

Occipital nerve entrapment

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General information

[Greater occipital nerve](#) (nerve of Arnold) is a sensory branch of [C2](#).

[Entrapment](#) presents as [occipital neuralgia](#): [pain](#) in [occiput](#) usually with a [trigger point](#) near the [superior nuchal line](#). Pressure here reproduces pain radiating up along the back of the head towards the [vertex](#).

More common in [women](#).

Possible causes of entrapment

1. [trauma](#)

a) direct trauma (including iatrogenic placement of suture through the nerve during surgical procedures, e.g., in closing a posterior fossa craniectomy)

b) following traumatic cervical [extension](#) ¹⁾ which may crush the C2 root and ganglion between the C1 arch and C2 lamina

c) fractures of the [upper cervical spine](#)

2. [atlanto-axial subluxation](#) (AAS) (e.g., in [rheumatoid arthritis](#)) or [arthrosis](#)

3. entrapment by hypertrophic C1-2 (epistrophic) ligament ²⁾.

4. [neuromas](#)

5. arthritis of the C2-3 zygapophyseal joint

Differential diagnosis

1. [headache](#)

a) may be mimicked by a [migraine](#) headache

b) may be part of muscle contraction(tension)headache

2. [myofascial pain](#): the pain may be widely separated from the trigger point

3. [vertebrobasilar disease](#) including aneurysm and SAH

4. [cervical spondylosis](#)

5. pain from [Chiari I malformation](#).

Treatment

[Occipital nerve entrapment treatment](#).

Case reports

A rare case of referred pain in the trigeminal nerve distribution caused by entrapment of the greater occipital nerve (GON). Notably, the pain extended to the ipsilateral [tongue](#), an unusual intraoral involvement. GON entrapment can lead to sensitization in secondary nociceptive neurons within the trigeminocervical complex (TCC), which receives signals from both trigeminal and occipital nerves, causing referred facial pain. A 55-year-old female presented with chronic left temporo-occipital pain, along with pain in her left periorbital area, ear canal, gum, and a 20-year history of atypical facial pain on her left tongue and lower lip. Following GON decompression, her temporo-occipital pain and facial symptoms improved, with a significant reduction in burning pain on her tongue and resolution of lip tingling. The TCC, comprising convergent inputs from trigeminal and occipital nerves, is the anatomical basis of referred craniofacial pain. Chronic GON entrapment can sensitize second-order neurons in the TCC and medullary dorsal horn, explaining this unusual referred pain to the intraoral structures ³⁾.

¹⁾

Hunter CR, Mayfield FH. Role of the Upper Cervical Roots in the Production of Pain in the Head. Am J Surg. 1949; 48:743-751

²⁾

Poletti CE, Sweet WH. Entrapment of the C2 Root and Ganglion by the Atlanto-Epistrophic Ligament: Clinical Syndrome and Surgical Anatomy. Neurosurgery. 1990; 27:288-291

³⁾

Son BC. Involvement of the Ipsilateral Tongue, an Intraoral Structure of Referred Pain due to Entrapment of the Greater Occipital Nerve. Case Rep Neurol Med. 2024 Dec 19;2024:3993982. doi: 10.1155/crnm/3993982. PMID: 39735902; PMCID: PMC11671630.

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