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Transnasal electrocoagulation of the vidian nerve*

Paul O'Flynn, Vincent Cumberworth, Christopher Milford, Ian Mackay

Department of ENT-Surgery, Charing Cross Hospital, London, United Kingdom

SUMMARY

Vidian neurectomy has previously been reported as having a high success rate in alleviating secreto-motor rhinopathies. We report a prospective study of 24 consecutive patients who underwent transnasal vidian electrocoagulation. An overall improvement in symptoms was found in 59.1%. A worsening of overall nasal symptoms was complained of by 27.3%. The possible reasons for this are discussed.

Key words: vidian nerve, electrocoagulation, secretomotor rhinopathy.

INTRODUCTION

Secretomotor rhinopathies are a cause of much inconvenience and irritation to the sufferers. Profuse watery nasal discharge, which may be constant or episodic, is the usual presenting complaint. Other nasal symptoms are often present. Rhinorrhoea may be induced by changes in temperature, inhaled irritants, and emotional stress. Golding-Wood (1961) has demonstrated that stimulation of the parasympathetic nervous system leads to watery rhinorrhoea and nasal obstruction. It is postulated that these symptoms may be a consequence of an imbalance or instability of the autonomic nerve supply to the nasal cavity.

The autonomic nerve supply to the nose consists of sympathetic fibres arising from the superior cervical sympathetic ganglia which course with the internal carotid artery before a branch (the deep petrosal nerve) joins the parasympathetic supply to form the nerve of the vidian canal. The parasympathetic fibres arise from the inferior salivatory nucleus, and pass with the facial nerve as far as the geniculate ganglion before branching off as the greater superficial petrosal nerve. This is joined by the deep petrosal nerve to form the vidian nerve.

Vidian neurectomy has been demonstrated to be helpful in alleviating symptoms in several studies (Malcomson, 1959; Golding-Wood, 1961, 1962). The nerve however, lies deep seated in the sphenoid bone, making surgical access difficult. Various routes have been described to reach the vidian nerve, namely transantral (Golding-Wood, 1962), transseptal (Minnis and Morrison, 1971), transpalatal (Chandra, 1969) and transnasal (Patel and Gaikwad, 1975; Guillen and Chabrol, 1976; Kirtane et al., 1984).

In all descriptions of the transnasal approach the authors agree that this is the simplest and most direct route to the vidian canal. Patel and Gaikwad (1975) claimed satisfactory early results after transnasal vidian electrocoagulation (TNVE), compared to the transnasal approach but provided no details and only short-term follow-up. Guillen and Chabrol reported their experience of TNVE in 1976. They described both transantral and transnasal approaches and illustrated the success of these procedures with case reports. Kirtane et al. (1984) reported TNVE in 247 cases without significant complications, and claimed a 95% success rate in alleviating rhinorrhoea and sneezing.

In this study we present our results after up to three years follow-up of electrocoagulation of the vidian nerve by the transnasal approach in patients with persistent watery rhinorrhoea.

PATIENTS AND METHODS

Patients were selected from the General ENT-Clinic. They consisted of adults able to give informed consent, whose principle complaint was watery rhinorrhoea which had not been controlled using intranasal steroid preparations and oral antihistamines. Excluded from the study were patients with other concurrent nasal disease such as polyps or nasal infection, and those unfit for general anaesthesia.

Pre-operatively, all nasal symptoms and their severity were recorded using a standardized form. A full ENT-examination was performed and sinus X-rays obtained.

Twenty-four consecutive cases, who underwent TNVE between November 1986 and March 1988, were studied. In November 1989, (i.e. between 21 and 36 months post-operatively) each subject was re-assessed. Using a standardized questionnaire each subject indicated whether their previous nasal symptoms remained unchanged, were

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Table 1. Subjective changes in nasal symptoms following transnasal vidian electrocoagulation.

		post-operatively		
symptoms	pre-operatively	better	same	worse
watery rhinorrhoea	22	12 (54.5%)	6	4 (18.2%)
nasal obstruction	17	11 (64.7%)	5	1
sneezing	14	8 (57.1%)	4	2
catarrh (postnasal drip)	12	6 (50.0%)	6	0
anosmia	11	5 (45.5%)	5	1
facial pain	10	6 (60.0%)	2	2
total		13 (59.1%)	3	6 (27.3%)

Table 2. Complications recorded following transnasal vidian electrocoagulation.

transient		persistent	
dry eyes	2	facial pain	1
infection	1		
numbness	1		
epistaxis	1		
headache	1		

better, or worse. In addition, each subject stated whether overall they felt their nasal symptoms were unchanged, improved, or worse.

SURGICAL TECHNIQUE

TNVE was performed under general anaesthesia supplemented by local vasoconstriction. The same surgeon performed all the operations. Under direct vision (aided by a fibre-optically illuminated Killian speculum) the position of the sphenopalatine foramen was identified. This was confirmed by gentle palpation with the tip of the insulated diathermy needle. Once this position was known, the mucosa and underlying structures were subjected to coagulation diathermy to help minimize bleeding. The diathermy tip was then advanced through the sphenopalatine foramen into the pterygopalatine fossa and onto the face of the sphenoid bone. The tip of the instrument could then, by palpation alone, be introduced into the vidian canal. Coagulation diathermy was then applied for approximately 2 s and withdrawn. The contralateral side was then dealt with similarly. Nasal packing was not required. Most patients were discharged home the morning after surgery.

RESULTS

Twenty-four patients entered the study and underwent TNVE. In November 1989, 22 were reviewed, two could not be contacted. The results for these 22 patients are reported. The age range was 17–76 years, eight males and 14 females. The subjective change in nasal symptoms is shown in Table 1. Table 2 lists the complications recorded after TNVE.

DISCUSSION

Two observations dominate the results of this study. First, the success rate was lower than expected, and secondly a significant number of patients complained of worsened symptoms after surgery.

The modest success compared with other studies (Golding-Wood, 1973; Ogale et al., 1988), whether measured by individual symptoms or the patients' own overall assessment of his/her symptoms, needs explanation. The results may be a consequence of selection, i.e. only patients with refractory symptoms were included in the study.

The surgical technique itself may be implicated as the diathermy was introduced blind into the vidian canal. However, cadaver practise has shown a high degree of accuracy in positioning the diathermy, and clinically the complaint of transient dry eye confirms this. Dry eye should perhaps be regarded as a consequence of the operation as the secretomotor innervation to the lacrimal gland also passes in the vidian nerve to the sphenopalatine ganglion. Numbness of the lip or palate may be accounted for by thermal injury to the nearby branches of the trigeminal nerve.

A further possible explanation exists. Parasympathetic microganglia have been identified in the inferior turbinates of both cats and humans (Galan Cortes et al., 1986). It is not known whether the pre-ganglionic innervation of these ganglia is conveyed with the vidian nerve or not. If an alternative pre-ganglionic parasympathetic pathway exists, the success or failure of vidian neurectomy would depend upon the dominance of the vidian nerve as the main parasympathic nerve supply to the nose. Where an alternate pathway is present, sectioning of the vidian nerve would worsen the symptoms since the sympathetic fibres in the vidian nerve would be lost allowing the parasympathetic to dominate (exactly opposite to the desired effect). In this study 18% of patients complained of worsened watery rhinorrhoea, and 27.3% felt they were overall worse after surgery. It should be emphasized that reports of worsened symptoms following this type of surgery have not previously been published.

REFERENCES

1. Galan Cortes JG, Perez Cases A, Suazez Nieto C (1986) Autonomic microganglia of the nasal mucosa and their relation to vasomotor rhinitis. Clin Otolaryngol 11: 373–382.
2. Chandra R (1969) Transpalatal approach for vidian neurectomy. Arch Otolaryngol 89: 542–545.
3. Golding-Wood PH (1961) Observations on petrosal and vidian neurectomy in chronic vasomotor rhinitis. J Laryngol Otol 75: 232–247.
4. Golding-Wood PH (1962) Pathology and surgery of chronic vasomotor rhinitis. J Laryngol Otol 76: 969–977.
5. Golding-Wood PH (1973) Vidian neurectomy: Its results and complications. Laryngoscope 83: 1673–1683.
6. Golding-Wood PH (1986) Vidian neurectomy. In: GM English (Ed.) Otolaryngology, Volume 2. Harper and Row Publishers, Philadelphia, USA, pp. 1–31.
7. Guillen G, Chabrol A (1976) Etat actuel de la chirurgie du nerf vidien. Rev Laryngol Otol Rhinol (Bordeaux) 97: 633–647.
8. Kirtane MV, Prabhu VS, Karnik PP (1984) Transnasal preganglionic vidian nerve section. J Laryngol Otol 98: 481–487.

9. Malcomson KG (1959) The vasomotor activities of the nasal mucus membrane. J Laryngol Otol 73: 73–79.
10. Minnis N, Morrison AW (1971) Transseptal approach for vidian neurectomy. J Laryngol Otol 85: 255–260.
11. Ogale SB, Shah A, Rao SC, Shah KL (1988) Is vidian neurectomy worthwhile? J Laryngol Otol 102: 62–63.
12. Patel KH, Gaikwad GA (1975) Bilateral transnasal cauterisation of the vidian nerve in vasomotor rhinitis. J Laryngol Otol 89: 1291–1296.

P. O'Flynn
ENT-Department
Queen's Medical Centre
University Hospital
Nottingham NG7 2UH
United Kingdom