

Abstract

Oral squamous cell carcinoma (OSCC) is a serious and relatively common disease of the oral cavity. Radical surgical removal of the tumor currently remains the treatment of choice. Leaving residual tumor cells in the patient's body has a clearly negative prognostic effect. The key to the success of this treatment modality is the accurate determination of the extent of the tumor and the determination of the safe surgical margin of tumor resection. For this purpose, additional investigative techniques are used, further researched and newly developed to identify the extent of the presence of tumor-altered cells.

The benefit of pre- and intraoperative use of natural autofluorescence was investigated in the presented research. The essence of our research is the hypothesis that the use of natural autofluorescence, specifically the VELscope (Visually Enhanced Lesion Scope) system, will lead to an increase in the success of surgical therapy in terms of achieving a tumor cell-free resection margin.

The total number of 122 patients with a diagnosis of OSCC included in our study were divided after meeting the inclusion criteria by simple randomization into study and control groups. Before surgery, each patient from the study group was examined with a VELscope device together with marking the extent of fluorescence loss. For this purpose, we have developed a unique technique of tattooing on the mucous membrane. Subsequently, the results after surgical treatment, i.e. the condition of the margin, were compared.

We achieved a pathological clear margin (pFM) in 55 patients, a pathological close margin (pCM) in 6 cases, and we did not encounter any case of a pathologically positive margin (pPM) in the mucosal layer in the study group. In comparison, the results of the control group revealed pPM in 7 cases, pCM in 14 cases, and pFM in 40 of all cases in the mucosal layer.

This study demonstrated that preoperative autofluorescence assessment of the OSCC mucosa surrounding can increase the ability to achieve R0 resection.