

# **Immunohistochemical Expression of SOX2 and OCT4 in Oral Squamous Cell Carcinoma: A Pilot Study**

Sajda Khan

Department of Oral Pathology and Microbiology, People's Dental Academy, People's University, Bhopal (Madhya Pradesh)

## **ABSTRACT:**

**Background:** Oral squamous cell carcinoma (OSCC) is one of the most frequently-occurring malignancies of the oral cavity and continues to be associated with poor prognosis, recurrence and metastasis despite improvements in diagnosis and treatment. Cancer stem cells (CSCs) are thought to play an important role in the process of tumour initiation, progression, invasion and resistance to therapy. SOX2 and OCT4 are two significant transcription factors of the embryo stem cells that play a role in the maintenance of the pluripotency and self-renewal of the ESCs. These markers have been found to be over-expressed in various cancers and may be associated with the aggressive behaviour of the tumour.

**Objective:** To evaluate the immunohistochemical expression of SOX2 and OCT4 in OSCC and to correlate the expression with clinicopathological parameters.

**Materials and Methods:** The present observational pilot study was conducted on 10 formalin fixed paraffin embedded (FFPE) tissue blocks that were used to retrieve 10 cases of oral squamous cell carcinoma (OSCC) with histopathological confirmation. SOX2 and OCT4 antibody was used for immunohistochemical staining. Nuclear brown staining was deemed as positive. Semi-quantitative scoring was performed based on the percentage of positive cells: 0–5% (1+), 6–25% (2+), 26–50% (3+), and >50% (4+). Descriptive statistics and Chi-square test were used for statistical analysis.

**Results:** All the cases of OSCC in this study expressed the proteins SOX2 and OCT4 positively by immunohistochemistry. As the grade increased, the expression of SOX2 and OCT4 increased. The immunoreactivity in poorly differentiated OSCC was higher than that in well-differentiated lesions.

**Conclusion:** The present pilot study showed that SOX2 and OCT4 expression was found to be upregulated in OSCC. The increased expression of these CSC markers could be associated with tumor progression, invasion, and prognosis. SOX2 and OCT4 could be helpful prognostic markers and therapeutic targets in OSCC.

**KEY WORDS:** SOX2, OCT4, Oral Squamous Cell Carcinoma, Cancer Stem Cells,

Immunohistochemistry, Oral Cancer