



# Treatment of Postdural Puncture Headache with Neostigmine and Atropine after Unintentional Dural Puncture with a Tuohy Needle

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## Introduction

Limited definitive therapies for postdural puncture headache (PDPH) are available. A novel treatment with a combination of neostigmine and atropine was proposed by *Mahmoud et al* for the treatment of PDPH caused by a spinal needle. This therapy has not been studied for treatment of PDPH caused by a larger Tuohy needle.

## Case Presentation

A 28-year-old G2P0 admitted in term labor developed PDPH after known unintentional dural puncture with a 17-gauge Tuohy needle. She described her pain as positional tension at the head, neck and shoulders as well as a positional headache. She failed conservative treatment of with oral analgesics, caffeine and bed rest. She was treated with a 20ml epidural blood patch (EBP) and had initial symptomatic relief. Her symptoms recurred and CT scan of the head showed only a small amount of pneumocephalus. A repeat EBP was recommended. The patient initially requested a trial of conservative measures, but these failed and she opted for a repeat EBP. After initial relief from another 20ml EBP, her symptoms again recurred. She declined a third EBP, but she did agree to an infusion of atropine and neostigmine. She was brought to PACU on the labor and delivery unit, and pulse oximetry, blood pressure cuff and EKG leads were placed, and she was monitored for 50 minutes after the infusion was completed. The neostigmine and atropine infusion was infused as per the initial study by Mahmoud et al. She experienced complete resolution of her headache.

She reported mild side effects including nausea and a vague twitching and tingling sensation all over her body which resolved after 30 minutes. The nausea resolved with ondansetron 4mg. There were no hemodynamic changes.

She was discharged home later that night, but called back two days later with complaints of a severe headache discharge which was effectively treated with oxycodone and caffeine. She was asymptomatic one month later.

## Discussion

PDPH puts patients at risk for potentially serious complications including subdural hematoma, chronic low back pain, interference with the maternal-infant bond or breastfeeding, and long-term headache syndromes. Currently, the only definitive treatment option is an epidural blood patch. Many contraindications exist for an EBP. It is therefore imperative to explore new treatment modalities to reduce the potential risks of PDPH as well as to provide symptomatic relief.

One such novel treatment modality recently described by Mahmoud et al involves the use of a neostigmine and atropine infusion

The study performed by Mahmoud et al. was a randomized prospective analysis of treating patients who developed PDPH following intrathecal spinal anesthesia using 22-gauge Quincke spinal needles with neostigmine and atropine infusions. They showed that this treatment regimen was effective in reducing and shortening the duration of PDPH symptoms and obviated the need for an EBP in study participants. The proposed pathophysiological mechanism involves cerebral vasoconstriction and an increase in CSF secretion. This case report suggests that the increase in CSF secretion may be enough to overcome even larger tears created by Tuohy needles.

## Conclusion

This case report suggests that neostigmine and atropine may be a useful for the treatment of postdural puncture headache after accidental dural puncture with a Tuohy needle.

## References

Abdelaal Ahmed Mahmoud A., et al. Addition of neostigmine and atropine to conventional management of postdural puncture headache: a randomized controlled trial. *Anesth Analg*. 2018;127(6):1434-1439.