

**Table S1** PubMed search strategy (search conducted on 10<sup>th</sup> July 2023)

Search number	Query	Sort by	Filters	Search details	Results
1	Oropharyngeal neoplasms[mh] OR Oropharynx neoplas*[tw] OR Oropharynx cancer*[tw] OR Oropharynx carcinoma*[tw] OR Oropharynx tumor*[tw] OR Oropharynx malignan*[tw] OR Oropharyngeal neoplas*[tw] OR Oropharyngeal SCC[tw] OR Oropharyngeal cancer*[tw] OR Oropharyngeal carcinoma*[tw] OR Oropharyngeal tumor*[tw] OR Oropharyngeal malignan*[tw] OR OP-SCC[tw] OR OPSCC[tw] OR OPC[tw] OR SCCOP[tw] OR Tongue cancer OR Tongue neoplasm*	Most recent		"oropharyngeal neoplasms"[MeSH Terms] OR "oropharynx neoplas*[Text Word] OR "oropharynx cancer*[Text Word] OR "oropharynx carcinoma*[Text Word] OR "oropharynx tumor*[Text Word] OR "oropharynx malignan*[Text Word] OR "oropharyngeal neoplas*[Text Word] OR "oropharyngeal scc"[Text Word] OR "oropharyngeal cancer*[Text Word] OR "oropharyngeal carcinoma*[Text Word] OR "oropharyngeal tumor*[Text Word] OR "oropharyngeal malignan*[Text Word] OR "OP-SCC"[Text Word] OR "OPSCC"[Text Word] OR "OPC"[Text Word] OR "SCCOP"[Text Word] OR ("tongue neoplasms"[MeSH Terms] OR ("tongue"[All Fields] AND "neoplasms"[All Fields]) OR "tongue neoplasms"[All Fields] OR ("tongue"[All Fields] AND "cancer"[All Fields]) OR "tongue cancer"[All Fields] OR ("tongue"[MeSH Terms] OR "tongue"[All Fields] OR "tongues"[All Fields] OR "tongue s"[All Fields]) AND "neoplasm*[All Fields])	35,185
2	Robotics[mh] OR robotic surgical procedures[mh] OR TORS[tw] OR Robotic*[tw] OR Robot*[tw] OR Surgical Procedures Minimally Invasive[mh:noexp] OR Transoral*[tw] OR Trans-oral*[tw] OR Trans oral*[tw] OR Transoral robotic surgery[tw]	Most recent		"robotics"[MeSH Terms] OR "robotic surgical procedures"[MeSH Terms] OR "TORS"[Text Word] OR "robotic*[Text Word] OR "robot*[Text Word] OR "minimally invasive surgical procedures"[MeSH Terms:noexp] OR "transoral*[Text Word] OR "trans oral*[Text Word] OR "trans oral*[Text Word] OR "transoral robotic surgery"[Text Word]	108,719
3	Margins of excision[mh] OR Margin[tw] OR Margins[tw] OR Surgical margin*[tw] OR Surgical excision margin*[tw]	Most recent		"margins of excision"[MeSH Terms] OR "Margin"[Text Word] OR "Margins"[Text Word] OR "surgical margin*[Text Word] OR "surgical excision margin*[Text Word]	117,433
4	#1 AND #2 AND #3	Most recent		("oropharyngeal neoplasms"[MeSH Terms] OR "oropharynx neoplas*[Text Word] OR "oropharynx cancer*[Text Word] OR "oropharynx carcinoma*[Text Word] OR "oropharynx tumor*[Text Word] OR "oropharynx malignan*[Text Word] OR "oropharyngeal neoplas*[Text Word] OR "oropharyngeal scc"[Text Word] OR "oropharyngeal cancer*[Text Word] OR "oropharyngeal carcinoma*[Text Word] OR "oropharyngeal tumor*[Text Word] OR "oropharyngeal malignan*[Text Word] OR "OP-SCC"[Text Word] OR "OPSCC"[Text Word] OR "OPC"[Text Word] OR "SCCOP"[Text Word] OR ("tongue neoplasms"[MeSH Terms] OR ("tongue"[All Fields] AND "neoplasms"[All Fields]) OR "tongue neoplasms"[All Fields] OR ("tongue"[All Fields] AND "cancer"[All Fields]) OR "tongue cancer"[All Fields] OR ("tongue"[MeSH Terms] OR "tongue"[All Fields] OR "tongues"[All Fields] OR "tongue s"[All Fields]) AND "neoplasm*[All Fields])) AND ("robotics"[MeSH Terms] OR "robotic surgical procedures"[MeSH Terms] OR "TORS"[Text Word] OR "robotic*[Text Word] OR "robot*[Text Word] OR "minimally invasive surgical procedures"[MeSH Terms:noexp] OR "transoral*[Text Word] OR "trans oral*[Text Word] OR "trans oral*[Text Word] OR "transoral robotic surgery"[Text Word]) AND ("margins of excision"[MeSH Terms] OR "Margin"[Text Word] OR "Margins"[Text Word] OR "surgical margin*[Text Word] OR "surgical excision margin*[Text Word])	223

**Table S2** Critical appraisal of eligible case reports

Citation	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Tateya I, Ishikawa S, Morita S, <i>et al.</i> 2014	Y	Y	Y	Y	Y	Y	U	Y
%	100.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0

Y, **XXXX**; U, **XXXX**.

**Table S3** Critical appraisal of eligible case series

Citation	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Clayburgh DR, Byrd JK, Bonfili J, <i>et al.</i> 2016	Y	Y	Y	U	N/A	Y	Y	Y	Y	N/A
Patsias A, Giraldez-Rodriguez L, Polydorides AD, <i>et al.</i> 2015	Y	Y	Y	U	Y	N	Y	N	Y	N
Scott-Wittenborn N, Jackson RS. 2018	Y	Y	Y	U	Y	N	Y	N	Y	N
Weyers BW, Birkeland AC, Marsden MA, <i>et al.</i> 2022	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Weyers BW, Marsden M, Sun T, <i>et al.</i> 2019	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
%	100.0	100.0	100.0	40.0	80.0	60.0	100.0	60.0	100.0	20.0

Y, **XXXX**; U, **XXXX**; N, **XXXX**; N/A, not available.

**Table S4** Critical appraisal of eligible cohort study

Citation	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
Marsden M, Weyers BW, Bec J, <i>et al.</i> 2021	N/A	N/A	Y	U	U	Y	Y	Y	Y	Y	Y
Yu AC, Afework DD, Goldstein JD, <i>et al.</i> 2022	N/A	N/A	Y	U	U	N/A	Y	Y	Y	Y	Y
%	0.0	0.0	100.0	0.0	0.0	50.0	100.0	100.0	100.0	100.0	100.0

Y, **XXXX**; U, **XXXX**; N/A, not available.

**Table S5** Critical appraisal of eligible quasi-experimental study

Citation	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Vicini C, Montevercchi F, D'Agostino G, <i>et al.</i> 2015	Y	Y	Y	Y	N	Y	Y	Y	Y
%	100.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	100.0

Y, **XXXX**; N, **XXXX**.