

**DISSERTATION TITLE :**

**CYTOLOGICAL CHANGES AND SPECIFIC SALIVARY BACTERIAL ASSESSMENT  
IN ORAL SQUAMOUC CELL CARCINOMA PATIENTS UNDERGOING RADIATION  
THERAPY**

**AIM :**

To assess the cytological changes and specific salivary bacteria in histopathologically proven oral squamous cell carcinoma patients undergoing radiation therapy.

**MATERIALS AND METHODS:**

This study comprised of 30 patients with histologically proven oral squamous cell carcinoma who were planned for radiotherapy of 60 Gy dosage in 30 fractionated doses. There were also 30 normal healthy individuals without any habits who were the control subjects. Saliva samples were obtained from all the subjects. In the study subjects, salivary samples were obtained before onset of radiotherapy, at the completion of 30 Gy and at 60 Gy.

The samples were used to culture three bacteria namely, *Streptococcus mitis*, *Prevotella melaninogenica* and *Capnocytophaga gingivalis*. The counts of the three bacteria were compared during the three stages and also to controls. The salivary samples were also centrifuged after adding 95% Ethyl alcohol and then the cell pellet smeared and stained with Papanicolau stain. The stained smears were subjected to cytomorphometric analysis using image analysis software CapturePro 2.8. The smears were analysed for changes in the cells among the different stages of radiotherapy and also changes from normal in five cytological parameters namely nuclear area, cytoplasmic area, nuclear diameter, cell diameter and nuclear cytoplasmic ratio.

**STATISTICAL ANALYSIS:**

Appropriate statistical tests like Wilcoxon Signed rank test and MannWhitneyU tests were used for comparison.

## **RESULTS:**

There was highly significant difference in the count of all the three bacteria in study subjects at all stages when compared to controls. There was statistically significant decrease in the bacterial count of all the three organisms with increasing dosage of radiation in the study subjects.

The cytomorphometric analysis showed an increase in mean nuclear area, diameter and nuclear cytoplasmic ratio and decrease in mean cell diameter and cytoplasmic area in the study subjects compared to controls. Between the three stages, nuclear cytoplasmic ratio showed a statistically significant increase with increasing radiation dosage.

## **CONCLUSION:**

This study shows that cytomorphometric analysis from the exfoliated cells in saliva can be done in patients undergoing radiotherapy and increase in nuclear cytoplasmic ratio can serve as an indicator of a good radiation response. Also, the results of bacterial analysis during therapy can be useful in the antibiotic therapy given in irradiated patients as infection is the cause for death in many cancer patients.

**KEY WORDS: Cytomorphometric analysis, Radiation therapy, oral squamous cell carcinoma, Streptococcus mitis, Prevotella melaninogenica , Capnocytophaga gingivalis**