

Treatment of post-traumatic external nasal neuralgia

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SUMMARY

Pain about the bridge of the nose is often a diagnostic dilemma. There is a small but important recognizable subgroup who may, as a consequence of involvement of the external nasal nerve in nasal injury, exhibit neuralgic pain after a latent interval. Temporary relief by local anaesthesia is diagnostic and cure is possible by division of the anterior ethmoidal nerve. We present a series of six cases to illustrate this rare cause of facial pain.

INTRODUCTION

Patients who present with pain over the nasal bridge are frequently "heart-sinkers". There is a distinct group of patients with external nasal neuralgia secondary to trauma, that has not been formally described. Accordingly they are infrequently recognized. These patients have a common symptomatic presentation that bears some similarity with those who have sensitive nasal nerves euphemistically termed "The sunglass syndrome" and those with symptoms of the anterior ethmoidal nerve syndrome.

A patient with facial pain frequently provides a clinical challenge. Diagnosis rests first and foremost on a full and detailed history as physical signs are often unremarkable if present at all. In common with other neuralgias, pain is confined to the distribution of the affected nerve. The promotion of symptoms by stimulation of the external nasal nerve and their relief after application of local anaesthetic are diagnostic features.

MATERIALS AND METHODS

A total of six patients (two male and four female), with ages ranging from 15 to 62 years, median 50 years, presented to the authors with similar clinical features between 1986 and 1988. Almost all were second referrals from other centres because of persistent symptoms and treatment failure. A history of trauma to the nasal

complex was given in all, some two to six months before the gradual onset of symptoms. Constant pain over the lateral aspect of the nasal bridge with radiation above the supraorbital ridge was present bilaterally in four and unilaterally in two patients. Exacerbation of pain by external pressure and temporary relief by lignocaine infiltration of the external nasal nerve were common to all our cases but none improved with cocainization of the internal nasal nerve. Two patients were particularly notable because they each sustained longstanding symptoms (cases 1 and 3). They were subject to repeated neurological examination and investigation including EEG and CT scanning, almost to the point of litigation because of the delay in diagnosis.

All patients were reassured and the nature of the condition explained. Anterior ethmoidal neurectomy was offered to all patients and accepted by four. A standard technique was used to section the anterior ethmoidal nerve together with the anterior ethmoidal artery. A small medial canthal incision was made to allow identification of the anterior ethmoidal neurovascular bundle. Preliminary cautery aided by an insulated pair of crocodile forceps and division of the nerve and vessel is a rapid procedure with minimal cosmetic disadvantage. There was a uniform response in these patients after operation all of whom gained transient hypoanaesthesia over the nasal tip and immediate relief of symptoms which has been sustained for two years. The clinical features of our cases are summarized in Table 1.

Table 1. Characteristics of patients with post traumatic external nasal neuralgia

patient	site	latency from trauma (months)	mode of trauma	symptom duration (years)	relief by lignocaine infiltration	relief by external pressure	relief by nasal cocaine	promotion nasal probing	relief after anterior ethmoid neurectomy
1.	48 F R & L	5-6	punch	13	Y	Y	N	N	Y
2.	56 F R & L	4	road traffic accident	6	Y	Y	N	N	not performed
3.	52 F R & L	2	head butt	2	Y	Y	N	N	Y
4.	33 F R & L	5	punch	3	Y	Y	N	N	Y
5.	15 M R	6	road traffic accident	10	Y	Y	N	N	not performed
6.	62 M R	5	surgery	2	Y	Y	N	N	Y

DISCUSSION

The nature of this condition may bear comparison with other sensory neuralgias and nerve entrapment syndromes. While it is true that the history of trauma in these cases can never be reconciled between a casual or causal relationship, there are features consistent with a traumatic origin. The presence of discrete tenderness at the junction of the osseous and cartilaginous external nose and the uniform response to local anaesthesia indicate an irritative focus of the nerve at that site. A latency between significant injury and the onset of symptoms seen in all our cases is compatible with local fibrosis or neuroma formation.

Consideration of the anatomy of the nasal nerves helps explain some of these findings. The skin of the ala, apex and vestibule of the nose are supplied by the external nasal nerve which then runs lateral to the upper lateral nasal cartilage to pass between cartilage and nasal bone. Rising superiorly on the medial surface of the nasal bone in a defined groove the external nasal nerve, seen radiologically as the ethmoidal sulcus, is joined by the internal nasal nerve, to continue as the anterior ethmoidal nerve. The anterior ethmoidal nerve ascends on the vertical plate of the ethmoid to groove the crista galli, it then passes laterally beneath the dura through the anterior ethmoidal foramen to enter the orbit and join the nasociliary nerve at right angles. This large nerve traverses the orbit from the medial wall to pass through the common tendinous ring to join the frontal and lacrimal nerves to form the wholly sensory upper division of the trigeminal nerve (Hollingshead, 1958). The anterior ethmoidal nerve is the most reliably accessible part of the final common pathway for the external nasal nerve (Figures 1 and 2).

The external nasal nerve may be involved in a proportion of nasal injuries, on one or both sides, as a consequence of disproportionate movement between the nasal bone and the upper lateral nasal cartilage. It is at this point that the nerve is vulnerable as it runs between the mobile nasal cartilage and its secure position deep to the nasal bone. Complete nerve section is most unlikely in a closed injury but fascicular injury is possible with the subsequent production of an intraneural or lateral neuroma. A neuroma comprises proliferated schwann cells, nerve fibres and scar tissue. From the divided fascicles great numbers of regenerating fibres emerge in disarray, become enmeshed with fibrous barriers and form intricate coils which may resemble different forms of compound nerve endings (Lyons and Woodhall, 1949). These changes may explain the sensitivity of a neuroma, which may evoke exquisite pain upon percussion, squeezing, traction and prosthetic pressure. A neuroma can only be symptomatic if it is subcutaneous and can be compressed against bone. Local injury may also produce a mechanism of fibrosis and entrapment to account for these observations although this is less easy to support as there is rarely any sensory loss.

The differential diagnosis of external nasal neuralgia includes the anterior

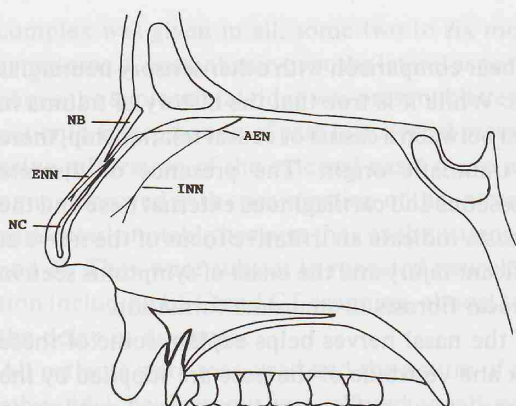


Figure 1.
The course of the external nasal nerve seen in parasagittal section.

ENN = External Nasal Nerve
 INN = Internal Nasal Nerve
 AEN = Anterior Ethmoid Nerve
 NB = Nasal Bone
 NC = Nasal Cartilage
 CP = Cribriform Plate
 ITN = Infratrochlear Nerve
 STN = Supratrochlear Nerve
 SON = Supraorbital Nerve
 NN = Nasociliary Nerve
 FN = Frontal Nerve
 LN = Lacrimal Nerve
 ON = Ophthalmic Nerve

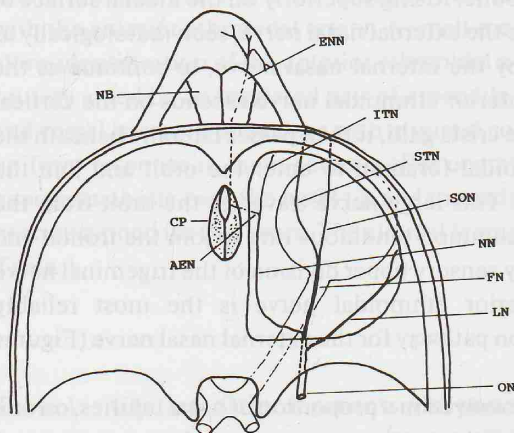


Figure 2.
The branches of the right ophthalmic nerve viewed from above.

ethmoidal nerve syndrome and the "sunglass syndrome", which may each produce similar symptoms referable to the nasal bridge. Distinction of these separate entities is important in regard to treatment.

The anterior ethmoidal nerve syndrome was first described by Greenfield Sluder (1927). "Patients uniformly complain of pain in the region of the forehead, right or left, more or less limited between the eyebrows, extending somewhat above the line of the supraciliary ridge and below into the nasal bones. Occasionally the pain is referred to the orbit and nasal fossa. Often, wearing spectacles may be uncomfortable."

The symptoms are irregular in development but frequently constant suggesting pressure in the ethmoid complex. Symptoms may be reproduced by probing the region supplied by the internal nasal nerve. Equally anaesthesia of the same region relieves symptoms when present. Accurate cocainization of this area is a valuable diagnostic manoeuvre (Sluder, 1927). The anterior ethmoidal nerve

syndrome is characteristically present for long periods and activated by conditions predisposing to engorgement of nasal tissues including climatic variation, allergen exposure, fatigue, emotional disturbance, alcohol or local inflammation (Littell, 1946). Patients with this condition have often suffered for some years and a degree of psychological overlay is to be expected (Shalom, 1963). The features of this syndrome are very similar to that of external nasal neuralgia but owe their genesis to more proximal stimulation of the internal branch of the anterior ethmoidal nerve. Neurectomy is not always reliable in these cases. Distinction must also be made from the "sunglass syndrome" which is manifest by pain over the nasal bridge, induced by pressure upon subcutaneous branches of the external nasal nerve from spectacles or sunglasses. Symptoms are more likely to evolve with the use of large and heavy "glasses" (Gwinup, 1983). Simple changes in the style of glasses should invariably result in improvement. In regard of therapy, local anaesthetic injection of the anterior ethmoidal nerve has been considered on a repeated basis by some authors and permanent chemical neurectomy by others. Stein (1908) is credited as the first to use this treatment, albeit for hay fever, it is Sluder (1927) who reported symptomatic improvement in four patients with anterior ethmoidal nerve syndrome after injection of the anterior ethmoidal nerve with a mixture of carbolic acid (5%) and alcohol (95%).

External nasal nerve section through an intercartilaginous incision for external nasal nerve neuralgia may be suboptimal because the nerve cannot be reliably found and the genesis of a stump neuroma after neurectomy in the same position may cause a recurrence of symptoms. Anterior ethmoidal neurectomy is the most reliable alternative. The credit for anterior ethmoidal nerve section as treatment for the anterior ethmoidal nerve syndrome goes to Littell (1946) who treated two such patients with good results over a two year follow-up period. This experience was echoed by Burnham (1949) who emphasized that the anterior ethmoidal nerve syndrome will respond to conservative treatment in a high proportion of cases and it is rare that a nerve section is required.

In contrast, patients with post-traumatic external nasal neuralgia will not respond to conservative treatment but symptomatic cure can be reliably anticipated after anterior ethmoidal neurectomy. Recognition of this syndrome is important to allay patients fears, to allow suitable effective treatment and to avoid unnecessary investigation.

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