



Research Article

# Correlation Between Allergic Rhinitis and Allergic Conjunctivitis: Role of Pterygopalatine Ganglion

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## Abstract

Anatomical and physiological relationship between nasal cavity and eye especially pterygopalatine ganglion which send post ganglionic fibres to lacrimal lands as well as mucous secreting glands of nasal cavity walls are reason for patients developing both nasal as well as eye symptoms when a patient is exposed to an allergen. This review article aims to present relevant anatomical and physiological knowledge about pterygopalatine ganglion in an easy understand way. This understanding of nasal and eye anatomical and physiological relationship is important in planning a treatment method which can take care of both nasal as well as eye complaints same time.

**Keywords:** Allergic ,Conjunctivitis,Pterygopalatine Ganglion

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**Supplementary information** The online version of this article (<https://doi.org/xx.xxx/xxx.xx>) contains supplementary material, which is available to autho-rized users.

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## Introduction:

Anatomical and physiological continuity between and nasal cavity and intraorbital structures we all are aware of, one of the reasons for patients complaining of ophthalmic symptoms during nasal cavity inflammation including during allergic rhinitis. Paranasal sinuses separated by bony wall from orbit, with relation to medial wall of orbit being close to ethmoid sinus predisposed to orbital complications risk whenever there is exposure to allergen or infection with highly invasive organism<sup>(1,2,3,4,5)</sup>.

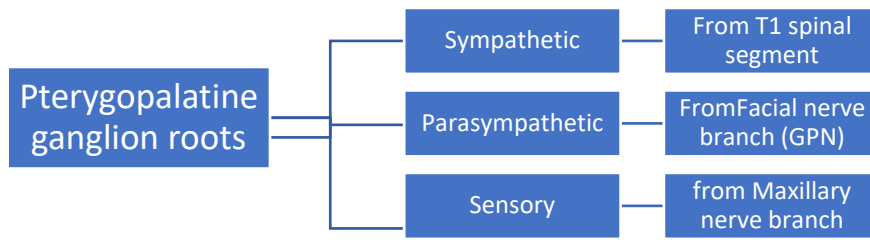
Anatomical and Physiological continuity between nasal cavity and orbit<sup>(6,7)</sup>:

A.

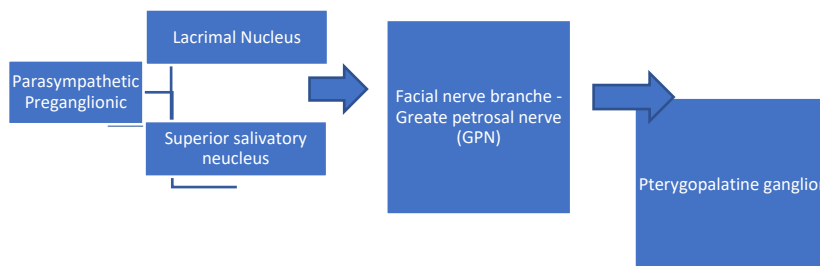
1. Nasolacrimal duct draining lacrimal secretions from eye to inferior meatus in nasal cavity.
2. Studies have proven nasolacrimal reflux as a factor in origin of ophthalmic diseases.

B. Pterygopalatine ganglion and neural relationship between nose and eye.

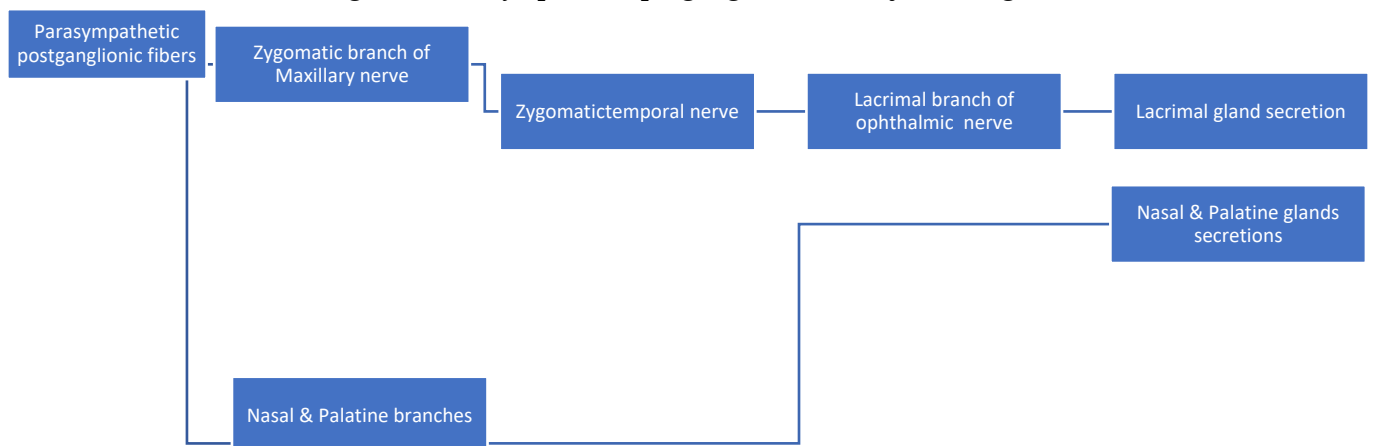
Pterygopalatine ganglion or sphenopalatine ganglion is the largest known peripheral parasympathetic ganglion. Both nasal mucosal gland and orbital lacrimal gland secretions are under control of postganglionic branches from the ganglion. This is the reason why a subject experience symptom from nasal cavity as well as eyes when inflammatory agents enter nasal cavity. The pterygopalatine ganglion role is well known in cluster headaches, periorbital pain syndromes, trigeminal neuralgic pain. Historically known as ganglion of hay fever, during episode patient present with congestion of both nasal mucus secreting glands as well as lacrimal glands.



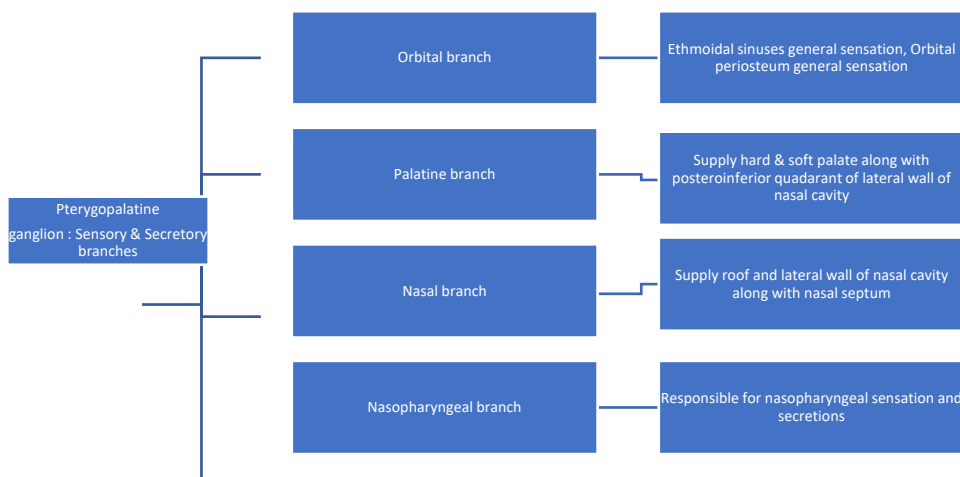
**Figure1. Main roots of pterygopalatine ganglion and origin.**



**Figure2. Parasympathetic preganglionic nerve fibres origin.**



**Figure3. Parasympathetic postganglionic nerve fibres course and functions.**



**Figure 4. Main sensory branches of pterygopalatine ganglion**

How the knowledge of Pterygopalatine ganglion connection helps us in management<sup>(8,9)</sup>:

Physician management approach will change by while managing a case of rhinitis, because of these anatomical and physiological continuity with respect to pterygopalatine ganglion:

- a. Intranasal drug delivery like steroid nasal spray will help in managing ophthalmic complaints.
- b. Nasolacrimal duct patency is important for healthy eye and inflammatory mechanism going on inside nasolacrimal duct need treatment by downregulating inflammation.
- c. Because of common pathophysiologic mechanism due anatomical and physiological close relation, will lead to future research focusing therapies having efficacy on symptoms at both nasal and eyes.

**Conclusion:**

Every time a clinician managing a case of allergic rhinitis and allergic conjunctivitis, sphenopalatine ganglion we remember as the reason for same time manifestations of both nasal and eye symptoms. The understanding of the neural continuity via sphenopalatine ganglion or pterygopalatine ganglion will help in better management during general practice as well during specialist care. We hope this mini review will help as a ready short quick reference for role of pterygopalatine ganglion in origin of symptoms and signs during episodes of allergic rhinitis and allergic conjunctivitis.

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