LIFE QUALITY IMPROVEMENT IN PATIENTS WITH ORAL SQUAMOUS CELL CARCINOMAS USING TOTAL DENTURES

Ralucă Dragomir, M. L. Ciofu*, Otilia Boișteanu, Emilia Dîmbu, V. V. Costan
“Grigore T. Popa” University of Medicine and Pharmacy Iași
Faculty of Dental Medicine
Department of Surgery: Oral and Maxillo-Facial Surgery
*Corresponding author. E-mail: ciofu_mihai@yahoo.com

LIFE QUALITY IMPROVEMENT IN PATIENTS WITH ORAL SQUAMOUS CELL CARCINOMAS USING TOTAL DENTURES (Abstract)

Aim: Treatment of oral cancer patients is followed by the occurrence of significant functional and aesthetic alterations. Dental rehabilitation is the key factor for post-op life quality. Material and methods: The study included 22 patients treated for squamous cell carcinoma: tongue (11 cases), floor of mouth (10 cases) and lower lip (1 case). The study group included only edentulous patients with appropriate mandibular bone height. The group was further divided into three subgroups: patients requiring floor-of-mouth lowering (9 cases), patients who needed lower labial vestibuloplasty (8 cases) and patients who required a vestibule and a floor-of-mouth extension procedure (5 cases). Healing was by second intention in most patients by using an acrylic splint fixed by circummandibular wire and maintained in place 4 weeks (16 cases). Eight patients underwent vestibuloplasty: in 3 using total skin grafts, 3 jugular mucosa and in 2 cases palate mucosa. The acrylic splint was made for two patients out of eight. Results: Secondary tissue retraction did not allow the proper retention of the mandibular removable prostheses in 3 patients who delayed their appointments. Prosthesis was made without any inconvenience in all other patients. Thereby 19 out of 22 patients had significant improvement in all functional aspects (mastication and swallowing), as well as facial aesthetics (restoring the vertical dimension of the lower face). Conclusions: Using less traumatic and non-expensive surgical techniques, quality of life patients with oral SCC can be greatly increased, allowing the social reintegration of these individuals. Keywords: ORAL CANCER, MANDIBULECTOMY, GLOSECTOMY, VESTIBULOPLASTY, PREPROSTHETIC SURGERY.

The sixth most common cancer is the oral and oropharyngeal cancer and in 90% of the cases the squamous cell carcinoma (SCC) is involved with or without the presence of the metastasis in the cervical lymph nodes. The most frequent localizations are the tongue and the floor of the mouth (fig. 1).

The literature showed that the incidence of the oral cancer is in direct relationship with the chronic use of alcohol and/or tobacco. The treatment of choice for this type of oral cancer is radical primary surgery, with reconstruction by free tissue transfer where indicated (1, 2, 3).

Oral cancer treatment can affect secondary the quality of the patient’s life by producing complications such as disfig-
Life quality improvement in patients with oral squamous cell carcinomas using total dentures

urement, impaired speech, masticatory dysfunction, dysphagia, or dysarthria. The dysfunctions that occur after the oral cancer resection have a significant impact on the patients’ lives. Some experience difficulties in eating and speaking (4, 5) others can remain with psychosocial sequelae that can change the relationship and the acceptance of the society making the head and neck cancer patients distressed (6).

![Fig. 1. SCC left floor of mouth](image)

To obtain a quality life as high as possible for a head and neck cancer patient we must find a way to rehabilitate the postsurgical defect from dental point of view. Rehabilitation of mandibular defects associated with tumor resection present a significant challenge for prosthodontic rehabilitation (7). Reestablishing occlusion and optimizing tongue mobility are important to post-operative oral function (8). There are many cases where periprosthetic surgery is needed, to obtain a stable prosthetic field (fig. 2).

This study concentrates on the possibilities for dental rehabilitation of oral cancer treated patients.

![Fig. 2 Post-op intraoral aspect after treatment of carcinoma by direct suture, with the disappearance of the paramandibular trench](image)

**MATERIAL AND METHODS**

A total of 22 patients admitted to the Oral and Maxillofacial Surgery Clinic of the Iasi “Sf. Spiridon” County Clinical Emergency Hospital were recruited after at least one relapse-free year post surgery. The subjects underwent a glossopelvectomy, associated or not with marginal mandibulectomy; in one patient was performed a lower lip resection in the study hospital between January 2013 and August 2017. All patients were males, aged 47 to 72 years at the time of surgery. Eleven patients (50%) were diagnosed with tongue cancer, 6 (27.2%) with cancer of the lateral floor of the mouth, 4 (18.1%) with cancer of the anterior floor of the mouth and 1 patient (4.5%) with lower lip cancer. The reconstruction techniques used at the primary surgery were: direct suture 13 cases (59%), cicatrization / healing “per secundam” 4 cases (18.18%), free split-thickness skin grafts 2 cases (9%), radial forearm free flap 2 cases (9%), and Camille Bernard technique for lower lip reconstruction 1 case (4.5%).
The study group containing only edentulous patients was further divided into three subgroups: (1) patients who needed floor-of-mouth lowering (9 cases), (2) patients who needed lower labial vestibuloplasty (8 cases) and (3) patients who needed vestibule and floor-of-mouth extension procedure (5 cases). In all patients included in the study, the orthopantomography highlighted appropriate mandibular crest height for total denture restauration.

**Floor-of-mouth lowering technique.** The technique used in lowering the floor of the mouth involved detaching the mylohyoid muscles from the mylohyoid ridge area and repositioning the muscle inferiorly, (effectively deepening the floor of the mouth area) and relieving the influence of the mylohyoid muscle on the alveolar crest. After the intervention, we applied an occlusal splint secured to the mandible with circummandibular wires for 4 weeks. Healing was by second intention (fig. 3).

![Fig. 3 Post-op lowering floor of mouth](image)

**Vestibuloplasty technique.** Vestibuloplasty technique implied the deepening of the vestibule by lowering the connection of the mucosa and muscle. In this study, we used three techniques: (1) skin graft technique, (2) mucosal graft technique (jugal and palatal mucosa), and (3) dental split technique with healing by second intention. Full-thickness grafts were used over the denuded area after the apical extension of the vestibule in 3 cases (13.63%) (including a patient with vestibule and floor-of-mouth extension procedure). The skin donor site was obtained from the supraclavicular area. Fixation of the graft was performed by surgical sutures.

We used two types of mucosal grafts: jugal mucosal grafts in 3 cases (13.63%) (including a patient with vestibule and floor-of-mouth extension procedure) and palatal mucosal grafts in 2 cases (9%). Vestibuloplasty using dental split technique with healing by second intention was performed in 2 patients (9%).

**Vestibule and floor-of-mouth extension technique.** This technique implied a simultaneous procedure for the deepening the vestibule and lowering the floor of the mouth, where the denuded area remained uncovered. Healing was by second intention, using a dental split secured to the mandible with circummandibular wires for 4 weeks (fig. 4).

![Fig. 4 Splint. After the deepening of the paramandibular shafts, an acrylic collar was used to protect the postoperative wound and to guide the secondary scarring](image)
RESULTS
Initially, in all patients we obtained a good depth of the paramandibular trenches. Three of the patients (13.63%) in whom we used the “per secundam” healing technique, did not show up to their appointment to have the dentures made. The first surgical outcome was lost, and the prostheses did not have adequate stability. None of these patients ever wanted a corrective secondary intervention. In the remaining patients the prosthetic dressing was performed without any difficulties, 11 patients (50%) of whom were entrusted to dental practitioners.
In all patients in whom dentures were made, the functional results were excellent increasing the quality of mastication and swallowing (fig. 5).

DISCUSSION
After oral cancer surgery, tissue defects can cause deformity, limited mobility, complicating many essential functions and leading to a decreased quality of life (5). The prosthetic treatment in oral cancer...
treated patients can be difficult and challenging, but it is an important step in improving the quality of life. In our study, at the extraoral examination, all patients presented with decrease of the lower facial third in relation to the middle third and the accentuation of the natural folds (fig. 7).

The main prosthetic problems consist in the loss of movable mucosa in the buccal and lingual part, changes in jaw direction toward the affected side and the loss of the masticatory mucosa (5). The aim of the preprosthetic surgery of the mandible is to increase the stability of the prosthesis (9, 10) fact that can be achieved by deepening the sulcus on the buccal/lingual side or on both (buccal and lingual) sides of the mandible.

Fig. 7. Post-op view (front and profile) without dentures

The principle of vestibuloplasty is that the vestibulum is extended apically by surgically shifting the tissue apically and the denuded open exposed soft tissue area is left for secondary epithelization. The thought behind this is that the denture-bearing area can be extended. However, the extension of the vestibulum results in rapid relapse due to scar contraction. To avoid this, attempts have been made to cover the denuded area by a graft (11). Free grafts can be classified into skin grafts and mucosal grafts (palatal mucosa, buccal mucosa). Skin grafts have been used as good alternatives since they encounter no problems with shrinkage and scars, which are unavoidable in the secondary epithelialization process. Studies show a high level of satisfaction in patients with vestibuloplasty with partial thickness skin graft. When used in the mouth, skin has associated problems that lead to patient dissatisfaction: it is a different color and texture from normal mouth epithelium; in the first years after grafting, there is a bad taste or odor, probably resulting from the presence of
Life quality improvement in patients with oral squamous cell carcinomas using total dentures

hair and sebaceous glands in the graft and insufficient oral hygiene; and the development of scars and discomfort in the donor site (10).

Palatal tissue offers the potential advantages of providing a firm, resilient tissue, with minimal contraction of the grafted area. Although palatal tissue is relatively easy to obtain at the time of surgery, the limited amount of tissue and the discomfort associated with donor site harvesting are the primary drawbacks. In areas where only a small localized graft is required, palatal tissue is usually adequate (12).

Full-thickness jugal mucosa harvested from the inner aspect of the cheek provides advantages like those of palatal tissue. This mucosa does not become keratinized, and often results in an inadequate denture-bearing surface in case of inadequate technique of suturing at the periostea (12).

The combination procedure of vestibule and floor-of-mouth extension technique effectively eliminated the dislodging forces of the mucosa and muscle attachments and provides a broad base of fixed keratinized tissue on the primary denture-bearing area.

The prosthetic field we obtained was very easy to dent even by the dentists who are not familiar to difficult scar tissue situations. Using less traumatic and non-expensive surgical techniques it is possible to have a nice prosthetic field. This field is then easily covered with total dentures thereby improving all functionally aspects (mastication, deglutition, speech and language). At the same time the, restoring the lower face vertical dimension, the facial aesthetic was improved.

Improving quality of life may be as important as eradicating the cancer and should be identified as a final treatment goal. Studies showed that even if oral function was not restored sufficiently, oral health-related quality of life improved with the placement of a maxillofacial prosthesis (5).

CONCLUSIONS

In our study we used less traumatic and non-expensive surgical techniques. The life quality of patients with oral SCC can be greatly increased using these techniques. Restoring occlusion with removable prosthesis, extraoral aspect and all the functions as mastication, phonation and phonation are improved. So, this allows the social reintegration of these individuals.

REFERENCES

NEW FINDINGS ON HUMAN PAPILLOMA VIRUS VACCINATION

Human papilloma virus (HPV) is an oncogenic virus, 13 of the 100 types being responsible for cancer of various sites: cervix, vulva, vagina, anus, penis, tonsils, and base of the tongue. Cervical cancer is the fourth most common cancer in women worldwide and is most commonly caused by HPV types 16 and 18. According to the World Health Organization, 58 countries have introduced anti-HPV vaccination into national immunization programs. Two vaccines containing purified viral proteins for HPV are currently available: the bivalent vaccine (types 16 and 18) and the quadrivalent vaccine (types 6, 11, 16 and 18). A recent study conducted by Huh WK and collaborators evaluated the efficacy of a new ninevalent vaccine that includes the types HPV 6, 11, 16, 18, 31, 33, 45, 52, and 58. The study group included 14,215 participants of whom 7,106 were vaccinated with ninevalent vaccine and 7,109 were immunized with quadrivalent vaccine. The results showed that the ninevalent vaccine had more than 97% efficacy against types 31, 33, 45, 52, and 58. Both vaccines have demonstrated similar efficacy against types 6, 11, 16 and 18. These results support the inclusion of the ninevalent vaccine in national immunization programs. This measure could increase to 90% prevention in cervical cancer (Huh WK, Joura EA, Giuliano AR, Iversen OE, de Andrade RP, Ault KA, Bartholomew D, Cestero RM, Fedrizzi EN, Hirschberg AL, Mayrand MH, Ruiz-Sternberg AM, Stapleton JT, Wiley DJ, Ferenczy A, Kurman R, Ronnett BM, Stoler MH, Cuzick J, Garland SM, Kjaer SK, Bautista OM, Haupt R, Moeller E, Ritter M, Roberts CC, Shields C, Luxembourg A. Final efficacy, immunogenicity, and safety analyses of a nine-valent human papillomavirus vaccine in women aged 16-26 years: a randomised, double-blind trial. Lancet. 2017 Sep 5. pii: S0140-6736(17)31821-4. doi: 10.1016/S0140-6736(17)31821-4. [Epub ahead of print])