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"DEPTH OF INVASION (DOI) AS A PREDICTOR FOR NODAL DISEASE IN ORAL SQUAMOUS CELL CARCINOMA"

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Dissertation Submitted to the
Shri Dharmasthala Manjunatheshwara University, Dharwad, Karnataka,

In partial fulfillment
of the requirements for the degree of

MASTER OF DENTAL SURGERY (M.D.S)

In

ORAL AND MAXILLOFACIAL SURGERY

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MAY 2022

ABSTRACT

BACKGROUND AND OBJECTIVES

Overall key to control primary tumor metastasis depends on various factors including the stage, extension, location of the tumor, level of involvement of lymph node and now the depth of invasion (DOI). With the increasing research on the prognosis of the oral carcinomas the scholars have successfully confirmed that the DOI of tumor has the direct influence on the overall disease free survival rate of patients. The American joint committee on cancer (eighth edition) on oral squamous cell carcinoma (OSCC) have included the DOI as a basis for implementation of TNM staging and have considered cut off points of DOI as 5mm and 10 mm for classification in T category. The tumor mass not being planar geometrically but rather grows 3 dimensionally, so surgeons should have the knowledge of third dimension that is the Depth of invasion for adequate resection with tumor free margins in order to prevent the loco regional recurrence in OSCC. A definitive correlation between the DOI, cervical lympnode metastasis and disease free survival rate of OSCC has been noted.

MATERIALS AND METHODS

Prospective study was conducted on patients reporting to SDM craniofacial Research centre from November 2019 to November 2021 who were subjected to surgery for resection of OSCC involving gingivo buccal sulcus along with neck dissection procedures. Preoperative ultrasonography evaluation of buccal mucosa and gingivo buccal sulcus and neck was performed. All examination were done by same sonologist using real timer sector scanner with a 7.5MHz and 10MHz frequency on linear transducers. Examination recorded the largest diameter of the lesion representing the depth of invasion of the tumour. Computed tomography

performed using 128 multi slice and multi detector CT scanner and DOI was measured from surface of the tumour to deepest point of invasion. Preoperatively measured DOI from ultrasonography and computer tomography was then compared with the DOI measured post operatively of resected specimen by histological assessment. Lymph node examination was also performed to evaluate metastasis and extra capsular spread. A cut-off value for DOI was derived, beyond which nodal metastasis was evident.

RESULTS

51 patients were included in the study of which 40(78.4%) were male patients and 11(21.6%) were female patients. Patients' age ranged from 20 to 70 years. DOI measured preoperatively from USG in these cases ranged from 6mm to 37mm with average of 19.41mm. Estimation of DOI using the USG had a sensitivity of 100% with 0% of negative predictive value which showed the specificity similar to the negative predictive value with relative coefficient of 0.0001, which was highly statistical significant. DOI measured from CT scan ranged from 6 to 32mm with average value of 18.84mm. DOI measured using CT scan showed sensitivity of 100% and 0% of negative predictive value, which was highly statistical significant with relative coefficient of 0.0001. The effectiveness of the CT scan and USG in preoperative measurement of DOI in gingivo buccal sulcus carcinoma was compared and were not statistically significant with p value of 0.475. But CT scan showed superiority in the measurement of DOI in gingivo buccal sulcus carcinoma when compared to USG scan. Histopathological DOI measured of resected specimen post operatively of all these patients ranged from 1.3mm to 16mm with average of 7.26mm. lowest DOI at which nodal metastasis observed was 3.4mm, so the cutoff value of DOI above which metastasis was probable decided was 3.5mm for this series. . Extra capsular spread or invasion was seen in 6(11.7%) patients and loco regional recurrence

following the surgery was seen in 2(3.9%) patients.

INTERPRETATION AND CONCLUSION

From this study it was found that histopathological examination of DOI is still the gold standard as compared to preoperative measurements using USG and CT scan. There is an extremely significant correlation between the microscopic DOI and the incidence of cervical lymph node metastasis, with increasing rate of nodal involvement seen with DOI greater than 3.5mm. Extra capsular spread beyond the capsule of lymph node was the most significant predictor of both loco regional recurrence and development of distant metastasis, and it accounted for decreased survival in patients.

KEY WORDS:

Depth of invasion, extra capsular spread, Lymph node metastasis, Ultrasonography, Computed tomography