Neoadjuvant chemotherapy and surgery for oropharyngeal carcinoma: a systematic review and meta-analysis

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Introduction

- Oropharyngeal squamous cell carcinoma (OPSCC), particularly HPV-associated OPSCC, is rapidly increasing in incidence especially in younger adult patients[1].
- The current recommendations for treatment of OPSCC can be simplified as definitive surgery or definitive concurrent chemoradiation therapy (CCRT). Depending on pathologic findings, definitive surgical treatment may be followed with adjuvant radiation with or without chemotherapy[2].
- Neoadjuvant chemotherapy (NAC) for patients with AJCC 7th Stage III and IV disease has been proposed to reduce the amount and volume of adjuvant radiotherapy following surgery in the treatment of OPSCC as well as to treat distant metastases[3,4].
- Here, we present a systematic review and meta-analysis of the literature examining neoadjuvant chemotherapy with surgery as definitive treatment and its impacts on overall survival and disease-free survival.

Methods and Materials

A systematic review according to Cochrane Handbook for Systematic Reviews of Interventions was performed.

Databases: PubMed/MEDLINE, SCOPUS, Web of Science

Timeline: Inception of literature – December 17, 2024

MeSH terms: “oropharyngeal carcinoma”, “oropharyngeal squamous cell carcinoma”, “oropharyngeal cancer”, ”neoadjuvant chemotherapy”, “neoadjuvant immunotherapy”

Inclusion Criteria:

- Case studies, cohort studies, or randomized controlled trials
- Patients with OPSCC undergoing neoadjuvant chemotherapy with surgery as definitive treatment
- Studies in which overall survival and/or disease-free survival was reported

Exclusion Criteria:

- Case reports, abstracts, review papers
- Surgery was not definitive treatment
- OPSCC outcomes were not individually analyzed

Primary outcomes: overall survival (OS) and disease-free survival (DFS)

Secondary outcomes: tracheostomy rate, gastrostomy rate, bleeding rate, grade 3/4 adverse events, deaths during induction chemotherapy

Analysis: Meta-analysis of primary outcomes was performed, as well as for HPV+ subgroup.

Results

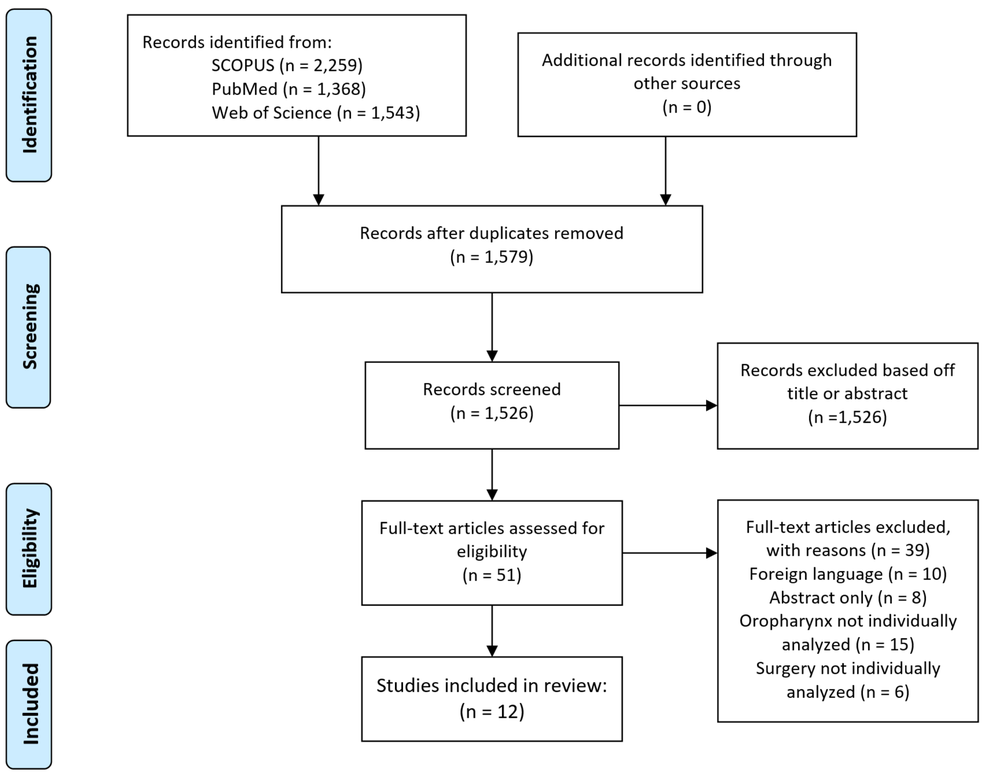

Figure 1: PRISMA diagram. A total of 12 studies were included in the review.

Results

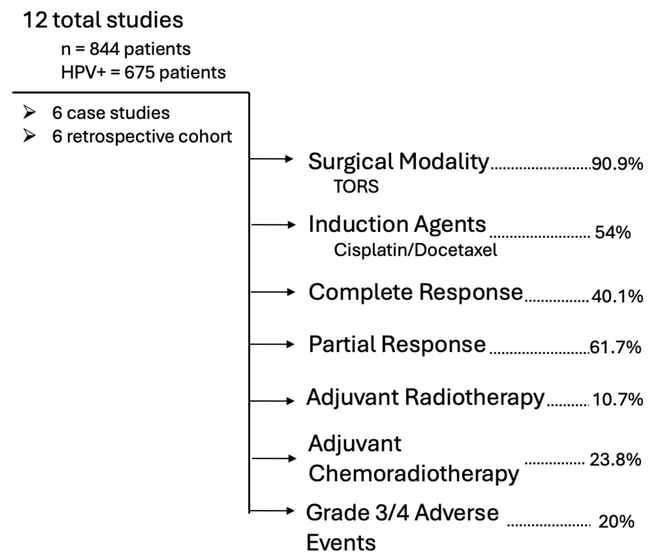

Figure 2: Further Analysis Summary of Included Studies. TORS alone was the most common method of definitive surgery. Cisplatin and docetaxel alone were the most used NAC combination. Complete response, partial response, adjuvant radiotherapy, adjuvant chemoradiotherapy, and grade 3 or 4 adverse events are averages amongst reported values.

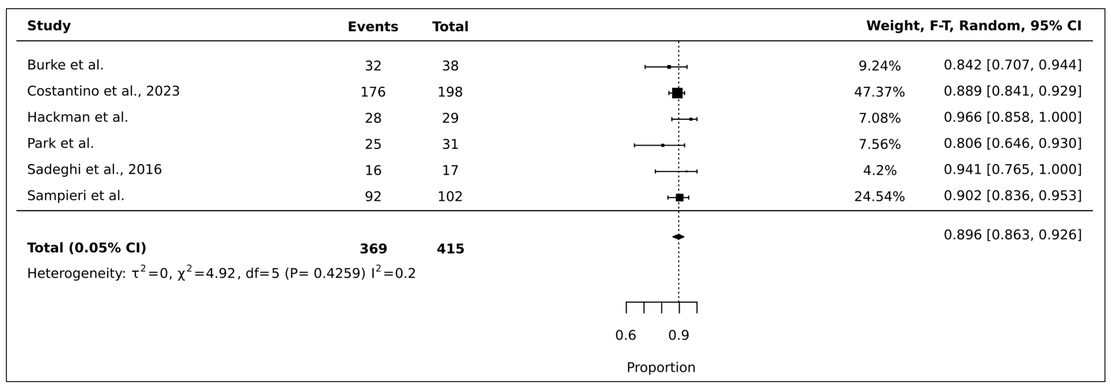

Figure 2: OS of NAC + Surgery. OS at 3 years is 89.6% [95% CI 86.3-92.6%]

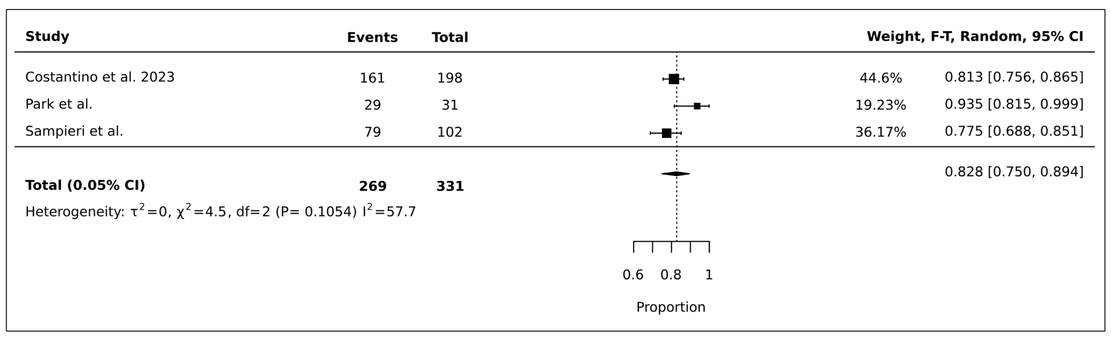

Figure 3: Disease free survival of NAC + Surgery. DFS at 3 years is 82.8% [95% CI 75.0-89.4%]

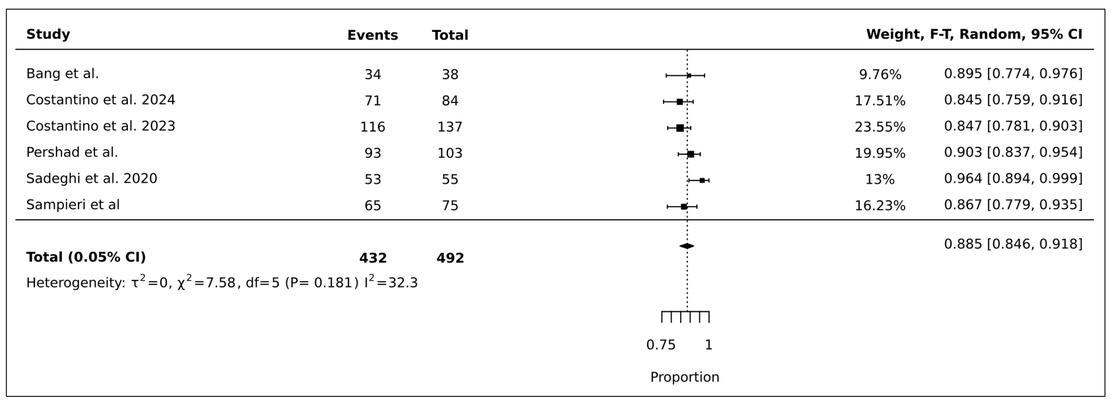

Figure 4: Disease free survival of NAC + Surgery for HPV+ subgroup. DFS at 3 years for the HPV+ subgroup is 88.5% [95% CI 84.6-91.8%]

Discussion

- Neoadjuvant chemotherapy with definitive surgery is an effective and relatively safe treatment for OPSCC, with improved outcomes in the HPV+ subgroup
- No deaths occurred in any of the included studies due to neoadjuvant chemotherapy
- More studies are needed to compare outcomes for NAC-S versus other standardized treatments for OPSCC to determine superiority

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