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External nasal nerve division: a treatment for post-traumatic neuralgia

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Abstract
We present four patients complaining of neuralgic pains across the nasal bridge following trauma, who were successfully treated by division of the external nasal nerve. We believe it is a useful treatment in selected cases.

Introduction

Patients in whom there is a history of previous nasal trauma occasionally present with pain in the distribution of the external nasal nerve. This may vary from neuralgic pain across the nasal bridge radiating to adjacent areas, to a severe hyperaesthesia resulting in an inability to wear spectacles. Damage to the external nasal nerve may occur due to direct trauma following a nasal injury or fracture, or may be the result of nerve involvement in callus formation or fibrosis. We present four patients in whom this type of pain was successfully abolished or greatly diminished following division of the external nasal nerves via an intercartilagenous incision.

Case reports

Case 1

A 25-year-old lady presented to the clinic with a six month history of frontal headaches and pain across the nasal bridge, which started several months after an injury in which she fell, directly damaging the nasal bridge. She was noted to have nasal obstruction due to enlarged turbinates and a septal deviation. Topical steroid medication failed to resolve her symptoms. She was admitted for reduction of her inferior turbinates and maxillary antroscopy (which was normal). This improved her nasal airway, but the pain persisted. Infiltration of local anaesthetic over the nasal bones caused temporary relief from the pain, and 20 months after her initial presentation, at her request, she underwent division of the external nasal nerve, on the left side only. This resulted in a great reduction in the pain, and one year later the other side was also divided with complete resolution of the pain at six months follow-up.

Case 2

A 38-year-old lady presented with nasal obstruction, frontal and nasal pain. Nine months previously she had been knocked down by a car, sustaining a nasal fracture, which required reduction, and an undisplaced orbital margin fracture. On examination, she had a deviated nasal septum with airway obstruction. A submucous resection (SMR) was performed, which improved her airway, but she continued to complain of pain around her nasal bridge radiating to her forehead. A CT scan of her paranasal sinuses showed a possible antral cyst, although subsequent antroscopy was normal. Two years after her initial visit, after diagnostic infiltration of local anaesthetic over the nasal bridge, the external nasal nerves were divided. At follow-up six months later she remains free from pain.

Case 3

A 61-year-old man was assaulted, sustaining a nasal and left malar complex fracture requiring reduction. He subsequently developed pain over the left cheek, orbit and nose and was unable to wear spectacles due to hyperaesthesia. He also suffered from left-sided nasal obstruction requiring a septoplasty, after which there was no change in his facial pain. An external nasal nerve division was performed with considerable relief from his symptoms, maintained at one year.

Case 4

A 35-year-old man was referred with nasal obstruction and discomfort over the nasal bones radiating to the frontal region. He had sustained a nasal fracture 11 years previously but did not require reduction. He was found to have a septal deviation with a reduced airway, and he underwent an SMR. His airway improved but the discomfort was undiminished, and not reduced by topical anaesthetic applied to the middle turbinates. However, infiltration of local anaesthetic over the nasal pyramid abolished the discomfort and he was admitted for external nasal nerve division. He reports relief from his discomfort at three months.

Discussion

The external nasal nerve is a terminal division of the nasociliary nerve, a branch of the ophthalmic division of the trigeminal nerve. After passing from the orbit through the anterior ethmoidal foramen and running in a groove in the cranial aspect of the cribriform plate, the nasociliary nerve enters the nasal cavity, giving off two internal nasal branches, and lies on the inner aspect of the nasal bones before emerging from their lower aspect as the external nasal nerve (Fig. 1). It is wholly sensory and supplies the skin over the apex of the nose and part of the alar and vestibular skin (Gray, 1980).

In its course adjacent to the nasal bone the nerve is vulnerable to trauma, particularly if the bone is fractured. If this results in persistent neuralgic pain, the parent nerve can be sectioned at the anterior ethmoidal foramen through a medial periorbital incision (Golding-Wood, 1979). In a recent article the condition was described in two patients which were treated successfully in this manner (Golding-Wood and Brookes 1991). It has the disadvantage of a facial incision and may be complicated by troublesome bleeding from the anterior ethmoidal artery.

Division of the external nasal nerve is easily accomplished by making a standard intercartilaginous incision (between the upper and lower lateral cartilages) within the nasal cavity and dividing

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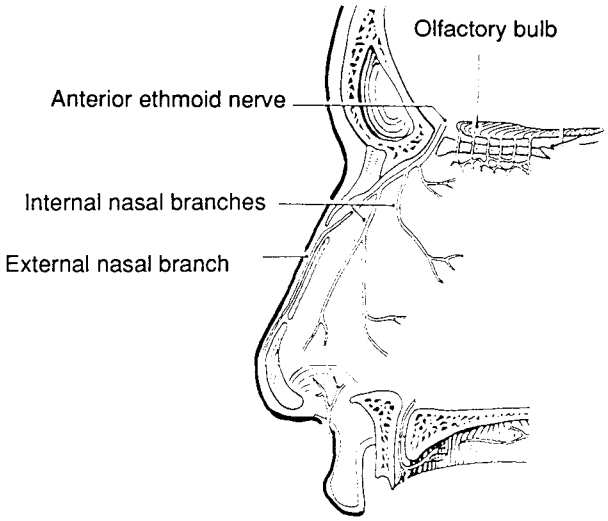

FIG. 1
Saggital section showing course of external nasal nerve.

the periosteum and soft tissue from the nasal bones, which will include the nerve as it emerges from the pyriform aperture. The four patients we treated in this manner remain symptom-free to date, although the possibility of further pain due to stump neuroma formation exists, which could be treated by division of the anterior ethmoidal nerve.

Recent prospective studies of the results of treating nasal fractures have concentrated on the cosmetic appearance and airway (Dickson and Sharpe, 1986; Illum, 1986; Crowther and O'Donoghue, 1987). The syndrome of neuralgic pain following trauma is probably underdiagnosed; indeed the history of trauma may only be elicited in retrospect due to the delayed nature of the symptoms developing. Such patients require careful assessment to exclude other possible causes such as sinus infection and the anterior ethmoidal syndrome (Sluder, 1922). They may have already undergone unsuccessful surgical procedures in an attempt to cure the pain, and the picture may be clouded by psychological factors, especially if litigation is involved. However, infiltration of local anaesthetic around the distribution of the external nasal nerve should be diagnostic, and indicate the likely success of the procedure.

Key words: Neuralgia; Nasal bone; Trauma.

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