Introduction

Tumors of the maxillofacial area (MFA) and neck are one of the most important health problems worldwide. In our country (Uzbekistan), approximately 84% of patients with MFA and neck tumors are referred to otolaryngologists, 9%–10% to stomatologists, and 5%–6% to oncologists. After referral from physicians, these specialists appropriately diagnose and evaluate the extent of the disease. However, doctors in the emergency room setting may not pay much attention to the related symptoms, and the complexity of the differential diagnosis may result in delayed diagnosis of head and neck tumors.

The best results, in terms of survival, are obtained through a combination of chemotherapy, radiation and surgical treatment. However, surgery on the MFA is often accompanied by complex and serious defects, which can result in disturbance of the functions of chewing, swallowing, respiration, and speech. Furthermore, cosmetic changes to the face may have a negative influence on the patients’ mental state, and their return to society is another major problem of MFA and neck tumors.

An effective method of early rehabilitation is correction of the defects with a prosthesis. In addition, orthopedic treatment is used along with reconstructive surgeries to adjust the prosthesis so that several related problems such as infection, immunity attenuation and/or unfitted braces can be prevented. Early intervention to address the defects is important because the early preparation of a prosthesis allows restoration of the lost functions and even improves the patient’s psychological condition.

In our institutes, early rehabilitation consists of a three-step reconstruction process, improvement in complex exercises, articulating gymnastics, mechanotherapy directed at the accurate alignment of the lower jaw, and restoration of the damaged functions of chewing, swallowing, and breathing. This program has been utilized to...
improve the quality of life (QOL) of patients with MFA and neck tumors. In the present study, we will demonstrate the results of our rehabilitation program.

**Material and methods**

In all, 134 patients from the clinics of the Republican Oncological Research Center and the Tashkent Institute of Postgraduate Medical Education, who had postoperative defects of the MFA due to tumors, were included in the present study. Traditional methods of clinical examination, surgical interventions, radiation therapy, chemotherapy, immunological reactivity and psycho-neurological body resistance, as well as methods of study of complex jaw prostheses were applied during the research.

These 134 patients were divided into three groups according to the locations of their defects: Group 1, patients with defects of the upper jaw with intact dentition of the remaining upper jaw; Group 2, patients with defects of the upper and lower jaw with partial defect of dentition of the remaining upper and lower jaw; and Group 3, patients with extensive defects of the upper jaw, facial soft tissues and full secondary adentia of the alveolar bone on the remaining upper jaw. This categorization allows us to plan the appropriate rehabilitation program for each patient.

**Results**

Among the 134 patients, 107 oncological patients with postoperative defects of the MFA were fitted with various types of prosthesis. Patients were both men and women, aged between 20 and 70 years of age, with the majority having Stage III or IV disease, while a small percentage had Stage I or II disease. The pathological diagnoses included cancer, sarcoma, melanoma, and other malignant tumors of the MFA and neck.

Thirteen patients had extensive defects of the upper jaw, facial soft tissues and full secondary adentia of the alveolar bone on the remaining upper jaw (Table 1). Consequently, these patients had defects of the right and left parts of the maxilla, large defects of the eye and soft tissues of the face, defects of the alveolar process of the mandible, and/or defects of the nose and ear skin. We found that the patients in Group 1 and 2 had the most favorable conditions for fixation of the removable prosthesis with obturators, while patients in Group 3 had unfavorable conditions for fixation and stabilization of the removable prosthesis with obturators on the soft tissues of their faces.

The indications for the complex prosthesis differed between patients because of various states of postoperative defects found in the patients after surgery. The plastic surgery operations were often prevented or delayed due to several reasons, including the disease itself, presence of scar tissue around the defect, infection, patient refusal, and delay in prosthesis preparation. Some of these factors could be addressed, such as patient refusal and/or delay in prosthesis preparation.

Nevertheless, orthopedic prostheses were used in the majority of patients to facilitate independent eating, and preservation of speech. In terms of the three-staged technique for prosthesis fitting, the preliminary prosthesis (defensive plate) was made during the initial treatment for the removal of the tumors, the prosthesis was made in the 10–15 days after the operation, and the final prosthesis was prepared approximately 26–30 days after the operation. Thus, our improved technique to prepare the complex prosthesis allows patients to return to their occupations 12–13 months after radical treatment. The patients showed a restoration of Karnofsky performance status to 80%–85%.

**Discussion**

In the present study, we have found several important results (Table 2). First, Group 3 had unfavorable conditions for fixation and stabilization of the removable
prosthesis. Because the patients in Group 3 had severe defects of the MFA, there is no argument that preparing prostheses for these patients is much more difficult than for other patients. However, confirming this result is quite important, because the patient categorization used in the present study is useful for identifying patients needing closer attention.

Second, some patients had difficulties undergoing early plastic surgeries due to several clinical and non-clinical reasons. In the future, these problems need to be prevented. Especially, the cause of patient refusal and the delay in preparing prostheses should be addressed because a quick improvement in the result would be expected. Third, we have found that the three-staged technique is practical and useful. Also, the QOL score recorded in the present study could be utilized as a base-line score for studies in the future.

In conclusion, the present study demonstrates that our rehabilitation program is useful for shortening the post-operative convalescent period and improving the QOL of patients with defects of the MFA due to cancer surgery.

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