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Otolaryngology -- Head and Neck Surgery 2011 145: 699 originally published online 26 April 2011
DOI: 10.1177/0194599811405292

The online version of this article can be found at:
http://oto.sagepub.com/content/145/4/699

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What is This?
Painful Traumatic Neuroma of the Tongue Treated with Serial Alcohol Injections

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Sponsorships or competing interests that may be relevant to content are disclosed at the end of this article.

Keywords
tongue, neuroma, trauma, traumatic, alcohol, lidocaine, sclerosant, sclerosing, serial, injection

Received December 29, 2010; revised February 17, 2011; accepted March 8, 2011.

Traumatic neuromas are nodular masses that can form after axonal injury. If the damaged nerve sheaths are not closely approximated, neurotrophic factors can cause aberrant growth, resulting in a neuroma.1 Although they are not true neoplasms, the pain associated with traumatic neuromas can be intense and debilitating. We present the case of a 67-year-old woman with a traumatic neuroma of the tongue that was treated with serial alcohol injections.

Case
A 67-year-old woman presented with a benign tongue mass, which was excised under general anesthesia. Three months later, she began to experience a constant dull ache in her tongue, with intermittent episodes of burning. She drank socially on occasion and denied tobacco use, constitutional symptoms, or history of irradiation. Physical examination was notable for a tender 3-mm mass on the tongue tip. No other palpable masses or lymph nodes were found in the oral cavity, head, or neck. She was placed on gabapentin, responding only minimally. She was also given local steroid injections, which did not provide relief. Eighteen months after the original surgery, she had a second neuroma excision, and pathology revealed traumatic neuroma. The pain returned 2 months after the second surgery, and examination at that time demonstrated an 8-mm mass in the same location. She was then placed on nortriptylene. She eventually decided to discontinue both the gabapentin and the nortriptylene due to side effects and inefficacy. A final attempt to control the pain involved serial alcohol injections. Over a 4-month period, she received 11 injections of alcohol into her tongue, starting at 4% and increasing to 16% (Table 1). Other than mild postinjection pain and transient weakness, there were no other sequelae. After the first several injections, her pain subsided for a few hours at a time postinjection. Long-lasting relief did not occur until the alcohol concentration was increased to 16%, and she currently continues to be pain free 9 months postinjection.

Technique
The pharmacy diluted alcohol with 2% lidocaine to achieve the desired concentration. This was drawn into a syringe with a 27-gauge needle. The needle was inserted through the ventral aspect of the patient’s tongue into the neuroma. Half of the dose was injected directly into the neuroma. The needle was then advanced proximally to the neuroma, and the remaining half of the dose was injected. She was counseled to monitor her symptoms, including tongue weakness, pain, or dysarthria. Institutional review board (IRB) approval was not required for this study according to the Naval Medical Center Portsmouth IRB guidelines.

Discussion
For many years, a definitive treatment of traumatic neuromas has eluded surgeons. The 16th-century French surgeon Ambroise Paré was the first to describe the traumatic neuroma, and his treatment of massaging the painful area is one that is still in use today.2 Currently, pharmacotherapy is considered to be the first-line treatment. Gabapentin and nortriptylene reduce neurogenic pain through poorly understood mechanisms. Steroid injections can also reduce pain, and they are believed to work by stabilizing the cell membrane and reducing action potentials, rather than by reducing local inflammation.3 Injections of various chemicals have also been attempted, with a goal of sclerosing the nerve ending and preventing axonal regeneration. Numerous surgical options have been met with varying degrees of success and include complete excision and physiologic relocation of the nerve ending into muscle or bone. A 2003 study shows promising results for interpositional vein grafting, that is, relocating the nerve stump into a nearby vein.5 In the past decade or so, there have been several studies that investigated the use of alcohol

Table 1

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injections in treating Morton’s neuroma in the foot. One prospective series reported a partial or total symptom improvement of 94% in Morton’s neuroma after alcohol injections, with 84% of patients becoming totally pain free.

On a cellular level, the alcohol diffuses into and around the cells, denaturing the proteins and dehydrating the cells. These changes result in neuronal breakdown, diminishing the pain transmitted by the neuroma. While lower concentrations of alcohol may transiently damage the nerve and decrease pain transmittal, higher concentrations cause permanent damage and can eliminate neuroma pain. Risks of alcohol injections include damage or death of nearby nerves and tissue, infection, pain, weakness, dysarthria, and poor symptom resolution. In conclusion, our case of a painful tongue neuroma treated successfully with serial alcohol injections shows promising results, and further study is warranted.

Acknowledgment
We appreciate Drs David Darrow and Daniel Karakla for their input and reflection on treatment options for this patient’s complicated problem.

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Author Contributions
David Touchette, data collection and analysis, article preparation and revision, final approval; Eric M. Gessler, corresponding author, developed technique data collection and analysis, article preparation and revision, final approval.

Disclosures
Competing interests: None.
Sponsorships: United States Navy, article approval.
Funding source: None

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