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Original Contribution

# Chronic headache and backache are long-term sequelae of unintentional dural puncture in the obstetric population ☆

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**Abstract**

**Introduction:** Unintentional dural puncture (UDP) and postdural puncture headache (PDPH) occur during the course of epidural catheter placement for labor analgesia with a reported incidence of 1%-5%. After UDP with an epidural needle, 80%-86% of patients develop PDPH. Acute symptoms after UDP are well known. However, few studies have evaluated the long-term complications of UDP, which is important in assisting parturients in the decision-making informed consent process. We sought to elucidate the long-term (> 6 weeks) sequelae of PDPH by examining parturients who had UDP (both recognized and unrecognized) associated with labor epidural analgesia.

**Methods:** Parturients with a documented UDP (n = 308) over a 5-year period were followed up for acute and long-term residual symptoms (lasting > 6 weeks) and compared with a control group (no documented UDP, n = 50) in the same period. Specific symptoms included headache, backache, neck ache, auditory symptoms, and visual symptoms.

**Results:** In comparing parturients with a UDP with control group (no UDP), differences were noted in overall acute symptoms (75.9% vs 21.7%, $P < .001$), specifically headache (87.0% vs 8.7%, $P < .001$), backache (47.2% vs 19.6%, $P = .002$), neck ache (30.1% vs 2.2%, $P < .001$), auditory (13.8% vs 0%, $P = .02$), and visual

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symptoms (19.5% vs 0%, $P = .002$). Differences were also noted in comparing chronic symptoms (26.5% vs 10.9%, $P = .04$) and specifically with respect to chronic headache (34.9% vs 2.2%, $P < .001$), backache (58.1% vs 4.4%, $P < .001$), and neck ache (14.0% vs 0%, $P = .02$). No differences were noted between groups in comparing chronic auditory and visual symptoms.

**Conclusion:** Chronic headache and backache sequelae persist in the obstetrical population after UDP. When parturients are considering labor epidural analgesia, long-term sequelae should be discussed in the informed consent decision-making process.



## 1. Introduction

Unintentional dural puncture (UDP) and subsequent postdural puncture headache (PDPH) are known complications of neuraxial anesthesia [1,2]. The incidence varies from 1%-5% [3]. After an UDP with an epidural needle, 80%-86% of patients develop PDPH with the most common symptom being an acute severe positional headache [4]. Compared with the general population, parturients have a higher incidence of PDPH due to their age, sex, and larger gauge needles used for labor epidural catheter placement [5]. Parturients with a PDPH are either treated with conservative measures or with a blood patch but are not routinely followed up for long-term complications [3]. Consequently, there are very few limited studies in the literature that have addressed the issue of long-term UDP and PDPH sequelae. Long-term (>6 weeks) sequelae of PDPH were studied by interviewing parturients who had UDP (both recognized and unrecognized) associated with insertion of labor epidural catheters.

## 2. Methods

After approval from the investigative review board (IRB), we reviewed the data of parturients who sustained an acute UDP after placement of a labor epidural from January 2007-December 2012. Their medical records were reviewed; and pertinent obstetric history, medical history, date of wet tap, date of blood patch if performed, and associated symptoms (headache, backache, neck ache, visual disturbance, and auditory symptoms) were recorded. A control group without an UDP matched for age, height, weight, gravidy, and parity was randomly selected within the same study period for comparison.

All patients within the study period received a standard labor epidural analgesic technique: in the sitting position, the epidural catheter was placed using the midline approach through a 17-gauge Tuohy needle at the L3-4 or L4-5 vertebral interspace using a loss of resistance to saline technique. The epidural catheter (Arrow Flex Tip Plus; Arrow International, Reading, PA) was inserted 5 cm into the epidural space and then secured with adhesive tape. After an initial bolus of 10 mL 0.0825% bupivacaine and fentanyl 100 μg, the patient was placed on a patient controlled epidural analgesia (PCEA) infusion. Patient controlled epidural analgesia parameters included continuous epidural infusion of 8 mL/h, PCEA demand bolus dose of 8 mL, PCEA demand bolus dose lockout every 8 minutes, and PCEA 1-hour total lockout of 24 mL.

The treatment pathway for UDP and PDPH includes conservative management (bed rest, hydration, oral caffeine, and analgesics [nonsteroidal antiinflammatory drugs, Aspirin, Tylenol, and Percocet]) for the first 24-48 hours and a therapeutic epidural blood patch (EBP) if conservative management fails (PDPH symptoms not getting better or progressively worse). Parturients with a backache were offered analgesics and/or a heat pad for discomfort. Standard follow-up for all parturients who received a labor epidural is assessed the following day by a dedicated obstetrical anesthesia nurse practitioner who performs a postdelivery anesthesia assessment. The nurse practitioner documents and notifies the anesthesiology staff of parturients with a potential or actual UDP for follow-up care, where a staff obstetrical anesthesiologist follows up and evaluates the parturient for PDPH treatment. After discharge, all parturients are instructed to call the obstetrical anesthesia department if there are any problems or concerns.

As a result of this IRB-approved study, parturients with a documented UDP and the control group (no UDP) were contacted by telephone, and verbal consent was obtained for study participation, and an IRB-approved questionnaire (Appendix) assessing for long-term sequelae and severity was administered. It focused on the persistence of 5 symptoms (headache, backache, neck ache, auditory, and visual symptoms). For the purpose of this study, a *PDPH* is defined as a severe, dull, nonthrobbing pain, usually frontooccipital headache; aggravated in the upright position; and diminished in the supine position. The PDPH may or may not be accompanied by nausea, vomiting, visual disturbances, and/or auditory disturbances. For the purpose of this study, any symptoms lasting longer than 6 weeks was considered as chronic.

Frequencies in each group and percentages in parentheses are reported in tabular format. Comparisons between group percentages were made using Fisher exact test. Specific symptoms included headache, backache, neck