Guidelines for Clinical Target Volume definition for perineural spread of major salivary gland cancers

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Objective

- Post operative radiotherapy standard of care for resectable major salivary gland cancers at risk of locoregional recurrence.
- Adenoidcystic inclination for perineural spread
- Relevant cranial nerve pathways are included in the clinical target volume (CTV)
- Contouring atlases standardize CTV definition in other organs
- Given the complex anatomy a CTV atlas for perineural spread would be very useful
Methods

- Identify nerve supply of glands via literature and diagrams
- Located nerves on e-anatomy CT images
- Two skulls and radiopaque markers scanned and pathways identified
- Bone CTVs assumed to be bone canals and foramina
- Soft tissue CTVs les distinct – more generous
PAROTID GLAND

- **Facial nerve** – *through* the parotid gland

- **Glossopharyngeal nerve** – parasympathetic supply
Facial Nerve

A

Geniculate ganglion
Facial nerve [VII]
Internal acoustic meatus
Greater petrosal

Nerve to stapedius muscle
Chorda tympani
Middle ear
Stylomastoid foramen
Incus.

B

Maleus
Chorda tympani
Tympanic membrane

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Otic and Auricular

Facial

Vagus
Otic and Auricular

Facial

Vagus
Glossopharyngeal nerve

- Jugular foramen
- Tympanic nerve
- Tympanic plexus
- Lesser petrosal nerve
- Foramen ovale
- Otic ganglion
- Auriculotemporal nerve
Otic and Auriculotemporal

Facial

Vagus
Submandibular and Sublingual

- Chorda tympani
- Lingual Nerve (V3)
- Submandibular ganglion
- Post ganglionic fibres
Submandibular ganglion and nerve to sublingual
Conclusions

• Identified the innervation of the major salivary glands
• Bone and soft tissue CTVs have been delineated
• Archived full set of images and CTVs of all the relevant transverse CT slices – representative images shown
• Useful atlas generated
• Not all potential pathways have been delineated e.g. corda tympani as its inclusion would likely overdose the middle ear even with IMRT