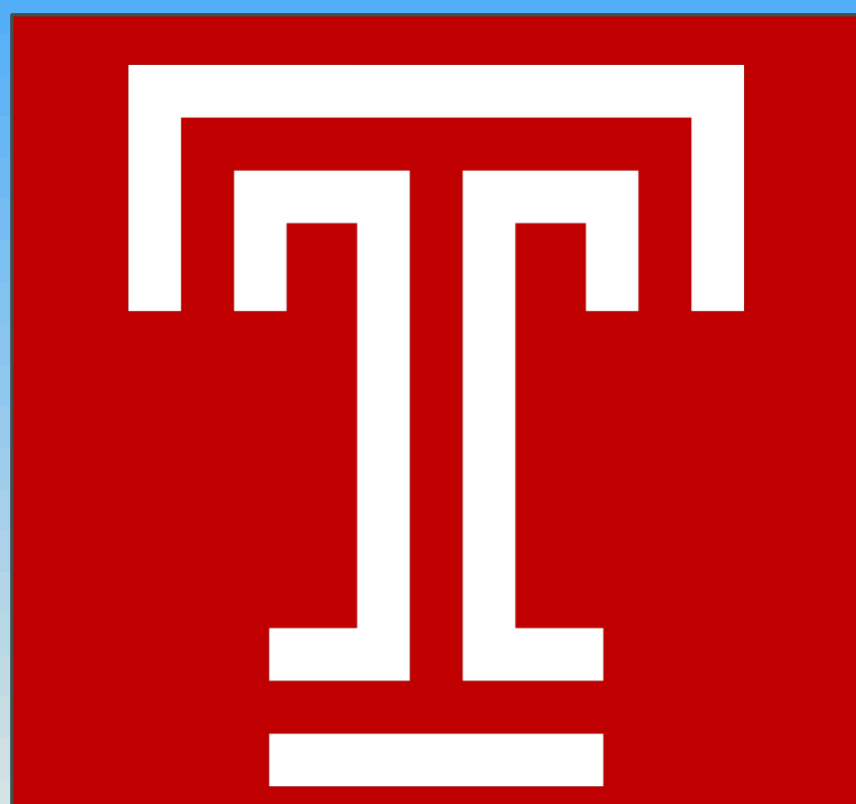




Postoperative Occipital Neuralgia After Atlantoaxial Fusion

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Introduction

Postoperative occipital neuralgia (PON) is a potential sequela of atlantoaxial fusion, a surgery used to treat instability of the upper cervical spine as a result of fractures of the odontoid. PON is the result of irritation to the greater occipital nerve (GON) which innervates the posterior scalp. Patients present with constant or intermittent burning and/or stabbing pain in the dermatomes that originate from the GON, which span from the suboccipital area to the upper portion of the neck, the area behind the eyes, and the posterior region of the head. There are various potential proposed etiologies of PON, which include intersegmental compression between the C1 and C2 screws, excessive C2 nerve root manipulation during surgery, overgrowth of the implanted bone, and postoperative edema exerting mass effect on the nerve.¹⁻²

Imaging

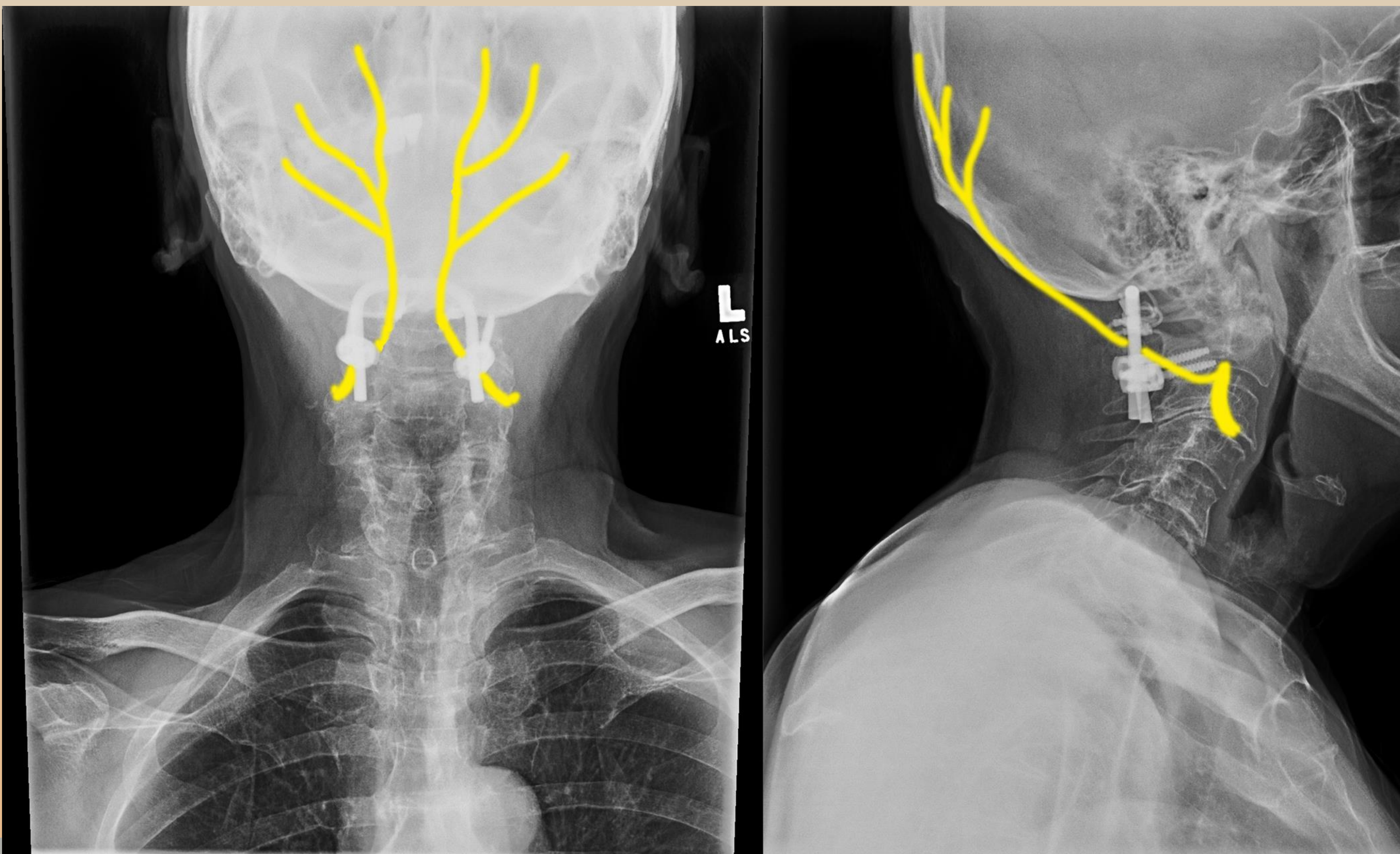


Figure 1
AP and Lateral x-ray images post op showing the GON originating from the C2 nerve root.

Case Report

This is a 77-year-old female with a history of osteoporosis, age-related anemia, polymyalgia rheumatica, and odontoid fracture after a motor vehicle accident two years prior. She was initially managed nonoperatively with a C-collar for six months which improved her pain, and the C-collar was removed. However, two months later she developed radiating neck pain down her left shoulder with associated deltoid weakness. Repeat imaging revealed nonunion of her C2 fracture, and she underwent a C1-C2 cervical fusion and was discharged to an acute inpatient rehabilitation facility. On her third day of admission, she developed a stabbing pain at the skull base which radiated to the left posterior aspect of her head in a C2 dermatomal pattern. Tinel's test was positive over the left skull base and negative on the right suggestive of left-sided occipital neuralgia. The patient was treated with a left occipital nerve block with an injection of 1% lidocaine and triamcinolone 40 mg injected into the base of her skull around the left occipital nerve. She reported improvement of neck and head pain on post-procedure day two and was subsequently discharged from the hospital.

Procedure

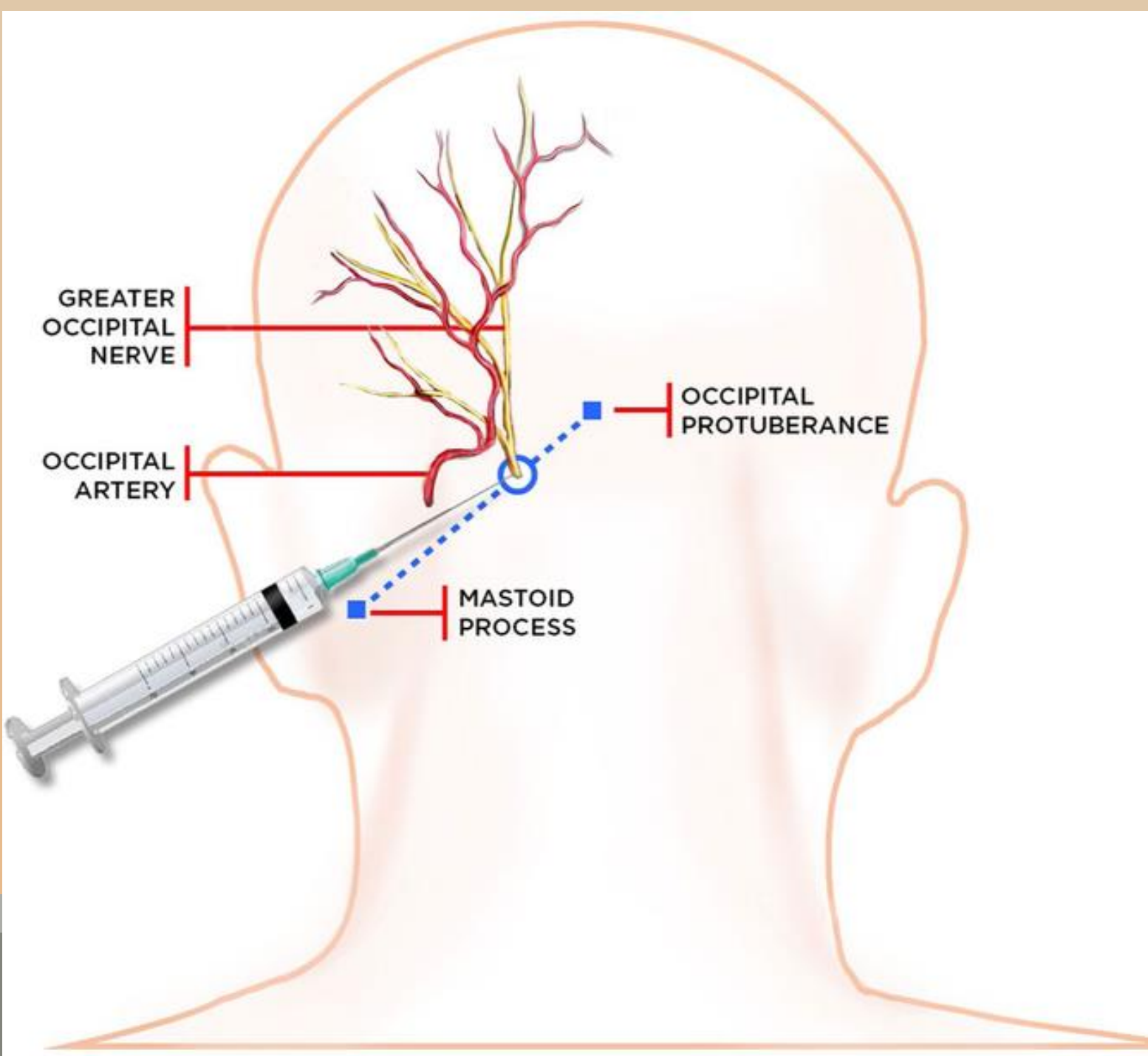


Fig. 2
GONB technique. Inject 1/3rd the distance from a line formed between the occipital protuberance and the mastoid process. A mixture of 1% lidocaine and triamcinolone 40mg for a total volume of 2cc.

Discussion

PON is a rare but debilitating complication of atlantoaxial fusion. While the etiology of our patient's PON is likely multifactorial, postoperative edema with resultant mass effect on the left greater occipital nerve was likely following her recent atlantoaxial fusion. The positive Tinel's test and pain relief following diagnostic injection helped confirm the diagnosis. The PON was quickly identified and treated with a diagnostic and therapeutic injection of lidocaine and steroid, which reduced both the patient's symptoms and shortened her hospital stay.

References

- [1] Ishak B, Schneider T, Tubbs RS, et al. Modified Posterior C1 Lateral Mass Screw Insertion for Type II Odontoid Process Fractures Using Intraoperative Computed Tomography-Based Spinal Navigation to Minimize Postoperative Occipital Neuralgia. World Neurosurg. 2017;107:194-201. doi:10.1016/j.wneu.2017.07.159
- [2] Guan Q, Xing F, Long Y, Xiang Z. Postoperative occipital neuralgia in posterior upper cervical spine surgery: a systematic review. Neurosurg Rev. 2018;41(3):779-785. doi:10.1007/s10143-017-0923-z

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