

Critical review of Vidian neurectomy

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SUMMARY

The author presents the critical review of Vidian neurectomy since 1961. Golding-Wood (1961, 1962) recommended this type of operation in vasomotor rhinitis. Many authors modified this operation. The author concludes that Vidian neurectomy is indicated in the cases of vasomotor rhinitis with profuse secretion refractory to conservative treatment.

INTRODUCTION

In 1961 and 1962 Golding-Wood recommended his technique of neurectomy of the greater superficial petrosal or Vidian nerve in obstinate cases of vasomotor rhinitis in order to remove the parasympathetic innervation. He believed that parasympathetic preponderance plays a decisive role in vasomotor rhinitis. Sympathetic and parasympathetic system normally maintain a balance which enables adequate adjustment to certain environmental requirements. Emotional disturbances, endocrine changes, allergic reactions and physical agents are influencing agents disturbing this balance. Twenty-five years after the beginning of this surgery a recapitulation and evaluation should be done.

DIFFERENT PROCEDURES FOR VIDIAN NEURECTOMY

Golding-Wood (1961, 1962) proposed transantral approach. After opening the pterygopalatine fossa the foramen rotundum and the maxillary nerve appear. The opening of Vidian canal is about 8 to 9 mm lower and medial to the foramen rotundum.

Krajina and Kosokovic (1965) described certain modifications of the method of Golding-Wood: the posterior wall of the maxillary sinus is removed medially and superiorly. The posterior portion of the medial wall is removed as well. The internal maxillary artery is then identified. It can be recognized easily by its pulsations and isolated without touching the remaining contents of the pterygo-maxillary fossa. The artery is followed to its entrance into the lateral nasal wall. Just above its entrance into the nose the pterygopalatine ganglion can be recognized. The lateral sensitive branche of the ganglion is left intact and the posterior branch i.e. the Vidian nerve is divided.

Chandra and Mostafa (1969) suggest a transpalatal approach. Incision is made between the hard and soft palate and the rhinopharynx approached by detaching the mucoperiosteum of the lateral wall in order to expose the medial lamina of the pterygoid. At this point the pterygoid canal is opened.

Minnis (1971) proposes a transseptal approach. Reaching the anterior-inferior wall of the sphenoid, he detaches the mucoperiosteum continuing laterally up to the edge of the sphenopalatine foramen.

Poch Vinals and Poch Brato (1977) prefer the cryotherapeutic method. They put the cryoprobe near the posterior tip of the middle turbinate and leave it in place for 5-8 minutes.

Prades (1978) uses the endonasal approach. He makes an incision and dissects the mucosa of the posterior third of the middle meatus until he reaches the anterior-inferior edge of the pterygopalatine foramen, which he widens.

Nomura (1974) and Frèche and Abitbol (1979) propose a subperiosteal or partially subperiosteal transantral approach. Nomura reaches the nerve by dissecting free the contents of the pterygomaxillary fossa without opening the periosteum. Frèche uses the same Nomura's approach; if the nerve can not be identified he opens the periosteum and reaches the nerve through the fossa.

Rose et al. (1979) perform a posterior ethmoidectomy in order to reach the anterior wall of the sphenoidal sinus. Through the sinus they reach the Vidian canal which runs caudolaterally along the floor of the sinus.

Portmann et al. (1982) reach the Vidian nerve through the nose with a bayonette electrode directed to the pterygopalatine foramen. Vidian canal is located 5-6 mm behind and lateral to the pterygopalatine foramen. The most convenient and largely accepted is the method of Golding-Wood with some modifications due to personal experiences of the surgeon.

INDICATIONS

The indications for Vidian neurectomy are severe chronic vasomotor rhinitis with profuse secretion resistant to medical treatment and recurrent polyposis. Montserrat (1975) mentions allergic rhinitis, Vidian neuralgia, recurrent polyposis and the crocodial tears syndrome. Golding-Wood explains the bilateral effect of Vidian neurectomy as reflectory via the autonomic nerve system. Cutting the parasympathetic fibers on one side interrupts the ipsilateral efferent supply, reduces by half the afferent supply which results in a bilateral effect. We believe that every case of vasomotor rhinitis displays a syndrome of most varying etiology. For this reason a thorough analysis is necessary in order to ascertain, if possible, the true etiological factors. We therefore use conservative treatment either locally or generally. Only in cases where conservative treatment is unsuccessful and where the nasal secretion is very abundant we apply surgical treatment.

RESULTS

In 1976, at the I.S.I.A.N. Meeting in Tokio, the following results were reported: Ohnishi et al. (1976) informed about long-term results of Vidian neurectomy: some degree of subjective relief was reported in a majority of cases (51 out of 54 cases i.e. 94,4%). Sneezing attacks and watery nasal discharge has completely ceased in 20 cases (37,0%). Persistence or recurrence of sneezing or watery nasal discharge was seen in 34 cases (63,0%). However, except for three cases who reported no change, the symptoms were milder than preoperatively. Schirmer's test had been performed in 20 cases postoperatively. The lack of lacrimal response in 15 out of 20 was taken as evidence of no regeneration of the Vidian nerve.

Nomura and Ichimura (1976) reported about transantral subperiosteal Vidian neurectomy: 25 patients followed for 2-6 years after operation. Initially all the patients were free of symptoms; however, recurrence occurred frequently.

Hirandani (1976) reported about clinicopathological study of allergic rhinitis and the place of Vidian neurectomy: 750 patients have been operated for allergic rhinitis during the last 10 years. 95% improved; the postoperative histological changes confirmed the clinical improvement.

Krajina (1976) summarises the results on 25 Vidian resections performed since 1964; in all cases Vidian neurectomy was made unilaterally on the side of the more marked symptoms. In two cases recurrences after two years were observed and that on the non-operated side of the nose.

In 1979 Krant et al. found in seven recurrent nasal polyposis only one patient who remained free from polyposis. In three cases polyposis did not recur, but the symptoms of rhinitis showed no improvement. In other patients polyposis recurred.

On the contrary Montserrat (1975) reports other experiences: not one of the 14 cases had recurrences of polyps, mucosal oedema or subjective symptoms of obstruction on the neurectomised side. On the other hand, on the non-operated side 12 out of these 14 cases have showed reappearance of some or all of these signs.

OBJECTIVE ASSESSMENT OF THE NASAL MUCOSA AFTER VIDIAN NEURECTOMY

Hirandani (1966) found that one month after Vidian neurectomy there was only a slight reduction in oedema of the stroma. However, in sections studied three months later, there was a marked reduction or complete disappearance of oedema in the stroma.

Rucci et al. (1985) measured the histamine contents and the number of mast cells. After neurectomy the histamine contents was significantly lower than before, but increased again with elapse of time. The number of mast cells per microscopic

field and their degranulation index was significantly reduced together with the reduction of histamine content. These data also suggest that parasympathetic innervation plays some role in the regulation of histamine synthesis and re-uptake.

Krajina (1973) investigated the nasal mucosa histochemically during the operation and 10 days later. He found a pronounced difference of the nasal mucosa before and after Vidian neurectomy. After dividing the nerve the mucous glands were decreased in number and the hypersecretory state of the mucous glands had become normal (Figures 1 and 2). The eosinophils in the mucous membrane of the nose disappeared.

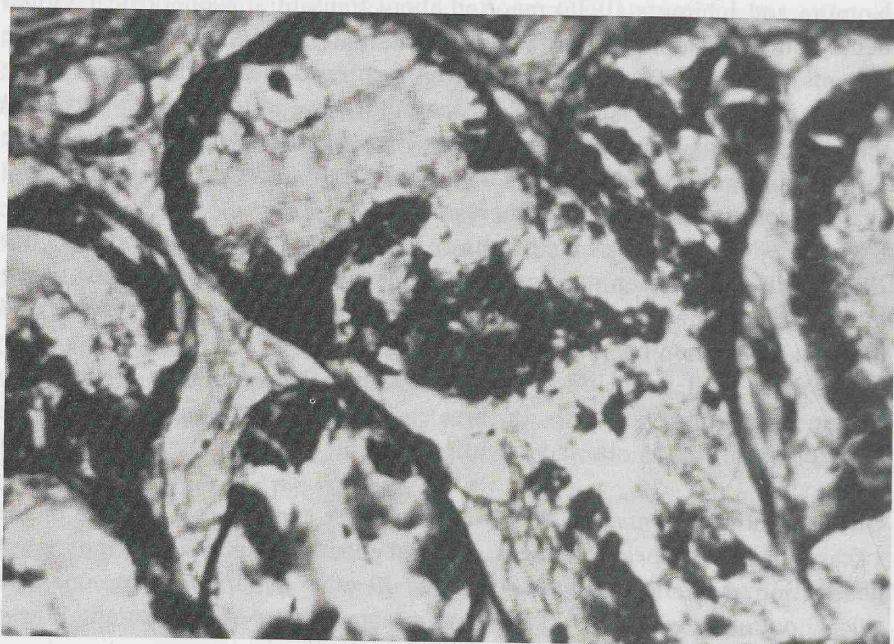


Figure 1. Glandular elements before Vidian neurectomy.

COMPLICATIONS

Hirandani (1966) noticed bleeding, infection, anaesthesia of the palate and infraorbital region and neuralgia as postoperative complications in 150 cases. Secondary haemorrhage occurred in two cases after ten days and one month. Krant et al. (1979) found in 27 neurectomies that lacrimal secretion is reduced to approximately 50% in most patients and remained almost zero in three cases. Up to now we did not see in our 40 cases any serious complications except the dull sensation in the cheek and conjunctival irritation.

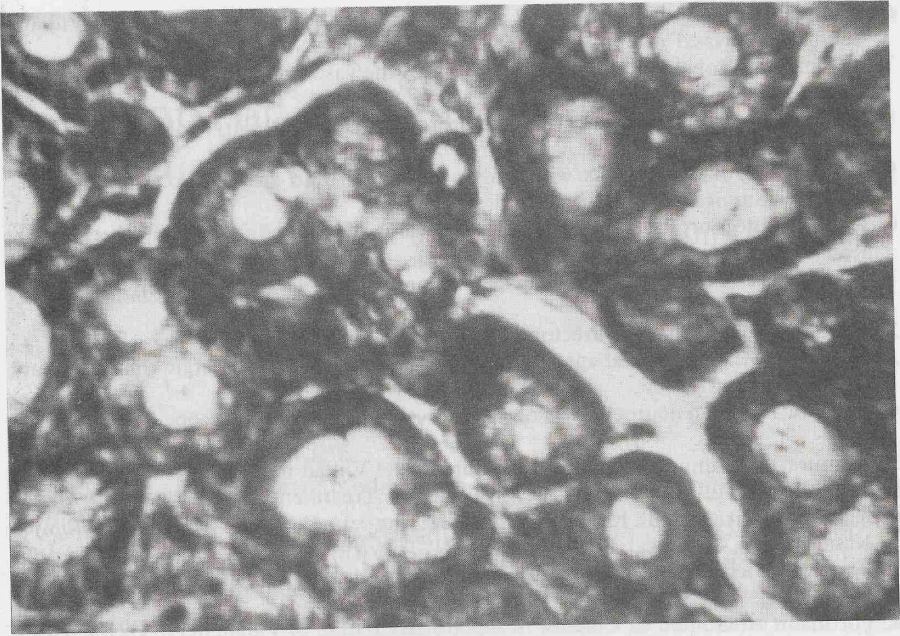


Figure 2. Glandular elements 10 days after Vidian neurectomy.

Frèche and Abitbol (1976) reported about amaurosis after Vidian neurectomy. This severe complication is rare in cases where Vidian neurectomy was performed more posteriorly.

CONCLUSIONS

The mucous glands are mostly innervated by parasympathetic nerves, or by the Vidian nerve. Therefore the results of neurectomy are good.

We consider Vidian neurectomy indicated in cases of secretory vasomotor rhinitis refractory to all conservative treatment. Recurrent nasal polyposis and other disturbances are mostly not influenced.

REFERENCES

1. Chandra R. Transpalatal approach for Vidian neurectomy. *Archs Otolar* 1969; 85: 542-545.
2. Frèche C, Abitbol J. La section du nerve Vidian par voie transmaxillaire. *Annls Oto-Lar* 1979; 96: 452-459.
3. Golding-Wood PH. Observation of petronasal and Vidian neurectomy in chronic vasomotor rhinitis. *J Lar Otol* 1961; 75: 232-247.
4. Golding-Wood PH. Pathology and surgery of the chronic vasomotor rhinitis. *J Lar Otol* 1962; 76: 969-977.
5. Hirandani NL. Treatment of chronic vasomotor rhinitis with clinicopathological study of Vidian nerve section in 150 cases. *J Lar Otol* 1966; 80: 902-932.

6. Hirandani LH. Clinicopathological study of allergic rhinitis and the place of Vidian neurectomy. *Nasal Allergy - Surgical Treatment*. ISIAN, Tokyo 1976.
7. Krajina Z, Kosokovic F. Surgical treatment of the vasomotor rhinitis. *Int Rhinology* 1965; 3: 81-84.
8. Krajina Z. Vidian neurectomy in vasomotor rhinitis. *Acta Otolaryngol (Stockh)* 1973; 76: 366-371.
9. Krajina Z. Our experiences with Vidian neurectomy in vasomotor rhinitis. *Nasal Allergy - Surgical Treatment*. ISIAN, Tokyo 1976.
10. Krant JN, Blécourt PW, Dieges PH, Heer LJ. Long-term results of Vidian neurectomy. *Rhinology* 1979; 17: 231-235.
11. Minnis NL and Morrison AW. Transeptal approach for Vidian neurectomy. *J Lar Otol* 1971; 85: 255-260.
12. Montserrat JM. Vidian neurectomy. *Rhinology* 1975; 13: 11-23.
13. Mostafa HM. Transpalatal approach for Vidian neurectomy in allergic rhinitis. *J Lar Otol* 1973; 87: 773-780.
14. Nomura Y. Vidian neurectomy. Some technical remarks. *Laryngoscope* 1974; 84: 578-585.
15. Nomura Y, Ichimura K. Transantral subperiosteal Vidian neurectomy - A technique and follow-up of cases. *Nasal Allergy - Surgical Treatment*. ISIAN, Tokyo 1976.
16. Ohnishi T, Takahashi R, Kaneko S, Dazai M. Long-term results of Vidian neurectomy. *Nasal Allergy - Surgical Treatment*. ISIAN, Tokyo 1976.
17. Poch VR, Poch Brato J. Cryo-chirurgie endonasale du nerf Vidien. *Cah ORL* 1977; 12: 115-126.
18. Portmann M, Guillen G, Chabrol A. Electrocoagulation of Vidian nerve via the nasal passage. *Laryngoscope* 1982; 92: 453-455.
19. Prades J. Précisions techniques concernant la neurectomie du Vidien par voie endonasale. *Anns Oto-Lar* 1978; 95: 143-147.
20. Rose KG, Ortman R, Wustrow F et al. Vidian neurectomy: neuroanatomical considerations and a report on a new surgical approach. *Archs Oto-Rhino-Lar* 1979; 224: 157-168.
21. Rucci L, Barghi MB, Masini E, Strochi OF. Vidian nerve resection in chronic hypertrophic non allergic rhinitis: Effects on histamine content, number and rate of degradation processes of mast cells in nasal mucosa. *Rhinology* 1985; 23: 309-314.

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