

THE ROLE OF CONTRALATERAL SUBMANDIBULAR SPARING IN HEAD AND NECK INTENSITY MODULATED RADIOTHERAPY (IMRT): A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction

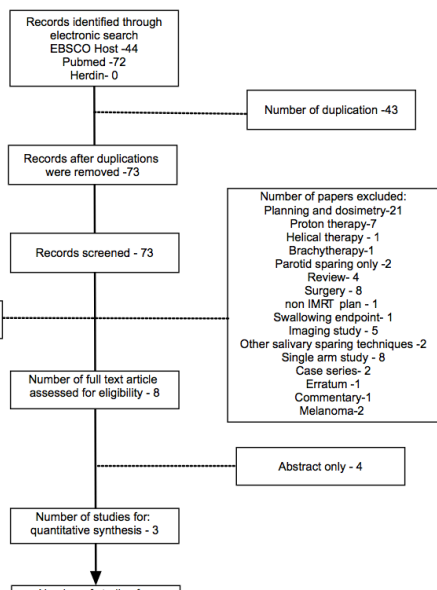
- **Xerostomia** is one of the most concerning side effects of radiotherapy affecting mastication, dentition, deglutition, speaking and nutrition.
- Numerous studies showed improvement in physician-graded xerostomia scores and stimulated salivary flow rates in patients treated with parotid-sparing IMRT.
- However, these have poor correlation on patient-reported xerostomia.
- Submandibular glands are the primary source of unstimulated salivary flow in about 60% and are responsible for mucin production that retains water for moisture.
- Sparing the submandibular gland may improve patient-reported xerostomia.

Objective

The aim of this review is to synthesize present available evidences on the effectiveness of contralateral submandibular (cSMG) sparing IMRT in patients with head and neck squamous cell carcinoma.

Methods

- Search of relevant articles was done from 2001 to December 2016.
- Search terms: **“SUBMANDIBULAR SPARING” AND “RADIOTHERAPY”** in MEDLINE Complete, CINAHL Plus, Proquest Health and Medical Complete, Academic Search Complete, Biomedical Reference Collection Basic, PubMed and HERDIN database
- Critical appraisal and meta-analysis of the eligible studies were undertaken to assess effectiveness of cSMG sparing versus non-cSMG sparing IMRT in head and neck cancer treated with parotid sparing IMRT.
- Critical appraisal using McMaster Critical Review form for Quantitative Studies
- Statistical pooling using Review Manager Software 5.3



Results

- 4 studies eligible for analysis:
 - 1 prospective study: narrative analysis
 - 3 retrospective studies: pooled analysis

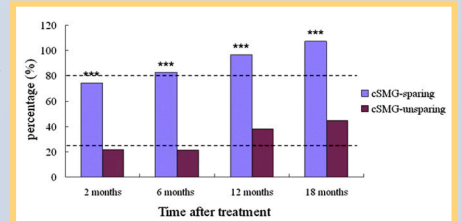
Only one prospective study (Wang et al, 2011)

Variable	cSMG-sparing group	cSMG-unsparing group
cSMG	n = 26 patients	n = 26 patients
Volume, cm ³ ± SD (range)	7.0 ± 2.2 (3.1–11.6)	6.2 ± 1.8 (3.0–10.0)
Mean dose, Gy ± SD (range)	20.4 ± 7.8 (1.9–29.7)	57.4 ± 3.8 (49.8–63.6)
Mean V30, % ± SD (range)	14.7 ± 16.6 (0–46.6)	99.8 ± 0.6 (97.6–100)

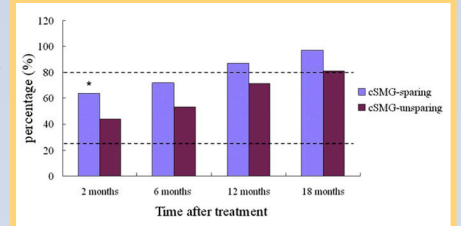
Assessment of Xerostomia and Salivary Flow

- At 2 and 6 months post-IMRT: lower among at cSMG-sparing group, but not significant at 12 and 18 months
- cSMG-sparing group had better mean unstimulated salivary flow rates at each time point post-IMRT and better mean stimulated salivary flow rates at 2 months post-IMRT

- Comparison of recovery USWS



- Comparison of recovery SWS



Oncologic Outcomes

- At 25 months median follow-up: Locoregional recurrence, distant metastasis and overall survival were the same (p values >0.05)

Pooled Analysis (Retrospective studies)

- Physician-Graded Xerostomia at 12 months

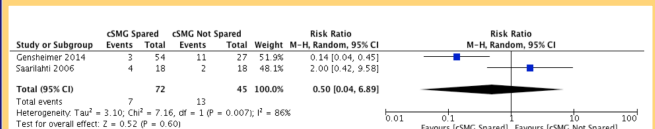


Figure 1. Physician-graded xerostomia at 12 months

- Locoregional recurrence at 24 months

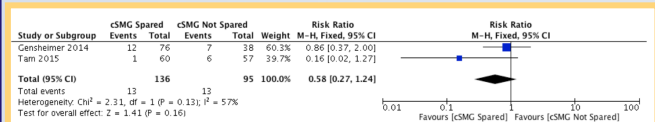


Figure 2. Locoregional recurrence at 24 months

Conclusion

Current evidences suggest better patient-reported xerostomia without compromising oncologic outcomes with cSMG sparing IMRT. More RCTs are warranted to provide higher level of evidence to verify its benefits.

References

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