

Supplementary Table 2. Delphi questionnaire for recommendations of oral cancer surgery guideline

No.	Recommendation	Fully agree	Agree	Neither agree nor disagree	Disagree	Totally disagree	Comment
1	The decision of treatment in oral cavity cancer patients should be discussed with multidisciplinary team approach and the patients should be provided enough information about the role of chemotherapy, radiation therapy and surgery. Strong recommendation, high-quality evidence	28 (75.7)	8 (21.6)	1 (2.7)	0	0	-
Diagnosis and work-up							
2A	Tissue biopsy and histologic examination is the essential step for the diagnosis of the oral cavity cancer. Strong recommendation, high-quality evidence	35 (94.6)	2 (5.4)	0	0	0	-
2B	Adjunctive tests (vital staining, oral cytology, light-based detection, oral spectroscopy, and blood or saliva analysis) are useful but cannot replace traditional biopsy for the definitive diagnosis of the oral cavity cancer. Weak recommendation, high-quality evidence	26 (70.3)	10 (27.0)	1 (2.7)	0	0	-
2C	Population-based screening program is necessary to reduce oral cancer mortality in high-risk individuals who use tobacco or alcohol or both. Strong recommendation, high-quality evidence	17 (45.9)	17 (45.9)	3 (8.1)	0	0	-
2D	Potentially malignant disorders should be carefully followed up. Strong recommendation, moderate-quality evidence	28 (75.7)	6 (16.2)	0	3 (8.1)	0	-
3	Oral functions, such as mastication, speech and swallowing may be assessed preoperatively. Weak recommendation, moderate-quality evidence	18 (48.6)	17 (45.9)	1 (2.7)	1 (2.7)	0	-
4A	Patients with oral cancer should be examined carefully to detect second primary malignancies. Strong recommendation, low-quality evidence	29 (78.4)	7 (18.9)	1 (2.7)	0	0	-
4B	Additional modalities such as PET/CT, chest CT, panendoscopy are recommended for second primary malignancy screening. Strong recommendation, moderate-quality evidence	21 (56.8)	13 (35.1)	1 (2.7)	2 (5.4)	0	-
Prevention							
5A	Intervention for smoking and drinking cessation should be recommended for high-risk populations. Strong recommendation, high-quality evidence	25 (67.6)	12 (32.4)	0	0	0	-
5B	Regular oral health maintenance and routine dental care are recommended to prevent oral cavity cancer. Strong recommendation, high-quality evidence	19 (51.4)	18 (48.6)	0	0	0	-
Imaging study							
6A	CT and/or MR are recommended for the staging and pretreatment evaluation of oral cavity cancer. Strong recommendation, high-quality evidence	36 (97.3)	1 (2.7)	0	0	0	-
6B	PET/CT is recommended for the evaluation of regional/distant metastases, second primary cancers, and mandibular marrow invasion. Strong recommendation, high-quality evidence	28 (75.7)	6 (16.2)	1 (2.7)	2 (5.4)	0	-
6C ^{a)}	US can be used to localize the primary focus and assess the tumor extent, including the cervical nodal status for oral cavity cancer staging. Weak recommendation, low-quality evidence	11 (29.7)	14 (37.8)	7 (18.9)	5 (13.5)	0	67.5% Agree
6C revised	US can be used to evaluate the cervical nodal status for oral cavity cancer staging. Weak recommendation, low-quality evidence	9 (47.4)	9 (47.4)	1 (5.3)			94.7% Agree

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No.	Recommendation	Fully agree	Agree	Neither agree nor disagree	Disagree	Totally disagree	Comment
Surgical approach							
7A	Surgeon should choose the appropriate surgical approach to achieve the clear surgical margin, under the full consideration of tumor size, depth location, degree of mouth opening, mandibular invasion, and surgeon's experience. Strong recommendation, low-quality evidence	33 (89.2)	4 (10.8)	0	0	0	-
7B	For advanced oral cavity cancers, mandibulotomy with or without lip-split can be produced wide exposure, but it may cause morbidities. Weak recommendation, moderate-quality evidence	18 (48.6)	13 (35.1)	3 (8.1)	3 (8.1)	0	-
Oral tongue							
8A	Tumor thickness should be considered when determining the extent of surgery because it is closely related to local recurrence of primary tumor and cervical lymph node metastasis. Strong recommendation, moderate-quality evidence	33 (89.2)	2 (5.4)	0	2 (5.4)	0	-
8B	Tumor thickness should be assessed to ensure adequate safety margin of basal area of oral tongue cancer, and the evaluation of tumor thickness can be made through palpation, preoperative imaging studies, and intraoperative ultrasonography. Strong recommendation, moderate-quality evidence	23 (62.2)	11 (29.7)	1 (2.7)	2 (5.4)	0	-
8C	The macroscopic and palpable margin should be at least 10 mm from the end of resected tissue. Weak recommendation, low-quality evidence	16 (43.2)	17 (45.9)	1 (2.7)	2 (5.4)	1 (2.7)	-
8D	When microscopic residual tumor or close margin is identified, re-resection or adjuvant treatment should be considered. Strong recommendation, low-quality evidence	28 (75.7)	7 (18.9)	1 (2.7)	1 (2.7)	0	-
Floor of the mouth							
9A	Macroscopic and palpable margins including deep margin should be at least 10 mm for mouth floor cancer. Strong recommendation, moderate-quality evidence	21 (56.8)	13 (35.1)	1 (2.7)	1 (2.7)	1 (2.7)	-
9B	Submandibular ducts and/or sublingual glands may be sacrificed. Weak recommendation, low-quality evidence	12 (32.4)	19 (51.4)	3 (8.1)	2 (5.4)	0	1 (Other opinion)
Gingiva and hard palate							
10A	Mucosal/periosteal resection is recommended primarily for the lesions without bone invasion. Strong recommendation, low-quality evidence	23 (62.2)	13 (35.1)	0	1 (2.7)	0	-
10B	Partial resection of the maxillary bone is recommended primarily for the lesions with bone invasion. Strong recommendation, low-quality evidence	25 (69.4)	10 (27.8)	1 (2.7)	0	0	-
Mandibular gingiva							
11A	Preoperative physical examination, combined imaging studies and identification of invasion pattern to the mandible are necessary to detect mandibular invasion and decide mandibulectomy in oral cavity cancer. Strong recommendation, low quality evidence	34 (91.9)	3 (8.1)	0	0	0	-
11B	Mandibulectomy can be waived in case with tumor abutted to the periosteum of the mandible. Weak recommendation, low quality evidence	11 (29.7)	21 (56.8)	3 (8.1)	1 (2.7)	1 (2.7)	-
11C	Mucosal/periosteal resection is recommended primarily for the lesions without bone invasion. Strong recommendation, low-quality evidence	21 (56.8)	14 (37.8)	1 (2.7)	1 (2.7)	0	-

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No.	Recommendation	Fully agree	Agree	Neither agree nor disagree	Disagree	Totally disagree	Comment
11D	Marginal mandibulectomy is recommended for cases with cancer not deeply invaded into the cancellous bone with obtainable resection margin. Segmental mandibulectomy should be performed for patients with extensive bone invasion. Strong recommendation, high quality evidence	26 (74.3)	6 (17.1)	1 (2.7)	1 (2.7)	1 (2.7)	-
11E	Segmental mandibulectomy can be considered those with irradiated or edentulous thin mandible. Weak recommendation, low quality evidence	10 (27.8)	17 (47.2)	8 (22.2)	0	1 (2.7)	-
11F	Maintenance of at least a 10-mm bone margin is necessary in mandibulectomy. Weak recommendation, low quality evidence	11 (29.7)	22 (59.5)	2 (5.4)	2 (5.4)	0	-
Buccal mucosa							
12A	For buccal cancer within the submucosal layer, the sufficient deep resection margin should be achieved by composite resection including the buccinator muscles. Strong recommendation, moderate-quality evidence	23 (62.2)	13 (35.1)	0	1 (2.7)	0	-
12B	If the tumor invades the buccinator muscles, the optimal surgical resection should be extended to the fat pads of buccal space. Strong recommendation, moderate-quality evidence	22 (59.5)	13 (35.1)	0	1 (2.7)	1 (2.7)	-
12C	In situations where the tumor is either invading towards fat or skin, resection of 1 to 2 cm of normal skin abutting the tumor is required. Strong recommendation, moderate-quality evidence	23 (62.2)	11 (29.7)	2 (5.4)	1 (2.7)	0	-
Retromolar trigone							
13A	For RMT cancer, careful preoperative evaluation about adjacent bone invasion should be assessed because of limited space between the mucosa and the mandible. Strong recommendation, moderate-quality evidence	33 (89.2)	4 (10.8)	0	0	0	-
13B	Trismus releasing procedures including coronoidectomy and myotomy of masticator muscles may be considered simultaneously for patients with mandibulectomy. Weak recommendation, low-quality evidence	12 (32.4)	17 (45.9)	7 (18.9)	1 (2.7)	0	-
Neck management, N0							
14A	Elective neck dissection can be considered in T2–4 oral cavity cancer. Weak recommendation, high-quality evidence	25 (67.6)	9 (24.3)	1 (2.7)	2 (5.4)	0	-
14B	The extent of elective neck dissection of oral cavity cancer should include at least level I, II, and III. Strong recommendation, moderate-quality evidence	32 (86.5)	4 (10.8)	1 (2.7)	0	0	-
14C	Level IIb can be omitted in elective neck dissection of oral cavity cancer. Weak recommendation, moderate-quality evidence	10 (27.0)	17 (45.9)	8 (21.6)	2 (5.4)	0	-
14D ^{a)}	Sentinel node biopsy can be alternative to selective neck dissection. Weak recommendation, moderate-quality evidence	6 (16.2)	15 (40.5)	15 (40.5)	1 (2.7)	0	56.7% Agree
14D revised	Sentinel node biopsy can be alternative to selective neck dissection. Weak recommendation, moderate-quality evidence	4 (21.1)	10 (52.6)	4 (21.1)	1 (5.3)	0	73.7% Agree
Neck management, N+							
15A	Therapeutic neck dissection should be performed for N+ in patients with oral cavity cancer. The extent of neck dissection should include at least level I, II, and III. Strong recommendation, low-quality evidence	24 (66.7)	10 (27.8)	1 (2.7)	1 (2.7)	0	-

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No.	Recommendation	Fully agree	Agree	Neither agree nor disagree	Disagree	Totally disagree	Comment
15B	Elective contralateral neck dissection is not routinely recommended for ipsilateral N+ oral cavity cancer. Weak-recommendation, low-quality evidence	10 (27.0)	23 (62.2)	3 (8.1)	1 (2.7)	0	-
Soft tissue reconstruction							
16A	Soft tissue flap reconstruction is recommended to preserve adequate speech and swallowing in patients with considerable defects after oral cancer surgery. Strong recommendation, moderate-quality evidence	27 (73.0)	9 (24.3)	0	1 (2.7)	0	-
16B	Soft tissue flap reconstruction is recommended for partial glossectomy defect approaching half of the tongue or larger to provide better swallowing function. Strong recommendation, low quality evidence	23 (62.2)	14 (37.6)	0	0	0	-
16C	Soft tissue flap reconstruction and postoperative rehabilitation should be performed for patients who underwent subtotal or total glossectomy to preserve functional speech and swallowing. Strong recommendation, low quality evidence	30 (81.1)	6 (16.2)	0	1 (2.7)	0	-
16D	Soft tissue flap reconstruction is recommended for floor of mouth defects to prevent communication between neck and oral cavity and to preserve mobility of the tongue for adequate speech and swallowing. Strong recommendation, low quality evidence	28 (77.8)	8 (22.2)	0	0	0	-
16E	Soft tissue flap reconstruction is recommended for buccal defects to preserve the ability of mouth opening and structural cosmesis. Moderate recommendation, low quality evidence	17 (45.9)	15 (40.5)	4 (10.8)	0	0	-
16F	The radial forearm and the anterolateral thigh free flaps are the preferred options for oral soft tissue reconstruction while other types of reconstructive surgery could be performed depending upon the extent of primary resection, patient's morbidity, and surgeon's preference. Strong recommendation, low-quality evidence	29 (78.4)	7 (18.9)	1 (2.7)	0	0	-
Mandibular reconstruction							
17A	The osteocutaneous free flap, especially fibular free flap, could be recommended as the primary method of mandibular reconstruction. Weak recommendation, low quality evidence	21 (56.8)	15 (40.5)	1 (2.7)	0	0	-
17B	Mandibular reconstruction using computer-aided design and manufacturing can be considered for reducing trial and error and surgical time. Weak recommendation, low quality evidence	13 (36.1)	16 (44.4)	6 (16.7)	1 (2.7)	0	-
Rehabilitation							
18A	Speech and swallowing evaluation and rehabilitation should be offered to all patients with locally advanced oral cavity cancer survivors within posttreatment 3 months. Strong recommendation, moderate-quality evidence	18 (48.6)	18 (48.6)	1 (2.7)	0	0	-
18B	Shoulder function should be assessed as regular follow-up who have neck dissection and/or postoperative radiation therapy and early rehabilitation should be considered where shoulder morbidity exists. Strong recommendation, high-quality evidence	28 (75.7)	9 (24.3)	0	0	0	-
18C	Regular physical activity is recommended for oral cavity cancer survivors. Strong recommendation, high-quality evidence	26 (70.3)	11 (29.7)	0	0	0	-
18D	Patients and survivors should avoid alcohol/tobacco product consumption. Strong recommendation, high-quality evidence	30 (81.1)	6 (16.2)	1 (2.7)	0	0	-

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No.	Recommendation	Fully agree	Agree	Neither agree nor disagree	Disagree	Totally disagree	Comment
18E	Patients and survivors encouraged to have healthful eating such as high in vegetables, fruits, and whole grains and low in saturated fats, sufficient in dietary fiber. Strong recommendation, lower-quality evidence	15 (40.5)	16 (43.2)	5 (13.5)	1 (2.7)	0	-
18F	Regular dental care, early interventions for oral/dental complications and meticulous oral hygiene is important for oral cavity cancer survivors. Strong recommendation, low-quality evidence	27 (73.0)	10 (27.0)	0	0	0	-
18G	Patients and survivors should be assessed for distress, depression, and anxiety periodically. Strong recommendation, high-quality evidence	22 (59.5)	14 (37.8)	1 (2.7)	0	0	-
Follow-up							
19A	Patients should be regularly examined for more than 5 years after treatment. Strong recommendation, high-quality evidence	29 (78.4)	8 (21.6)	0	0	0	-
19B	Patients should be inspected frequently during the first 2 years because of the high risk of locoregional recurrence; this schedule includes every 1 to 3 months during year 1, and every 2 to 6 months during year 2. Strong recommendation, low-quality evidence	27 (75.0)	9 (25.0)	0	0	0	-
19C	History and physical examinations should be performed regularly to check for locoregional recurrence. Strong recommendation, low-quality evidence	32 (86.5)	4 (10.8)	1 (2.7)	0	0	-
19D	Repeating pretreatment baseline imaging study (CT or MR) is recommended within 6 months after treatment to provide reference images. Strong recommendation, low-quality evidence	22 (59.5)	13 (35.1)	1 (2.7)	0	1 (2.7)	-
19E	PET-CT is recommended for the detection of distant metastasis, recurrence, and second primary tumors. Strong recommendation, moderate-quality evidence	30 (81.1)	5 (13.5)	2 (5.4)	0	0	-
19F	A chest radiography or CT study is recommended for the detection of lung metastasis and second primary tumors in the lung. Strong recommendation, moderate-quality evidence	28 (77.8)	8 (22.2)	0	0	0	-
19G	US can be considered for the detection of cervical lymph node recurrence. Weak recommendation, low-quality evidence	13 (36.1)	17 (47.2)	4 (11.1)	2 (5.4)	0	-
19H	A thyroid function evaluation is recommended to evaluate the presence of hypothyroidism in patients with oral cavity cancer who have undergone radiation therapy in head and neck area. Strong recommendation, low-quality evidence	24 (64.9)	13 (35.1)	0	0	0	-
19I	Thyroid function should be evaluated twice yearly during the first 5 years after treatment, and annually afterward. Thyroid function may be subjected to periodic follow-up evaluation for 10 years. Weak recommendation, low-quality evidence	13 (35.1)	16 (43.2)	5 (13.5)	3 (8.1)	0	-
Salvage surgery							
20A	Salvage surgery should be considered for recurrent oral cavity cancer, if possible to be resected. Strong recommendation, moderate-quality evidence	30 (81.1)	7 (18.9)	0	0	0	-
20B	Elective neck dissection can be considered for T2–4 recurrent oral cavity cancer. Weak recommendation, low-quality evidence	10 (27.8)	18 (50.0)	6 (16.7)	2 (5.6)	0	-
20C	Comprehensive neck dissection should be considered for rN+ recurrent oral cavity cancer. Strong recommendation, low-quality evidence	28 (75.7)	9 (24.3)	0	0	0	-

Values are presented as number (%).

PET/CT, positron emission tomography/computed tomography; MR, magnetic resonance; US, ultrasonography; RMT, retromolar trigone.

^aFailed to get more than two-thirds of agreement in Delphi questionnaire.