



DOI:10.29013/EJBLS-25-3-7-11



## DENTAL IMPLANTATION IN GERIATRIC AND ONCOLOGIC PATIENTS: CLINICAL EVIDENCE AND A PROTOCOL-BASED APPROACH FOR COMPLEX REHABILITATION

**Tamar Baramidze**<sup>1</sup>

<sup>1</sup> Oncologic Science Research Center of Tbilisi, Konstantin Mardaleishvili  
Medical Center, BAU International University Batumi, Georgia

---

**Cite:** Baramidze T. (2025). *Dental Implantation in Geriatric and Oncologic Patients: Clinical Evidence and A Protocol-Based Approach For Complex Rehabilitation. The European Journal of Biomedical and Life Sciences 2025, No. 3.* <https://doi.org/10.29013/EJBLS-25-3-7-11>

---

### Abstract

**Objective:** To evaluate the clinical effectiveness and protocol-driven approach of dental implant rehabilitation in geriatric patients with a history of oncologic treatment, and to determine the feasibility and outcomes of implantation following extensive oral resections.

**Materials and Methods:** This study includes 53 elderly patients, including clinical cases of maxillary and mandibular cancer-related resections. All patients underwent combined oncologic treatment (surgery, chemotherapy, radiotherapy). Implants were placed no earlier than 6 to 12 months posttreatment depending on individual risk. Two detailed cases are presented.

**Results:** A total of 61 implants were placed with an overall peri-implantitis incidence of 11.4%. Full functional restoration of mastication, speech, and swallowing was achieved. No implant failures occurred during osseointegration, including in reconstructed graft sites.

**Conclusion:** Dental implantation is safe and effective in elderly patients, including those with extensive oncologic treatment histories. With careful planning and adherence to clinical protocols, implants significantly improve life quality and function. This study offers a guideline for safe rehabilitation in similar high-risk populations.

**Keywords:** *Dental Implants; Geriatric Dentistry; Oral Cancer; Maxillary Resection; Implant Rehabilitation; Bone Reconstruction; Prosthodontics*

### Introduction

Many elderly patients reject dental implants and opt instead for uncomfortable removable dentures, believing that age makes implant therapy inappropriate or unsafe. However, clinical experience and current research demonstrate that dental implantation is not only possible in older adults but can also be life-changing. Implants restore masticato-

ry function, eliminate discomfort, and help patients regain independence and social confidence. Although older patients often have systemic conditions, the absolute contraindications for dental implantation are rare.

In geriatric patients, implant-based rehabilitation contributes to improved bone health by halting bone resorption through the mechanical load transferred from implants

to the bone. It improves digestion and nutritional status, prevents muscle wasting or excessive weight gain, and restores the aesthetic harmony of facial features affected by tooth loss. These effects have a direct impact on the patient's physical and psychological well-being.

This article explores the role of dental implants in the rehabilitation of elderly patients, with a specific focus on those with a history of oral cancer. Two clinical cases are presented to illustrate the possibilities and challenges of implant therapy in this population. Furthermore, the article outlines a clinical protocol developed through experience and research that ensures the safe and effective use of implants in geriatric oncologic patients.

### Materials and Methods

Case 1 – Patient G. Sh., 68 years oldThe patient presented with complaints related to a tumorous lesion in the region of the right maxilla. Diagnosis confirmed squamous cell carcinoma of the right upper jaw. The patient underwent resection of the right maxilla, followed by the use of a surgical obturator and complex prosthodontic treatment. Three years postoperatively, the patient returned with complaints of a new lesion on the contralateral (left) side of the previously operated area. Computed tomography and cytological analysis confirmed a malignant process involving the left maxilla. Surgical intervention included resection of the left maxillary

half. Thus, the patient was left with a bilateral maxillary resection defect.

**Figure 1.**



The patient was discharged with a temporary obturator, which could not be securely fixed. A six-month healing period was allowed before implant-based rehabilitation was planned.

**Figure 2. Post-resection defect**



Two dental implants were placed: one in the residual bone fragment on the left side, and one pterygoid implant on the right.

**Figure 3. Implant placement plan)**



After osseointegration, two metal-ceramic crowns were fixed on the implants. These crowns were used as anchors for a removable maxillary prosthesis. (Figure 4 & 5 – Prosthesis fabrication and fixation) A complete removable denture was fabricated for the mandible, resulting in full dental arch

**Figure 4.**



restoration and proper occlusion. (Figure 6 – Final result).

Following treatment, the patient regained masticatory, swallowing, and speech functions and was fully rehabilitated physically, functionally, and socially.

Case 2 – Patient J. T., 61 years old

**Figure 5.**



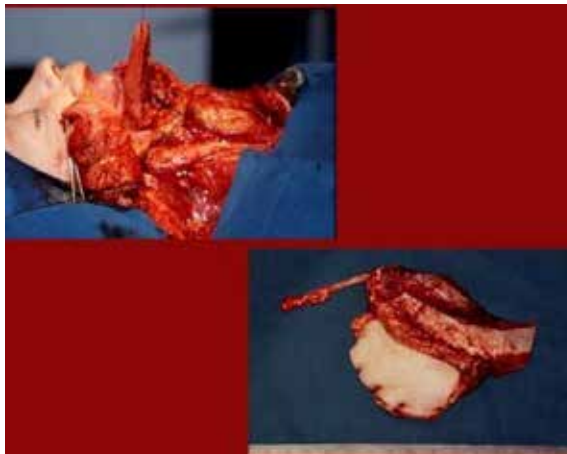
The patient was diagnosed with squamous cell carcinoma of the oral mucosa, with tumor spread involving the tongue and mandibular bone. (Figure 6 – Initial presentation) Treatment included combined

**Figure 6.**



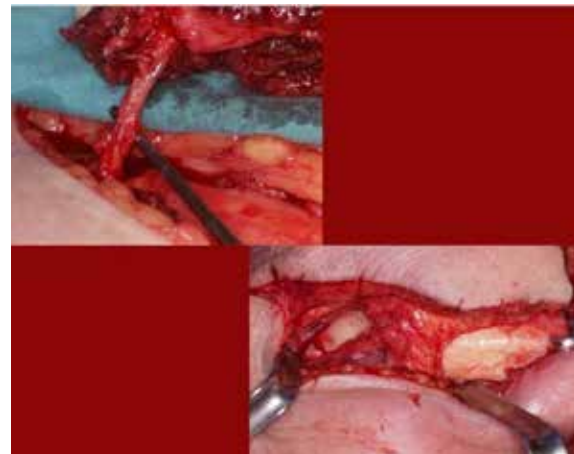
chemoradiotherapy followed by surgery. The surgical procedure involved resection of soft tissues and segmental resection of the mandible, along with functional neck dissection involving removal of lymph nodes.

**Figure 7.**



(Figure 7 – Surgical resection and neck dissection) For mandibular reconstruction, a composite free flap from the iliac crest (osteomyocutaneous flap) was used, with the vascular pedicle anastomosed to the superior

**Figure 8.**

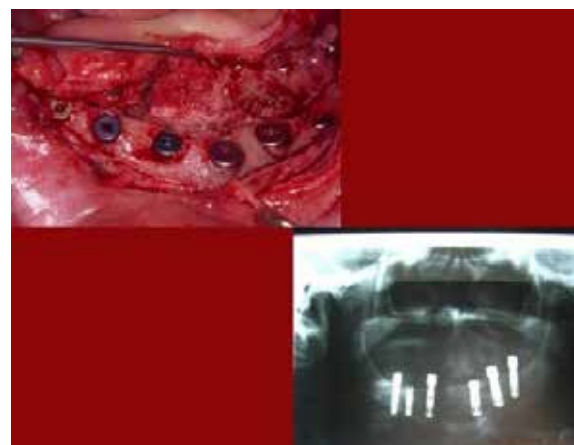


thyroid artery and the internal jugular vein. (Figure 8 – Free flap reconstruction) The bony graft was fixed to the residual mandibular segments and to a titanium mandibular reconstruction plate. (Figure 9 – Fixation)

**Figure 9.**



**Figure 10.**



After one year and five months, six dental implants were placed: both in the native and grafted mandibular bone. (Figure 10 – Implant placement) Following upper complete denture fabrication, full dental arch and occlusion were restored. (Figure 11 – Final prosthetic outcome).

**Figure 11.**



The patient regained masticatory, speech, and swallowing functions, and was rehabilitated physically, functionally, and socially.

### Results and Discussion

In both described clinical cases, the process of osseointegration proceeded without complications, despite the patients' advanced age and prior cancer treatment, including chemoradiotherapy. These patients belonged to the geriatric group and had undergone aggressive oncological treatment involving surgery, radiation, and chemotherapy, all of which can significantly affect bone healing and implant success.

Out of 53 patients treated in our clinic, 61 dental implants were placed in the upper and lower jaws after at least six months from the completion of cancer treatment. The incidence of peri-implant complications was low: only 7 implants (11.4%) showed peri-implant

pathology. Among these, peri-implantitis developed in two cases (3.27%) prior to prosthodontic rehabilitation, while in five cases (8.19%) peri-implant inflammation occurred one and a half to two years after prosthetic loading.

Based on clinical experience and current international evidence, our clinic has developed a protocol for implant rehabilitation in elderly oncologic patients, including specific timelines and precautions depending on resection type and location.

### Conclusion

Dental implantation in geriatric patients, including those with a history of oncologic disease and aggressive cancer therapy, is not only feasible but often essential for restoring vital functions such as chewing, swallowing, and speech. Age alone should never be considered a contraindication for implant-based rehabilitation.

Our clinical experience demonstrates that, with proper patient selection, interdisciplinary evaluation, and precise surgical and prosthetic planning, dental implants can successfully integrate even in compromised anatomical and systemic conditions. Implant rehabilitation significantly improves quality of life, nutritional status, facial aesthetics, and social engagement in elderly patients.

Particularly in oncologic cases, where extensive resections and adjuvant therapies are common, implant-supported prosthetics can be the only reliable method for functional restoration. The clinical cases and outcomes presented in this study affirm that dental implants play a vital role in the physical, functional, and psychosocial rehabilitation of elderly patients.

### Refferances

- Albrektsson, T., & Wennerberg, A. (2004). Oral implant surfaces: Part 1-review focusing on topographic and chemical properties of different surfaces and in vivo responses to them. *International Journal of Prosthodontics*, – 17(5). – P. 536–543.
- Barasch, A., Safford, M. M., & McAnulty, K. (2009). Dental management of patients irradiated for head and neck cancer. *Oral Oncology*, – 45(10). – P. 879–885. URL: <https://doi.org/10.1016/j.oraloncology.2009.04.008>
- Bornstein, M. M., Chappuis, V., von Arx, T., & Buser, D. (2014). Dental implants in the elderly population: A systematic review and meta-analysis. *Clinical Oral Implants Research*, – 25(5). – P. 498–510. URL: <https://doi.org/10.1111/clr.12274>



- Chambrone, L., Mandia, J., Shibli, J. A., Romito, G. A., & Abrahao, M. (2013). Dental implants installed in irradiated jaws: A systematic review. *Journal of Dental Research*, – 92(12\_suppl), – P. 119S-130S. URL: <https://doi.org/10.1177/0022034513504947>
- de Lima Ferreira, F. V., Vasconcelos, C. F., de Sá, A. C. R., & Silva, M. A. G. (2021). Osteoradionecrosis of the jaw: A current overview of the literature. *Journal of CranioMaxillofacial Surgery*, – 49(6). – P. 542–550. URL: <https://doi.org/10.1016/j.jcms.2021.01.005>
- Javed, F., & Romanos, G. E. (2013). Impact of implant loading protocols on periimplant soft and hard tissue healing: A systematic review. *Journal of Periodontology*, – 84(8). – P. 1099–1109. URL: <https://doi.org/10.1902/jop.2012.120377>
- Moy, P. K., Medina, D., Shetty, V., & Aghaloo, T. L. (2005). Dental implant failure rates and associated risk factors. *International Journal of Oral and Maxillofacial Implants*, – 20(4). – P. 569–577.
- Penarrocha-Diago, M., Aloy-Prosper, A., Peñarrocha-Oltra, D., & Peñarrocha-Diago, M. (2014). Survival of dental implants in irradiated patients: A systematic review. *Medicina Oral, Patología Oral y Cirugía Bucal*, – 19(5). – e540-e544. URL: <https://doi.org/10.4317/medoral.20054>
- Pippi, R. (2019). Post-surgical complications following oral surgery procedures: A retrospective study. *Oral and Maxillofacial Surgery*, – 23(2). – P. 175–182. URL: <https://doi.org/10.1007/s10006-018-0751-9>
- Schiegnitz, E., & Al-Nawas, B. (2016). Dental implants in medically compromised patients: A systematic review and meta-analysis. *Clinical Oral Implants Research*, – 27(5). – P. 523–544. URL: <https://doi.org/10.1111/clr.12606>

submitted 10.07.2025;  
accepted for publication 24.07.2025;  
published 31.10.2025  
© Baramidze T.  
Contact: [Journal.jdr@sagepub.com](mailto:Journal.jdr@sagepub.com)