



## **A Comparative Study of CT scan and MRI in The Assessment of Squamous Cell Carcinoma of The Oral Cavity and Its Cervical Lymph Node Metastasis**

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**Conflicts of Interest:** Nil

### **Abstract**

**Background:** The tongue is the centre piece of the oral cavity and the oro pharynx. It enables taste of food and plays a critical role in formation of food bolus and deglutition.

**Methods:** In the prospective study, 40 patients (24 males, 16 females), aged 25 to 77 years (mean 53.3) .who referred to the surgery department, underwent surgery for a primary SCC of the oral cavity. These patients were examined with CT and MRI before surgery.

**Results:** The minimum age of the patients was 27 years; maximum age 76 years and the mean age was 53.3 years. Males constituted 60% of the patients and the rest were females. The frequency of tumors in the cheek was 15% and 12% in the floor of mouth, The number of lymph nodes detected by CT scan and MRI was (n=16).

**Conclusion:** The CT was a trend towards a better detection rather than MRI in detection of muscle infiltration. Beside MRI in the detection of bone invasion is a more sensitive tool and would be preferred to CT.

**Keywords:** Computed tomography, Magnetic resonance imaging, TNM staging, tongue carcinoma

### **Introduction**

The tongue is the centre piece of the oral cavity and the oropharynx. It enables taste of food and plays a critical role in formation of food bolus and deglutition. The tongue is also crucial for speech. Speech is impaired by glossectomy, the degree of which depends on the extent of the resection. In fact, the earliest sign of tongue paresis is a change in the quality of speech.

Given the importance of the tongue, tongue carcinoma should be accurately staged in order to optimize treatment options and preserve organ function. The intent of this review is to familiarize radiologists with the pertinent anatomy of the tongue and the behavior of tongue carcinoma so as to map malignant infiltration accurately. Squamous cell carcinoma of the tongue spans two regions. The anterior two thirds (oral tongue) is a common subtype of squamous cell carcinoma of the oral cavity where as the posterior third (base of tongue) is considered part of the oropharynx.

### **Material and Method**

In the prospective study, 40 patients (24 males, 16 females), aged 25 to 77 years (mean 53.3) .who referred to the surgery department, underwent surgery for a primary SCC of the oral cavity. These patients were examined with CT and MRI before surgery. All MR images were evaluated by two experienced radiologists and an oral and maxillofacial surgeon on the basis of two standard questionnaires in a blind fashion. Two questionnaires were

used to collect data from MRI results by one of the radiologists.

In each questionnaire the following items were determined: patient's name, sex, age, occupation, tobacco consumption, alcohol consumption, site of primary tumor, size of tumor, depth of the tumor, TNM classification, muscle invasion, neural invasion, lymph node involvement, size of lymph node, shape of lymph node, site of lymph node, the number of lymph nodes, presence of fatty core, presence of central necrosis, nodal calcification, margins of lymph nodes, and extra capsular spread.

The results of the radiological assessment were compared with the histopathological and intraoperative findings. Sensitivity, specificity, accuracy, positive predictive value (PPV) and negative predictive value (NPV) were calculated for the depiction of the primary tumor, the local tumor infiltration and cervical lymph node involvement.

## Results

The minimum age of the patients was 27 years; maximum age 76 years and the mean age was 53.3 years. Males constituted 60% of the patients and the rest were females. The frequency of tumors in the cheek was 15% and 12% in the floor of mouth, The number of lymph nodes detected by CT scan and MRI was (n=16).

Table 1. Specificity and Sensitivity of CT and MRI in bone invasion muscle infiltration

	Muscle Invasion		Bone Invasion	
	Sensitivity	Specificity	Sensitivity	Specificity
MRI	52%	94%	90%	82%
CT scan	62%	94%	50%	82%

Table 2. Positive predictive Value (PPV) and Negative predictive Value (NPV) of CT scan and MRI

	Muscle Invasion		Bone Invasion	
	PPV	NPV	PPV	NPV
MRI	72%	84%	76%	94%
CT scan	74%	86%	62%	78%

## Discussion

Head and neck carcinomas constitute approximately 5% of all malignancies worldwide, and the incidence of tumors of the head and neck is increasing. The great majority of these tumors are SCC, which account for about 95% of all head and neck tumors.(8) There is an increased frequency of carcinoma in smokers and patients with a history of excessive alcohol use. Mukherji et al. reported similar values for sensitivity (96%), specificity (87%), positive predictive value (89%) and negative predictive value (95%) for the detection of bone invasion in CT scan<sup>1</sup>. Researchers have also noted the association of SCC of the oral mucosa and the chewing of betel quid<sup>2</sup>. MRI has advantage of no us age of X-ray but is more expensive than CT scan and is not suitable for patients that have claustrophobia. So, for patients that do not have these problems, it would be better to prescribe MRI. In this survey, we had limit patients. Because in cases of SCC clinicians prescribe CT or MRI not both of them, so we were not able to include many patients in the study. Therefore, one suggestion would be to use more cases in the following surveys.

The critical determinant of the utility of an imaging modality for oral cavity SCC is its ability to detect the presence or absence of metastasis.

## Conclusion

The CT was a trend towards a better de-tection rather than MRI in detection of muscle infiltration. Beside MRI in the detection of bone invasion is a more sensitive tool and would be preferred to CT.

## **References**

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