

## INTRO

- Cranial nerve X, the vagus nerve, contains both sensory and motor fibers
- Key role in parasympathetic control
  - Cardiovascular: heart rate
  - Respiratory: phonation and airway protection
  - Gastrointestinal: swallowing and peristalsis
- Sensory coverage of ear via Arnold’s nerve, the auricular branch of the vagus, both inner auditory canal and external auditory meatus
- Otalgia can be a presenting sign of vagus nerve compression and may be difficult to treat

## CASE REPORT

- 57 y.o. male with subglottic squamous cell carcinoma complaining of persistent bilateral ear pain
  - Cancer treated with neoadjuvant chemo-radiation and tracheostomy for recurrent and progressive disease with plan for laryngectomy with free flap reconstruction after new discovery of FDG-avid lymph nodes
- Pain rated 8/10, constant, throbbing, localized to external acoustic canals bilaterally
  - Pain refractory to PO and IV analgesia, only reported relief was cutaneous simulation via gauze in canal
- Physical exam elicited no specific triggers, tympanic membranes were clear, and imaging showed no focal mass compression
- Patient underwent diagnostic nerve block of Arnold’s nerve after site preparation with alcohol
  - Utilized 27-gauge needle and infiltrated 0.5cc of 1% lidocaine to subcutaneous tissue posterior to tragus, bilaterally
  - No complications noted
- Immediate pain relief, decreasing pain score to 3/10, lasting 1.5 hours with recurrence of preprocedural pain score
- Patient refused follow-up procedures / alternatives i.e. denser block, scheduled blocks, ablation, etc.

# Diagnostic Nerve block of Arnold’s Nerve, Auricular Branch of the Vagus Nerve, for Refractory External Auditory Canal Pain

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## Directed nerve block of Arnold’s nerve resulted in subjective analgesia of unique auricular pain

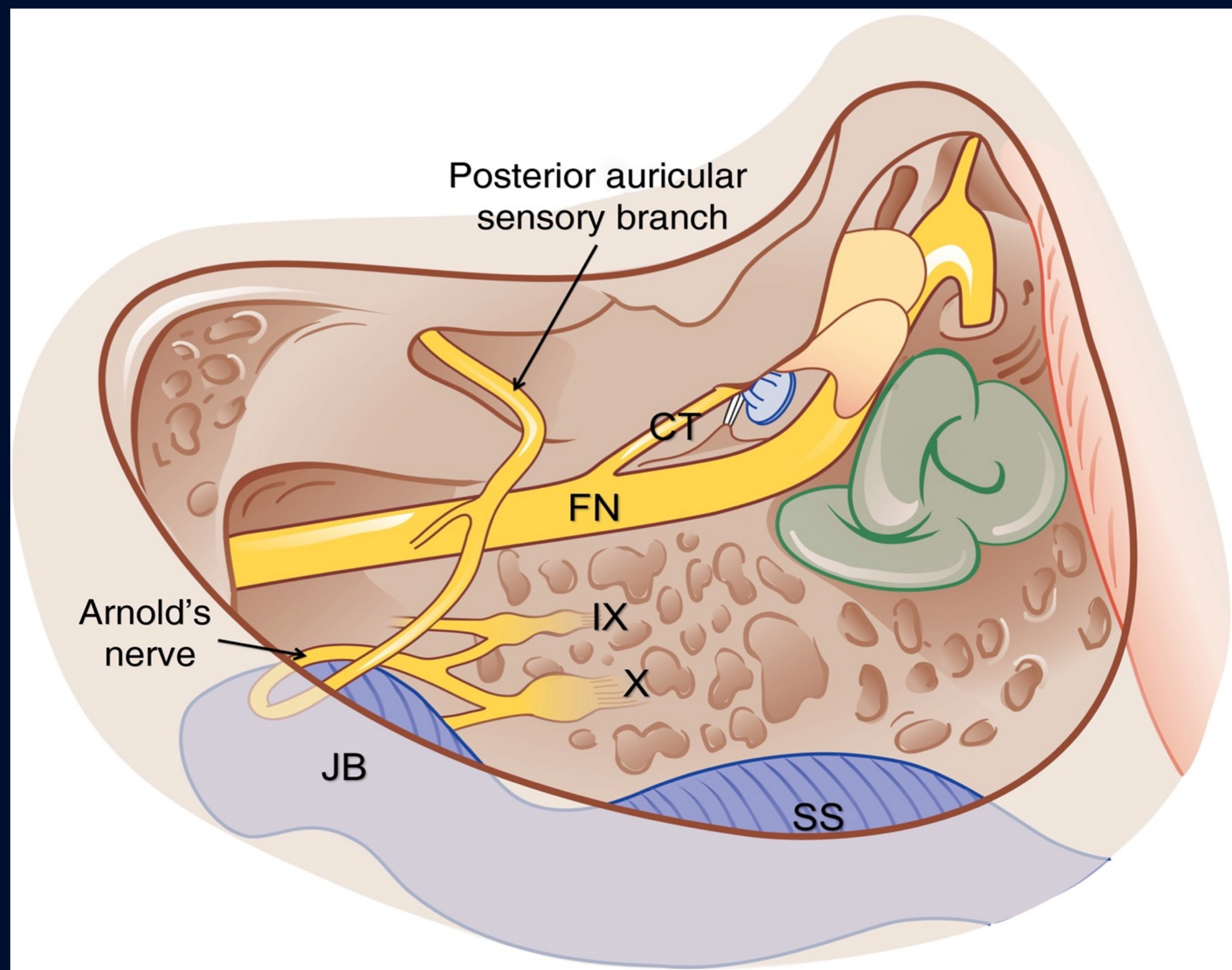


Figure 2

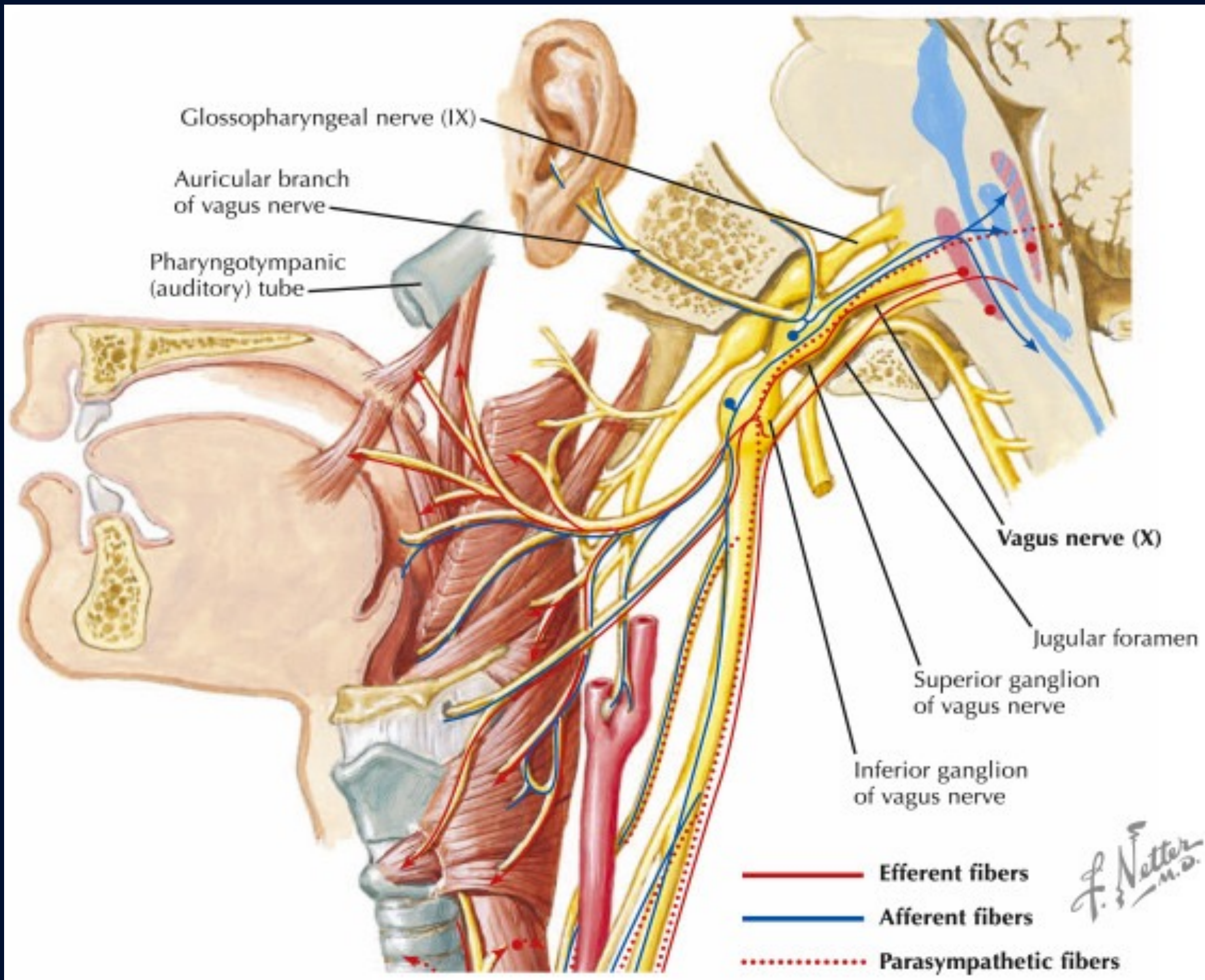


Figure 1

## Adequate pain relief from the block can serve as diagnostic precursor for subsequent treatment modalities

## DISCUSSION

- Patient experienced excellent analgesia of bilateral auditory canal pain, however, refused therapeutic nerve block options or other alternatives
  - Ultimately chose to self administer 5% topical lidocaine to area three times a day and place cotton gauze in canal opening
- Vagus nerve and its branches can be affected by numerous pathologies, focally and diffusely
  - Oncological pain can be difficult to treat, either as localized or referred pain
- Growing field utilizing the auricular branch of the vagus nerve to treat other pathologies
  - Atrial fibrillation
  - Depression
  - Opiate withdrawal symptoms
- Diagnostic nerve blocks of Arnold’s nerve can be useful in preparation for sustainable long term therapeutic interventions
  - Repeated nerve blocks of increased intensity
  - Ablation
  - Neuromodulatory techniques

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