PAIN MEDICINE CASE REPORTS

ISSN 2768-5152

Volume 10, Number 4, pp. 361-364

EXPANDING SPHENOPALATINE GANGLION BLOCK USE IN ONCOLOGY: MULTIFOCAL PAIN RELIEF IN METASTATIC BREAST CANCER—A CASE REPORT

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Background: Facial pain in patients with metastatic cancer is often multifactorial, involving neuropathic, nociceptive, and treatment-related mechanisms. Conventional therapies such as opioids, neuropathic agents, and corticosteroids are frequently inadequate or poorly tolerated. The sphenopalatine ganglion block (SPGB) is a minimally invasive procedure that may offer effective pain relief; however, data on the use of this technique for cancer-related facial and somatic pain is limited.

Case Report: We describe a 73-year-old woman with widely metastatic breast cancer who presented with severe, continuous facial pain involving her jaw, lips, cheeks, and ears, along with deep lower back pain, burning tongue pain, and bilateral thigh pain. Previous pharmacological treatments provided insufficient relief. She underwent multiple intranasal SPGB procedures with 0.5% bupivacaine administered via cotton-tip applicators. Following each treatment, she experienced nearly complete resolution of facial and somatic pain. That relief lasted from 3 days up to one week, even during concurrent chemotherapy and radiation therapy. The patient tolerated the procedures well, without adverse effects, and reported substantial improvement in her quality of life.

Conclusions: This case highlights the intranasal bupivacaine SPGB as a simple, safe, and effective noninvasive option for refractory cancer-related facial and somatic pain. The observed relief beyond craniofacial areas suggests potential central modulation of pain pathways. Further research is warranted to validate the SPGB as a palliative treatment in advanced cancer pain syndromes.

Key words: Sphenopalatine ganglion block, cancer pain, facial pain, case report

BACKGROUND

Facial pain in patients with metastatic cancer is often multifactorial and difficult to manage. Neuropathic, nociceptive, and treatment-related mechanisms may all contribute to the pain. Common pharmacological treatment options include opioids, neuropathic agents, corticosteroids, and topical therapies; however, these are frequently inadequate or poorly tolerated. No gold standard therapy currently exists for cancer-related craniofacial pain (1-3).

The purpose of this case report is to expand clinical awareness of the sphenopalatine ganglion block (SPGB) as a palliative treatment option for refractory facial pain in oncology patients.

We report a case of a 73-year-old woman with metastatic breast cancer who experienced consistent and complete resolution of severe facial pain—and, unexpectedly, chronic lower back and extremity pain—after a series of intranasal SPGB treatments with 0.5% bupivacaine. The patient provided verbal

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Disclaimer: There was no external funding in the preparation of this manuscript.
Conflict of interest: Each author certifies that he or she, or a member of his or her immediate family, has no commercial association (i.e., consultancies, stock ownership, equity interest, patent/licensing arrangements, etc.) that might pose a conflict of interest in connection with the submitted manuscript.
Patient consent for publication: Consent obtained directly from patient(s).
This case report adheres to CARE Guidelines and the CARE Checklist has been provided to the journal editor.
Accepted: 2026-02-04, Published: 2026-06-30

and written informed consent for publication of this report.

CASE

Initial Patient Presentation

A 73-year-old woman with a medical history significant for hypertension, atrial fibrillation, hypothyroidism, Crohn's disease, chronic migraines, and metastatic breast cancer presented to our pain management clinic with intractable facial pain and chronic low back pain. She reported that her facial pain began approximately 3 years prior, shortly after an episode of uncomplicated dental work. The pain originated in her lower jaw and radiated to her lower lip, tongue, bilateral cheeks, and ears. She described the condition as a constant "tingling sensation" in the lower jaw, with intermittent "shooting" pain to the ears and cheeks and a persistent "burning sensation" on the tongue. Notably, her description of the discomfort was not a myofascial muscular pain but rather a neuropathic quality of a tingling dysesthesia. Also remarkable was her observation of a positional component: turning her head to the left while sleeping exacerbated left-sided facial pain the next day, and a similar process ensued for the right side. Furthermore, she reported intermittent facial swelling, particularly of the cheeks, without any identifiable triggers. Overall, her presentation was most consistent with painful trigeminal neuropathy, characterized by constant dysesthetic facial pain involving multiple trigeminal distributions rather than paroxysmal, triggerable attacks.

Over the 3 years, she was evaluated by multiple dentists and neurologists, though a definitive diagnosis was never established. During this time, her oncologist managed her metastatic breast cancer, which had progressed more recently to involve the facial region. Importantly, her facial pain had preceded any radiographic evidence of facial metastasis by several years. At the time of the patient's presentation to our pain clinic, the extent of metastatic involvement of the facial region could not be determined definitively from available records.

She had trialed various over-the-counter topical agents, including Blue-Emu and local heat therapy, which provided transient and partial relief. Pharmacological treatments included 50 mg of tramadol every 6 hours as needed, which was ineffective, followed by 5 mg of oxycodone every 4 hours as needed and 2 mg of dexamethasone daily. The 5 mg dose of oxycodone provided no relief, though 10 mg of oxycodone enabled sleep and reduced the patient's pain from 10-12/10 to approximately 7/10 on the numeric rating scale. Despite this, the pain remained debilitating and was progressively worsening, severely impairing her sleep, daily functioning, and social interactions. The symptoms were consistent with a neuropathic mechanism rather than myofascial muscular strain. Notably, conventional neuropathic agents such as gabapentin, pregabalin, or duloxetine were not trialed prior to the sphenopalatine ganglion block. The patient's bilateral facial pain involved multiple trigeminal distributions, without a single dominant nerve territory, a targeted trigeminal branch or ganglion procedure was considered less suitable. Because of the documented efficacy of SPG blocks in treating headaches and cancer-related craniofacial pain (1-5) and the patient's partial response to conventional analgesics, we proceeded with this minimally invasive, targeted approach.

Procedure Details

The SPG block was performed using a needleless transnasal topical technique with cotton-tipped applicators rather than a percutaneous needle-based approach (Fig. 1). At the time of the patient's first procedure, she reported severe pain in the lower jaw, right ear, and bilateral cheeks, along with a burning sensation of the tongue and lower lip. Her pain was rated 12/10 on the numeric rating scale.

The patient was placed in a supine position with a pillow under her shoulders to facilitate cervical extension. Noninvasive monitoring included blood pressure and pulse oximetry. Cotton-tipped applicators were lubricated and inserted into each nostril and advanced gently to the posterior nasopharynx. Bupivacaine 0.5% was instilled drop by drop until the patient reported tasting it at the back of her throat. The applicators were left in place for 15 minutes, during which time the patient remained comfortable. After symptom reassessment, she opted to continue with 2 additional 15-minute intervals, with fresh instillations of bupivacaine and readjustment of the applicators each time.

The patient tolerated the procedure well without complications, remained hemodynamically stable, and was discharged after a brief recovery period.

Clinical Outcome

Following the initial SPG block, the patient experienced complete resolution of her facial and chronic low back pain for the first time in 3 years.

Over the next 2 weeks, she underwent another bilateral SPG block, which again provided total pain relief across her face and lower back, lasting about one week. However, her pain returned shortly after radiation therapy was administered.

Approximately 3 weeks later, during a subsequent session, the patient reported complete resolution of right-sided facial pain, left-arm and bilateral thigh discomfort, low back pain, and the onset of a migraine. The "hardness sensation" in her lower lip also improved. This relief persisted for 3 days. Although she underwent radiation therapy on the same day, she remained pain free immediately afterward until her symptoms recurred 3 days later.

About 5 days afterward, she received another block that reduced her back pain substantially and decreased the intensity of her facial pain from severe to mild. During this period, her radiation therapy had caused oral mucositis, which she described as a new burning sensation beginning approximately one day prior to the procedure.

Despite these challenges, roughly one week later, the patient experienced a full week of complete pain relief following another SPG block, even while continuing chemotherapy treatments. A further session one week after that provided 3 days of complete analgesia until chemotherapy resumed.

At her last appointment, she again reported total resolution of lower back and oral pain following a bilateral SPG block.

To reduce the burden of frequent travel to the clinic, the patient's husband was trained to administer SPG blocks at home, using lidocaine 2% nasal drops without applicators. This approach allowed for more convenient, timely pain management and decreased the patient's need for in-office procedures.

Unfortunately, as her metastatic disease progressed, her overall condition declined. During follow-up, her husband reported episodes of confusion, likely related to disease progression and ongoing treatments, and indicated that he had not administered the at-home SPG blocks recently because the patient had become less communicative about her pain.

DISCUSSION

Pain in advanced cancer is often multifactorial, arising from tumor infiltration, inflammation, and treatment-related injury (4). In this case, the patient experienced neuropathic facial pain that likely involved branches of the trigeminal nerve, compounded by mucositis and radiation-related inflammation. Additionally, she suffered from chronic axial and appendicular pain, reflecting a complex interplay of cancer-related myofascial pain, neuropathy, central sensitization, and preexisting degenerative changes.

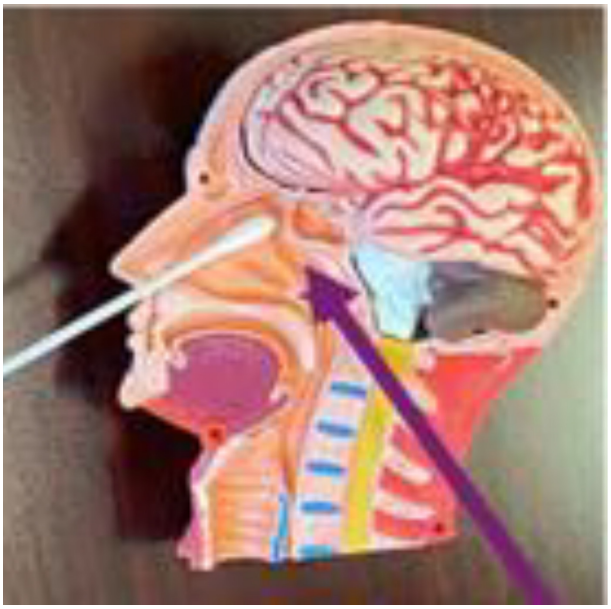

Fig. 1. Relevant sphenopalatine ganglion anatomy and trans-nasal topical approach. The block was performed using cotton-tipped applicators placed along the posterior nasopharynx; no needle was used.

The SPG is a key relay center for autonomic and nociceptive input within the craniofacial region. Historically, the SPG has been described as lying directly beneath the nasal mucosa, forming the anatomical basis for trans-nasal topical blockade. However, contemporary imaging studies using fused CT and MRI challenge this assumption, demonstrating that the SPG is located within the sphenopalatine fossa at a mean distance of approximately 6-7 mm from the nasal mucosa overlying the sphenopalatine foramen, separated by mucosa, connective tissue, neurovascular structures, adipose tissue, and bone (5-8). These findings raise important questions regarding whether intranasally applied local anesthetic reliably reaches the SPG by passive diffusion.

Despite these anatomical considerations, intranasal SPGBs have demonstrated clinical efficacy in a variety of headache and facial pain syndromes. This pattern suggests that the therapeutic effects of the SPGB may not depend solely on direct ganglionic blockades. Alternative mechanisms have been proposed, including

blockade of trigeminal nerve branches within the nasal mucosa, modulation of the trigemino-autonomic reflex, systemic absorption of local anesthetic, or activation of central pain-modulating pathways (9-16). Notably, intranasal local anesthetics are known to anesthetize first- and second-division trigeminal afferents, which may influence nociceptive processing at the level of the trigeminocervical complex and higher central structures.

In the present case, SPGBs consistently resulted in the relief not only of facial pain but also of axial and appendicular pain, an effect not readily explained by local craniofacial anesthesia alone. This unexpected systemic analgesia supports the hypothesis that SPGBs may exert broader central effects, potentially through engagement of descending inhibitory pathways or modulation of central sensitization. Such mechanisms may be particularly relevant in patients with advanced cancer, in whom widespread pain amplification and autonomic dysregulation are common.

Unlike systemic pharmacological therapies, the SPGB offers a localized, minimally invasive, and well-tolerated intervention with a favorable side-effect profile. In this patient, repeated blocks provided meaningful, albeit temporary, analgesia despite her ongoing chemotherapy and radiation therapy, contributing to improved quality of life during a vulnerable period of care. While more durable interventions such as radiofrequency thermocoagulation (RFTC) of the SPG can provide longer-lasting relief, these procedures are more invasive and carry higher risk. In patients with advanced cancer or significant comorbidities, repeated intranasal SPGBs may therefore represent a safer and practical option for palliative pain management, balancing efficacy with procedural tolerability.

This case adds to a growing body of evidence suggesting that the SPGB may be a valuable adjunct in the management of complex cancer-related pain syndromes. Importantly, the clinical efficacy of the block may not depend on direct anesthetic diffusion to the SPG itself but rather on indirect trigeminal, autonomic, or central neuromodulatory effects. Further research is warranted to better elucidate these mechanisms and to define the role of the SPGB within multidisciplinary palliative pain management strategies.

CONCLUSIONS

Facial and somatic pain related to metastatic cancer can be difficult to manage with systemic analgesics, neuropathic agents, and invasive procedures. This case report demonstrates that a bupivacaine SPGB can be a simple, safe, inexpensive, and noninvasive treatment option for patients suffering from chronic, treatment-resistant facial pain and possibly other forms of somatic and neuropathic pain in the context of advanced cancer.

REFERENCES

1. Epstein JB, Elad S, Eliav E, Jurevic R, Benoliel R. Orofacial pain in cancer: Part II--clinical perspectives and management. *J Dent Res* 2007; 86:506-518.
2. Ye Y, Jensen DD, Viet CT, et al. Advances in head and neck cancer pain. *J Dent Res* 2022; 101:1025-1033.
3. Romero-Reyes M, Teruel A, Ye Y. Cancer and referred facial pain. *Curr Pain Headache Rep* 2015; 19:37.
4. van den Beuken-van Everdingen MH, de Rijke JM, Kessels AG, Schouten HC, van Kleef M, Patijn J. Prevalence of pain in patients with cancer: A systematic review of the past 40 years. *Ann Oncol* 2007; 18:1437-1449.
5. Crespi J, Bratbak D, Dodick D, et al. Measurement and implications of the distance between the sphenopalatine ganglion and nasal mucosa: A neuroimaging study. *J Headache Pain* 2018; 19:14.
6. Windsor RE, Jahnke S. Sphenopalatine ganglion blockade: A review and proposed modification of the transnasal technique. *Pain Physician* 2004; 7:283-286.
7. Schlereth T, Birklein F. The sympathetic nervous system and pain. *Neuromolecular Med* 2008; 10:141-147.
8. Robbins MS, Robertson CE, Kaplan E, et al. The sphenopalatine ganglion: Anatomy, pathophysiology, and therapeutic targeting in headache. *Headache* 2016; 56:240-258.
9. Levin D, Acquadro M, Assaad P, Eelani C, Al-Masry M, Gerges F. Sphenopalatine ganglion block relieves chronic abdominal wall pain! *Surgical Case Reports* 2022; 2613-5965.
10. Levin D, Acquadro M, Cerasuolo J, Gerges F. Sphenopalatine ganglion block for ipsilateral shoulder pain following open pancreaticoduodenectomy. *BMJ Case Rep* 2022; 15:e243746.
11. Levin D, Gerges FJ, Acquadro M. The versatility of the transnasal sphenopalatine ganglion block. *Pain Med* 2023; 24:1020.
12. Levin D, Cohen S, Grant GJ. Sphenopalatine ganglion block for postdural puncture headache in the patient with challenging spinal anatomy. *Reg Anesth Pain Med* 2021; 46:1115.
13. Levin D, Acquadro M, Cerasuolo J, Gerges FJ. Persistent coronavirus disease 2019 headache relieved with sphenopalatine ganglion block. *Turk J Anaesthesiol Reanim* 2022; 50:S68-S70.
14. Levin D, Gerges T, Acquadro M. A case report of sphenopalatine ganglion block relieving chronic pain post-dental bone graft surgery. *Cureus* 2023; 15:e45266.
15. Cohen S, Levin D, Mellender S, et al. Topical sphenopalatine ganglion block compared with epidural blood patch for postdural puncture headache management in postpartum patients: A retrospective review. *Reg Anesth Pain Med* 2018; 43:880-884.
16. Levin D, Cohen S, Mellender S, Kiss G. Sphenopalatine ganglion block successfully treats migraines in a type 1 Arnold Chiari malformation pregnant patient: A case report. *A A Pract* 2018; 11:32-34.