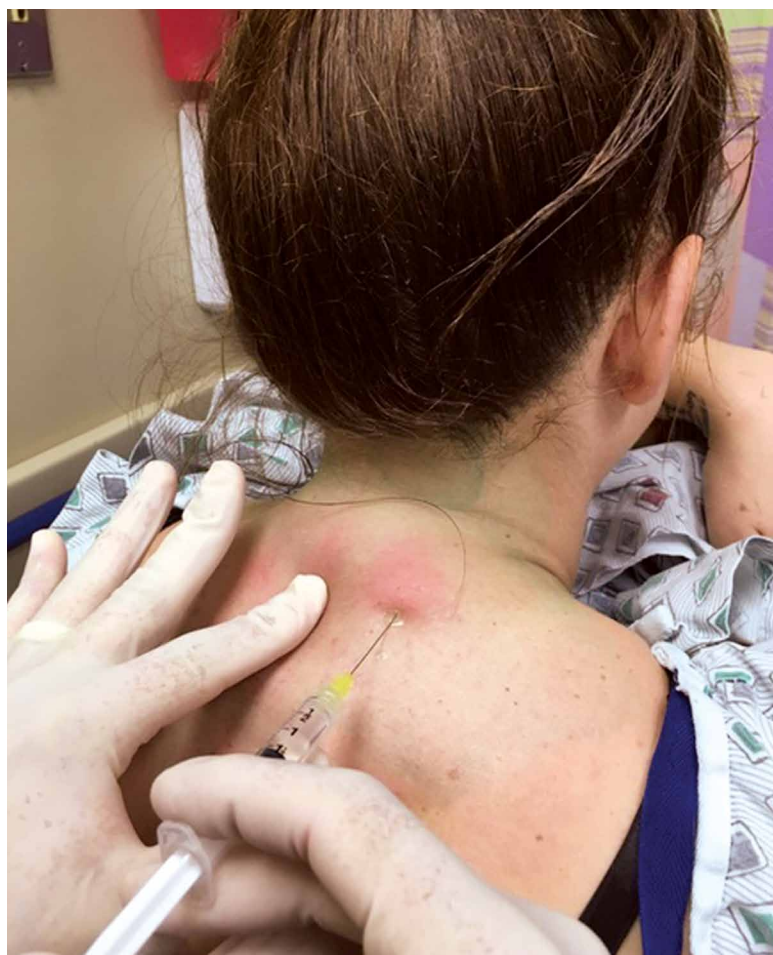


Paraspinous Cervical Nerve Block for Primary Headache

John Hipskind, MD

In a convenience sample of seven patients who presented to the ED for treatment of headache, paraspinous cervical nerve block reduced pain with no reported adverse effects.



Headaches—pain or discomfort in the head, scalp, or neck—are a very common reason for ED visits.¹ In 2011, the World Health Organization estimated that 46.5% of the population in North and South America aged 18 to 65 years old experienced at least one headache within the previous year.¹

Migraine is a recurrent headache disorder that afflicts 18% of US women and 9% of US men,² resulting in at least 1.2 million visits to US EDs annually.¹ The economic cost resulting from migraine-related loss of productive time in the US workforce is more than \$13 billion per year, most of which is in the form of reduced work productivity.³ Management and treatment for migraine headache in the ED commonly include intravenous (IV) or intramuscular (IM) medications, fluids, or oxygen. While ultimately effective, these methods require nursing care and additional time for post-treatment monitoring, both of which adversely affect patient flow.

In 2006, Mellick et al⁴ described the safety and effectiveness of paraspinous cervical nerve block (PCNB) to abort migraine headaches. Despite its demonstrated efficacy and safety, a decade later, PCNB is still rarely used. Friedman et al⁵ ranked

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Table. Paraspinous Cervical Nerve Block for Primary Headache: A Sample of Seven Patients

Patient	Age (y)/ Sex	Comorbidities	Headache Type/Duration	Home Medications	Initial Unsuccessful Tx in ED	Pain Rating Before PCNB ^a	Pain Rating After PCNB ^a
1	51/F	Hypertension, diabetes, depression	Intermittent for 3 months; current episode: 3 days	Amitriptyline, aspirin	Ondansetron, hydration	10/10	4/10
2	77/F	Hypertension	Intermittent for 3 years; current episode: 4 days	Acetaminophen	—	7/10	0/10
3	55/F	Hypertension, diabetes, anxiety, depression, chronic abdominal pain, substance abuse	Intermittent for 3 months; current episode: 1 day	Metoclopramide	Diphenhydramine, ketorolac, metoclopramide	10/10; decreased to 9/10 after medications administered in ED	5/10
4	42/F	Anxiety, depression, migraines	Intermittent for 3 months; current episode: 3 days	Sumatriptan, metaxalone	—	8/10	2/10
5	55/F	—	Intermittent for 40 years; current episode: 4 days	Propranolol, sumatriptan	Diphenhydramine, ketorolac, metoclopramide	7/10; decreased to 5/10 after medications administered in ED	1/10
6	37/M	Anxiety, hypertension, PTSD	Intermittent for 2 years since sustaining a closed head injury	Metoclopramide, aspirin, sumatriptan	Diphenhydramine, ketorolac, dexamethasone, metoclopramide fentanyl, ketamine	10/10	6/10; after PCNB patient was treated with morphine and diphen- hydramine
7	87/F	—	Intermittent; current episode: 4 days		Diphenhydramine, fentanyl, metoclopramide	10/10	No score recorded in chart; pain had decreased

^aPatients rated pain on a 0 to 10 scale, with 0 = no pain and 10 = worse possible pain.

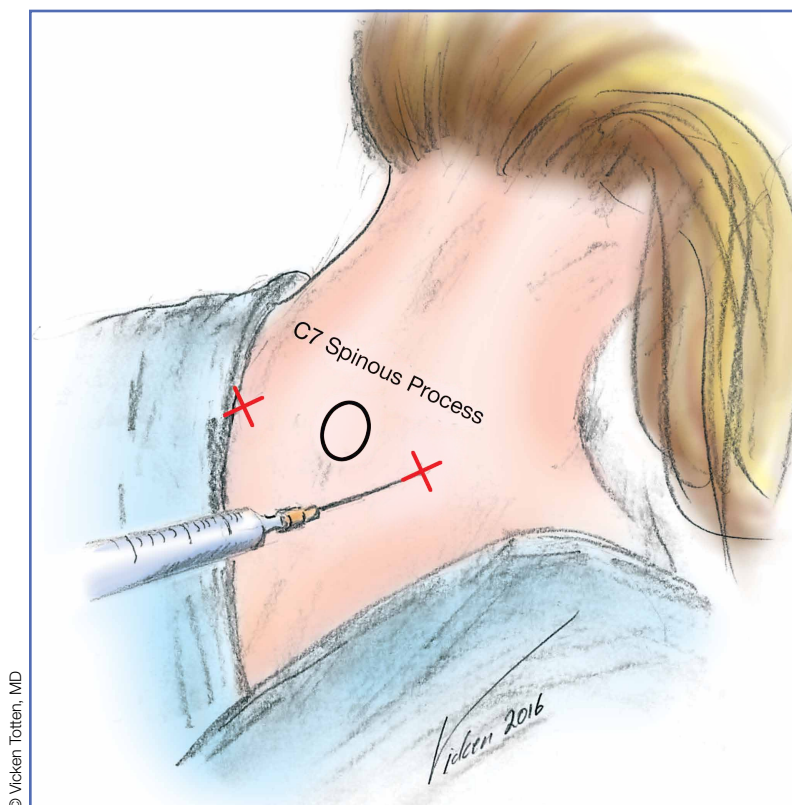
Abbreviations: F, female; M, male; PCNB, paraspinous cervical nerve block; PTSD, posttraumatic stress disorder; Tx, treatment.

peripheral nerve blocks as the fourth step in management suggestions for primary headache.

Case Reports of Headache Patients

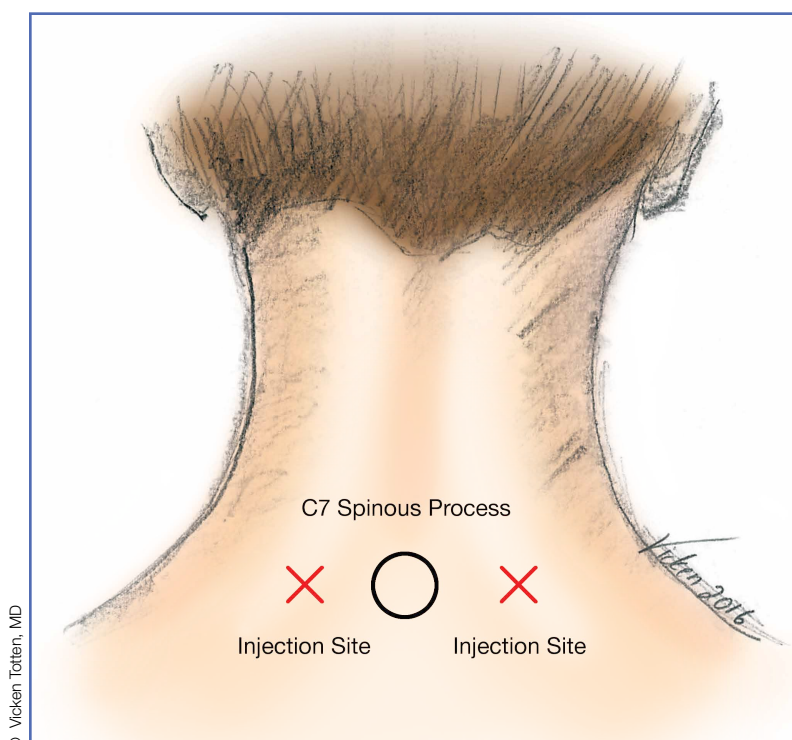
We report on seven headache patients we treated in our ED with PCNB who had

good-to-complete resolution of pain, suggesting that PCNB is efficacious and can potentially shorten the ED length of stay. This series of seven patients (six female, one male) was a convenience sample of primary headache patients who presented over a 10-month period and were safely



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Figure 1



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Figure 2

and rapidly treated with PCNB (**Table**). No ill effects of this treatment were found and none of the patients required additional pain treatment after discharge.

In each case, the PCNB procedure was explained to the patient and consent was obtained. Each patient was treated with a total of 3 cc of 0.5% bupivacaine with epinephrine injected into the posterior neck according to the method described by Mellick et al.⁴ Our seven patients achieved an average 5-point reduction in pain on a 10-point pain scale, with 0 = no pain and 10 = worse possible pain.

Other than the provision of medications, no nursing assistance was required. Only one of the patients required further treatment after the PCNB, and none had an adverse reaction. All of the patients reported that their headaches were similar in nature to past headaches. Based on their history and physical examination, none were diagnosed to be experiencing a secondary, more serious cause of headache, and none subsequently returned to our institution with a secondary type of headache.

The Paraspinal Cervical Nerve Block

Paraspinal cervical nerve block requires less time to administer and recovery is shorter than that from IM or IV opioids, sedatives, or neuroleptics. It is an easy technique to teach since it requires bilateral injections.

Technique

Prior to the procedure, cleanse the bilateral paravertebral zones surrounding C6 and C7 with chlorhexidine. Next, fill a 3 cc syringe using 0.5% bupivacaine with epinephrine. Using a 1.5-inch, 27-gauge needle, inject 1.5 mL of anesthetic about 3 cm lateral to the C7 spinous process, 2 to 3 cm deep, bilaterally (**Figures 1 and 2**).

Once the injection is complete, withdraw the needle completely, and compress and massage the injection site to facilitate anesthetic diffusion to surrounding

tissues. Repeat on the other side using the same technique.

Indications

Paraspinous cervical nerve block is an appropriate treatment only for patients who are having a typical episode of chronic, recurring headaches, whose history and physical examination do not suggest the need for any further diagnostic work-up, and who, in the judgment of the treating clinician, require only pain relief.

Contraindications

A patient should not be considered for PCNB if he or she has a new-onset headache, fever, altered mental status, focal neurological deficits, meningismus, findings suggestive of meningitis, papilledema, increased intracranial pressure from a space-occupying lesion, recent head trauma with concern for intracranial hemorrhage, or suspicion of an alternate diagnosis.

Efficacy and Patient Response

Paraspinous cervical nerve block has been shown to decrease pain in patients who had failed standard migraine therapy and patients reported no complications. Of the seven patients in this case report, only one patient received opioids in the ED and none received prescriptions for opioids upon discharge for outpatient use.

Mellick and Mellick⁶ have postulated that pain may be modified due to the PCNB effect on the convergence of the trigeminal nerve with sensory fibers from the upper cervical roots. Since cervical innervation provides feeling to the head and upper neck, blocking this input can ameliorate pain.⁶

Summary

This series of seven patients provides further evidence of the effectiveness of PCNB in relieving headache symptoms for pa-

tients with recurrent, primary headaches when a secondary, more serious cause has been clinically excluded. Each of the seven patients had marked improvement of their pain and required only minimal nursing attention; moreover, all stated they would willingly undergo the procedure for future painful episodes.

Although there were no reported complications, this series is too small to demonstrate complete safety of the procedure. While this report is limited by a small sample size, it demonstrates that this is a quick, effective, and easily learned method of addressing a common ED complaint that obviates the need for parenteral medications and offers a potentially decreased patient length of stay.

Paraspinous cervical nerve block is a promising modality of treatment of ED patients who present with headache and migraine symptoms who do not respond to their outpatient “rescue” therapy. This procedure should be considered as an early treatment for migraine and other primary headaches unless contraindicated.

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