Histopathology Reporting Guide For Oral Cavity Carcinomas
Recommendations From The ICCR Dataset

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Data Set for the Reporting of Oral Cavity Carcinomas

Explanations and Recommendations of the Guidelines
From the International Collaboration of Cancer Reporting

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Goals of the International Collaboration of Cancer Reporting (ICCR)

- Standardize evidence-based pathology reports for use throughout the world
- Oral cavity dataset specific to resection specimens and biopsies of invasive carcinoma of the oral cavity
- Core element reporting important for staging, clinical management and prognosis
Core elements are considered essential for clinical management, staging, or prognosis.

Core elements are similar in all the standardized reporting datasets: AJCC, RCPath, UICC, etc.

Standardized structured reporting contributes to quality in diagnostic pathology.

Evidence based
Non-Core Elements

• Generally, are not validated (not evidenced-based) or routinely used in patient management
• Elements which may be clinically important and recommended as good clinical practice: submucous fibrosis, PVL, HPV, etc
Core Element: Specimens Submitted

Clear communication is critical for arriving at the correct tumor staging and treatment.
In large cancers that involve more than one site, the primary site of involvement should be recorded. *Not specified – use rarely!*
Both macroscopic and microscopic dimensions are included as core elements.

Tumor Dimensions - Macroscopic

3.6 cm
Tumor Dimensions – Macroscopic

- Masticator space
- Medullary bone
- Level 1b LN
- Extension beyond the inferior border of mandible
Tumor Dimensions

- Microscopic dimensions should be the primary dimensions for pathologic staging
- Gross examination may under/overcall tumor extent
- Dysplasia, ulceration and inflammation may appear grossly as tumor
HISTOLOGICAL TUMOR GRADE

Required for conventional squamous cell carcinoma only

Not applicable

Well differentiated

Moderately differentiated

Poorly differentiated

Cannot be assessed, specify
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<tr>
<th>Histologic Subtypes</th>
<th>Verrucous SCC</th>
<th>Papillary SCC</th>
<th>Spindle Cell SCC</th>
<th>Carcinoma Cuniculatum</th>
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<td>Well-differentiated, non-metastasizing</td>
<td>Keratinizing and non-keratinizing types</td>
<td>Worse prognosis than conventional oral SCC</td>
<td>Well-differentiated</td>
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<td>Local recurrences</td>
<td>Better prognosis than conventional SCC</td>
<td>Subset may be radiation-induced</td>
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<td>May progress to SCC</td>
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<tr>
<th>Basaloid SCC</th>
<th>Acantholytic SCC</th>
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<th>Lymphoepithelial Carcinoma</th>
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<td>High grade carcinoma</td>
<td>Well-differentiated</td>
<td>More aggressive than conventional SCC</td>
<td>Rare in oral cavity</td>
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<td>Frequent metastasis</td>
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<td>Propensity for recurrence</td>
<td>Present at high stage</td>
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<td>Prognosis similar to</td>
<td>Local recurrences</td>
<td>Local and distant metastases</td>
<td>~ 70% lymph node metastases</td>
</tr>
<tr>
<td>conventional SCC</td>
<td>May progress to SCC</td>
<td></td>
<td>Some cases are Epstein Barr Virus</td>
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</tbody>
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Histologic Subtypes
Depth of Invasion

**Primary tumour (pT)**
- **TX** Primary tumour cannot be assessed
- **Tis** Carcinoma in situ
- **T1** Tumour 2 cm or less in greatest dimension and 5 mm or less depth of invasion***
- **T2** Tumour 2 cm or less in greatest dimension and more than 5 mm depth of invasion or, tumour more than 2 cm but not more than 4 cm in greatest dimension and depth of invasion no more than 10 mm
- **T3** Tumour more than 2 cm but not more than 4 cm in greatest dimension and depth of invasion more than 10 mm or tumour more than 4 cm in greatest dimension and not more than 10 mm depth of invasion
- **T4a** (Lip) Tumour invades through cortical bone, inferior alveolar nerve, floor or mouth, or skin (of the chin or the nose)
- **T4a** (Oral cavity) Tumour more than 4 cm in greatest dimension and more than 10 mm depth of invasion or tumour invades through the cortical bone of the mandible or maxilla or involves the maxillary sinus, or invades the skin of the face
- **T4b** (Lip and oral cavity) Tumour invades masticator space, pterygoid plates, or skull base, or encases internal carotid artery
Depth of Invasion

• UICC: does not define where it is assessed
• AJCC: defines it as horizontal of adjacent basement membrane
• RCPaath: defines it as the epithelial surface
Avg ventral tongue thickness is .240 mm
Avg dorsal tongue thickness is .48 mm
Measuring depth of invasion of an ulcerative tumour
Measuring depth of invasion of an exophytic tumour
Horizon line would underestimate DOI

Courtesy of Dr. Martin Bullock
On a curved surface, an arcuate line is better

Courtesy of Dr. Martin Bullock
c Arcuate line of horizon replicates the natural rounded contour of the lateral border of tongue

(d) In a polypoidal tumour, the mucosa is heaped up by the tumour and thickness is a better measure of tumour bulk than depth of invasion
“The inclusion of DOI in the pT category for oral cavity cancer may improve prognostic performance of AJCC staging by predicting regional control and status of regional lymph nodes”.

Findings include:

- Challenges in measuring DOI in SCCs of the oral tongue ≤ 4 cm in largest dimension.
- May explain significant variation in DOI measurements by different institutions (with median DOI ranging from 7 to 12 mm)
- It is thus appropriate that both DOI and largest tumor size are incorporated into pT stage rather than DOI alone.

Pattern of Invasion

Cohesive: Large islands with a pushing border
Non-cohesive: Small islands and narrow strands
Dispersed pattern of invasion: Individual cells >1 mm from the main tumour
Pattern of Invasion

The patterns of tissue invasion by carcinoma are a continuous spectrum.

It is important to evaluate the most complex area of tumor-stroma interface ("worst" area) and consequently assessment should only be made on resection specimens.

For prognostic purposes, two (3?) groups are recognized:

- Carcinomas composed of broad cohesive sheets of cells or strands of cells >15 cells across
- Carcinomas composed of narrow strands, non-cohesive small groups or single cell
Cohesive –
Broad Pushing Front
Non-Cohesive: Single-cell filing pattern or small islands
Widely Dispersed Pattern

> 1 mm
Pattern of Invasion Reporting Differences Between Datasets

- UICC: Not reported
- RCPath: 2 groups are recognized: carcinomas composed of broad cohesive sheets of cells or strands of cells >15 cells across and carcinomas composed of narrow strands, non-cohesive small groups or single cell
- AJCC: Worst pattern of invasion 5 (≥1mm from the main tumor or nearest satellite)
ICCR Dataset: For stage T1/T2 oral squamous cell carcinoma, particularly those arising in the tongue there is evidence that tumor satellites ≥ 1 mm from the main tumor or nearest satellite (worst pattern of invasion WPOI-5) is a valid adverse prognostic factor.
Medullary Bone Invasion
Intramedullary invasion into the mental foramen

Mylohyoid muscle
Cortical Bone Erosion

- Important to recognize cortical bone erosion vs medullary bone invasion
- A 2 cm tumor with bone erosion is a T1
- A 2 cm tumor with medullary bone invasion is a T4!!
Similar Reporting Guidelines With Respect to Perineural and Lymphovascular Invasion
Coexistent Pathology

- PVL
- Fungal infection
- HPV + dysplasia
- Submucous fibrosis
- Inflammation
Proliferative verrucous leukoplakia (PVL) is a distinct form of oral precancer of unknown etiology with a multifocal presentation and a progressive course with high recurrence rates and malignant transformation in as many as 70% of cases.

This diagnosis requires adequate clinical information.
A subset of oral dysplasia is positive for high-risk HPV. The epithelium exhibits full-thickness dysplastic changes with karyorrhexis and apoptosis and the cells are strongly positive for p16 by immunohistochemistry.
Submucous Fibrosis

- Subepithelial fibrosis is a characteristic of oral submucous fibrosis and increased fibrosis is associated with an increased risk of epithelial dysplasia.
No studies have demonstrated that Candida infection has a direct role in the development of OED or OSCC although reports demonstrate an increased oral yeast colonization in patients with oral cancer.
Ancillary Studies

• For most oral squamous cell carcinomas, immunohistochemistry is not required to establish a pathologic diagnosis.

• Exception: spindle cell carcinoma (AE1/AE3, CK5/6, p63 and p40)
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