

## EXTRAORAL PHOTOBIOMODULATION THERAPY FOR RADIODERMATITIS IN HEAD AND NECK CANCER PATIENTS: A CASE SERIES

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### INTRODUCTION

Radiodermatitis affects up to 95% of head and neck cancer (HNC) patients undergoing radiotherapy (RT). It can cause symptoms such as pruritus, discomfort, burning sensations, secondary infections, and pain, significantly impairing quality of life and treatment outcomes.

### METHODS

A case series was conducted to assess the feasibility of treating radiodermatitis lesions using extraoral photobiomodulation therapy (ePBMT) with a super-pulsed diode laser (Gemini®, Azena Medical, LLC, distributed by Ultradent Products, Inc.), operating at dual wavelengths of 810 nm and 980 nm.



### RESULTS

The study included female patients with a mean age of 55.7 years. Diagnoses were oropharyngeal squamous cell carcinoma (2 cases, 50%), laryngeal squamous cell carcinoma (1 case, 25%), and nasopharyngeal squamous cell carcinoma (1 case, 25%). The mean radiation dose administered was 54 Gy to the cervicofacial drainage area. Three patients (75%) developed grade 3 radiodermatitis, requiring temporary discontinuation of RT, and one patient (25%) was hospitalized due to severe pain associated with radiodermatitis. Pain scores averaged 6 (range 4-10) on the visual analog scale. Daily ePBMT sessions were administered to the cervical skin region at five points along the neck ( $1.0\text{ W} \times 30\text{ s} = 20\text{ J/cm}^2$  per point). Following ePBMT, radiodermatitis improved from grades 2-3 to grade 1, with pain scores decreasing to a mean of 2. On average, 5.5 sessions (range 4-8) were required for significant improvement. All patients after ePBMT finished the proposed radiotherapy protocol.

#### Case 01:



D1



D2



D3



D4



D5

### RESULTS

#### Case 02



D1



D2



D3



D5

#### Case 03



D1



D3



D5



D8



### CONCLUSIONS

ePBMT was effective in managing radiodermatitis in HNC patients undergoing RT, significantly reducing pain and enhancing wound healing. Further studies are needed to confirm these findings and optimize treatment protocols.

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