SDM
College of Dental Sciences & Hospital
Dhavalnagar, Sattur, Dharwad - 580009, Karnataka, INDIA
Recognised by Dental Council of India, New Delhi

SHRI
DHARMASTHALA
MANJUNATHESHWARA
UNIVERSITY

SHRI DHARMASTHALA MANJUNATHESHWARA UNIVERSITY,

DHARWAD, KARNATAKA

INTRAOPERATIVE NEAR INFRARED GUIDED SURGERY USING INDOCYANINE GREEN (ICG) FOR IDENTIFICATION OF POSITIVE MARGINS IN ORAL SQUAMOUS CELL CARCINOMA – A DIAGNOSTIC ACCURACY TEST

By

DR TEJASWINI M

Dissertation Submitted to the

Shri Dharmasthala Manjunatheshwara University, Dharwad, Karnataka,

In partial fulfilment

of the requirements for the degree of

MDS

in

ORAL AND MAXILLOFACIAL SURGERY

Under the guidance of

DR DEEPTHI SHETTY

DEPARTMENT OF ORAL AND MAXILLOFACIAL SURGERY

SDM COLLEGE OF DENTAL SCIENCES AND HOSPITAL

DHARWAD

2021- 2024

ABSTRACT

BACKGROUND & OBECTIVES:

Globocan 2023 data reveals OSCC is the most common cancer amongst men (**22.6%**) ,second most common amongst women (**12.8%**), with a mortality rate of **75.1%** in Asia. Current methods of intraoperative margin assessment, including frozen sections and intraoperative ultrasound are **labour-intensive** and **time-consuming**. Molecular imaging in OSCC is **not as well documented** as it is in other malignancies such as ovarian, breast, hepatocellular, and sarcomas. The main objective of my study was to **identify intraoperative positive margins**, thereby minimizing the **chances of recurrence** and **improving the prognosis**.

METHODS:

Indocyanine green dye was administered intravenously (**2 mg/kg**) one hour before the tumour resection in OSCC patients. The **margins** were assessed through a series of pictures taken through a near-infrared (NIR) microscope using **white light, IR-800 flowmetry and colour-segmented mode** when the image visibility score was highest. The final histopathology report served as confirmation for the outcomes derived from the photos.

RESULTS:

The study comprised a cohort of **31 patients**. The most frequent subsite being buccal mucosa, which extended to the gingivobuccal sulcus in 19 patients. The study has a **sensitivity of 100%**, **a specificity of 85%**, and **positive predictive value of 6%** with **0% being the negative predictive value**. The study's overall **accuracy rate is 87%**, and the **p value**, as determined by the Kappa measure of agreement, is **0.6**, which indicates **substantial agreement**.

INTERPRETATION & CONCLUSION:

The ICG-NIR method is a **valuable tool** in the detection of intraoperative positive margins. Further studies in the form of multi-centric, randomized control trials and carcinoma-targeted dyes are required to validate this technology.

KEYWORDS

Oral squamous cell carcinoma; Indocyanine green dye; Near infrared fluorescence; Diagnostic accuracy test; Intraoperative positive margins; Overall survival; Local recurrance

LIST OF CONTENT