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# Adjuvant use of Phtalox in sport lip injury treatment

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## CASE REPORT

A 25-year-old patient, systemically healthy and taking no medication, attended the Periodontics sector of the Bauru School of Dentistry (USP) 24 hours after suffering trauma to the soft tissue (internal region of the labial vermillion) as a result of the practice of Flag Football (Figure 1).

The clinical examination revealed a deep wound caused by an elbow that hit the athlete's mouth, and he reported using a mouth guard. Due to the extent and depth of the injured area, the region was cleaned with Phthalocyanine Derivative 0.12% (PHY) and Hydrogen Peroxide 3% (Figure 2). Then, interrupted simple sutures were made at the edges of the wound with absorbable polyglactin suture (Vicryl) to close the wound by primary intention. Photobiomodulation was also performed with a low-intensity 660 nm red laser (Laser Twin Flex Evolution MMOptics São Carlos – Brazil) at 30 J/cm<sup>2</sup> for 30 s each point and 40 mW power, to aid in the healing process. There were 4 sessions of laser therapy, one every 48 hours at 4 equidistant points around the wound (Figure 3). The patient was instructed to perform mouthwash with PHY twice a day for 7 days and prescription of Nimesulide 100 mg every 12 hours for four days. The sutures were removed after seven days,

with the wound occluded and a very satisfactory scarring aspect (Figure 4). The patient reported discomfort in the area only on the day of the procedure, noting a slight swelling. In the subsequent days, the swelling has already decreased and no complaints of pain from the second postoperative day onwards. No adverse effects have been reported with the use of PHY mouthwash. In the 5-month postoperative control, the region was well healed and without loss of local sensitivity (Figure 5).



Figure 1: Inner region of the labial vermillion 24 h after injury.

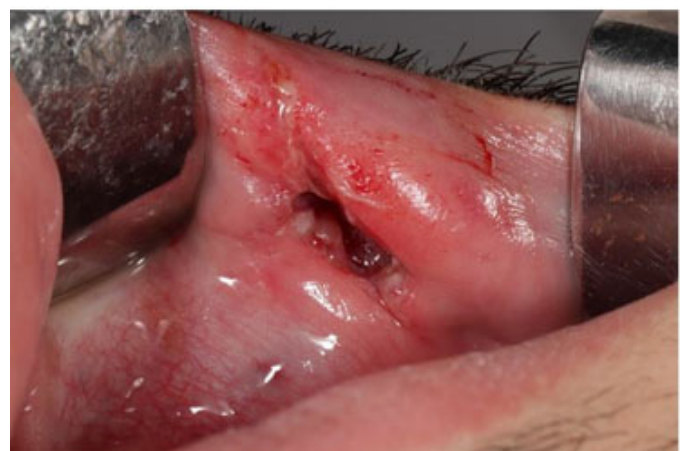


Figure 2: Aspect after cleaning the region with Phthalocyanine Derivative 0.12% (PHY) and Hydrogen Peroxide 3%, showing the depth of the lesion.

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Figure 3: First photobiomodulation session immediately after suturing.



Figure 4: Aspect of the wound without the sutures after 7 days.

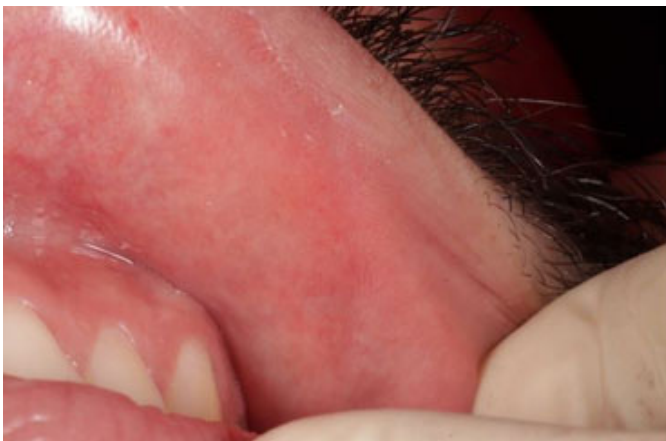


Figure 5: Follow-up of the area after five months.

## DISCUSSION

A mouthguard is a device used to prevent or reduce trauma to the teeth, gingival tissue, lips, and jaw during sports activities. The device is used in the upper arch separating the maxillary and mandibular dentition, with the function of protecting the teeth from the surrounding

soft tissue, absorbing, or redistributing shock. The use of mouthguards is recommended for those who participate in sports where there is a risk of orofacial trauma, as they may also play a role in preventing and reducing concussions [1]. Even with its use, as in the presented clinical case, lesions in the labial mucosa can occur. It was found that injuries to the lips of Flag Football athletes are commonly reported, showing that the use of a mouthguard is essential for this sport [2].

Phthalocyanine Derivative 0.12% has shown potential in favoring healing. A recent study found that, at the clinically used concentration (0.12%), PHY was less cytotoxic compared to chlorhexidine, in addition to not negatively interfering with repair in the wound healing assay [3]. Furthermore, clinically, the mouthwash with phthalocyanine favored the healing of ulcers in the oral mucosa of patients affected by COVID-19 [4].

It is known that wound decontamination is essential to allow an adequate healing process. The antibacterial action of this PHY has also been reported in the literature, also showing antibiofilm, antifungal, and antiviral action [5–7]. In addition, the association with photobiomodulation improved healing and reduced postoperative discomfort. This approach is successfully used to stimulate and accelerate wound healing in humans. Healing after trauma involves several biological events that can be improved with the use of laser, such as increased motility of human keratinocytes, tissue neovascularization, increased proliferation and maturation of fibroblasts [8, 9].

The clinical protocol for the use of the combination of photobiostimulation and PHY mouthwash suggests a favorable therapeutic option in the healing of traumatic soft tissue injuries. However, more clinical studies with a larger number of samples are needed to demonstrate this beneficial action on healing.

## CONCLUSION

The use of PHY mouthwash associated with photobiostimulation was effective in healing the traumatic wound in the reported case.

**Keywords:** Photobiomodulation, Phthalocyanine, Wound healing

### How to cite this article

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## Author Contributions

Caique Andrade Santos – Conception of the work, Design of the work, Acquisition of data, Analysis of data,

Interpretation of data, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Rafael Sponchiado Cavallieri – Conception of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Fabiano Vieira Vilhena – Conception of the work, Acquisition of data, Analysis of data, Interpretation of data, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

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## Guarantor of Submission

The corresponding author is the guarantor of submission.

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## Consent Statement

Written informed consent was obtained from the patient for publication of this article.

## Conflict of Interest

Authors declare no conflict of interest.

## Data Availability

All relevant data are within the paper and its Supporting Information files.

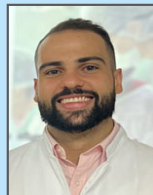
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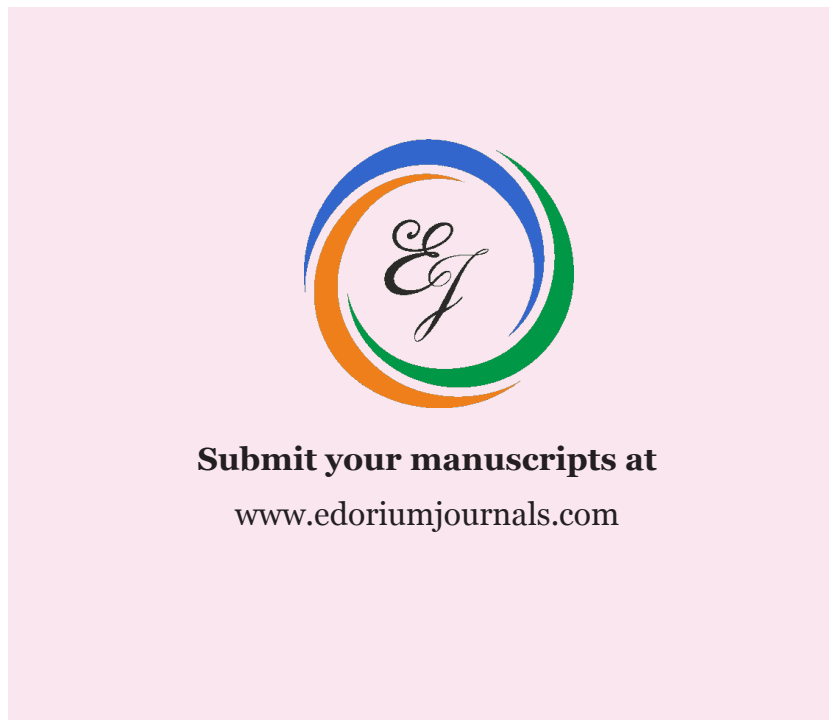
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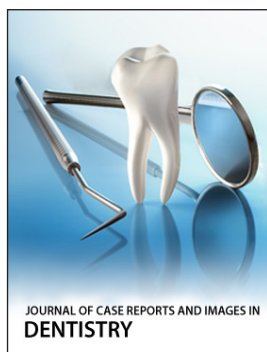
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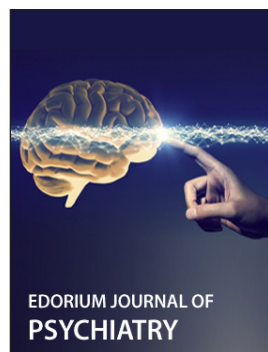
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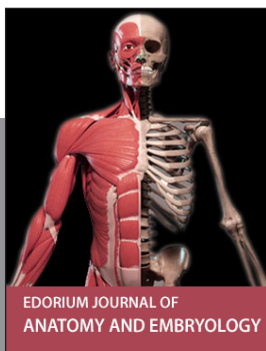
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