusion

In this survey involving 105 patients, none of the patients recalled "backache" post-operatively. This is a much lower incidence when compared with previous studies<sup>1,2,3</sup>. Perhaps this may be related to improved technique in administration of epidural anaesthesia (83 out of 105 patients had their epidural anaesthesia established after a single attempt) and improved quality of equipment manufactured over the past decades.

All 28 patients who had post-operative back pain experienced "injection site tenderness". The cause of "injection site tenderness" is likely to be due to direct trauma from the epidural needle. The pain was localized to the site of injection, mild to moderate in severity and lasted up to 4 days. Although this was a relatively common finding (26.7% in this series), it was not considered by the patients to be a significant post-operative problem.

However, due to the small number of subjects studied, it was not possible to establish a relationship between factors like needle sizes, technique of injection, use of epidural catheters, duration of surgery and position during surgery and the incidence of post-operative back pain after epidural anaesthesia.

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