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IP Annals of Prosthodontics and Restorative Dentistry

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## Case Report

# Prevention of soft and hard tissue injuries from implant attachments by using an attachment retained soft-hard tissue guard

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### ARTICLE INFO

#### Article history:

Received 05-10-2022

Accepted 18-10-2022

Available online 24-11-2022

#### Keywords:

Dental Attachments

Dental Implant Attachments

Biological Complications

Occlusal Guard

Soft Tissue

### ABSTRACT

Dental attachments, including dental implant attachments, when not in use can cause biological complications intraorally like soreness of lips, the floor of the mouth, tongue, or cheeks. The article describes an appliance designed for patients experiencing these complications. The described soft-hard tissue guard is newly designed and to be worn by the patient when attachments are not in use for retaining a prosthesis. The aim of this article is to describe the process of fabrication, advantages, disadvantages, and requirements of an attachment retained soft-hard tissue guard by means of a case report.

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## 1. Introduction

Dental implant attachments are very commonly used to increase the retention and stability of removable prostheses. These implant attachments with all of their advantages may, at times, come with their own problems. The most common problem with the attachments is loss of retention due to regular wear and tear of the components.<sup>1</sup> Another the wear of the attachments themselves.<sup>2</sup>

Some of the complications observed occur when the retained prosthesis is not in place and the attachments are not being used, particularly when there is an opposing dentition or fixed prosthesis. This situation may lead to damage to the attachment as well as damage to the opposing dentition or prosthesis. Other common problems observed occur when the patient has overactive perioral musculature, shallow floor of the mouth and prominent sublingual salivary glands.

The soft tissue overlays the attachments and leads to soreness or ulceration. This may happen due to active

musculature or when tissue gets caught between attachment and opposing dentition or prostheses.

The authors designed the implant attachment retained soft-hard tissue guard to protect the soft and hard tissues from the attachments when the prosthesis is not in place. The design comprised of an acrylic base, extended enough on the ridge but staying with-in the physiological parameters. The size was determined big enough so it cannot be accidentally ingested. The acrylic base would retain with the attachments compatible to the attachment abutment over the implants.

The following patient presented for the fabrication of a mandibular implant retained overdenture. On clinical exam, the lower lip was sore around the abutments (Locator® Attachment System, Zest Dental solutions, Carlsbad, CA, USA, Figure 1). According to the patient, the soreness was present all the time. Extraoral examination revealed a hyperactive lower lip. (Figure 2)

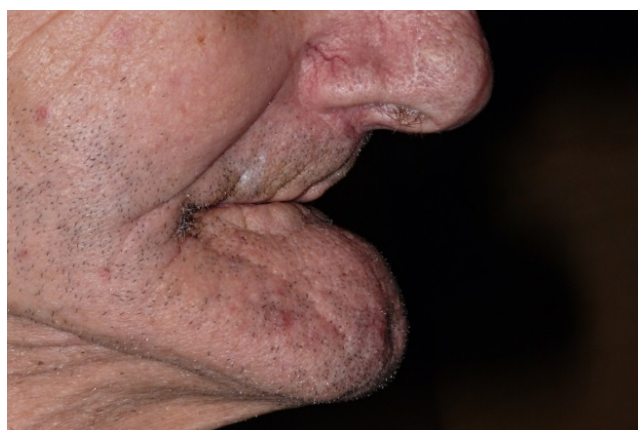
An attachment retained soft-hard tissue guard was planned.

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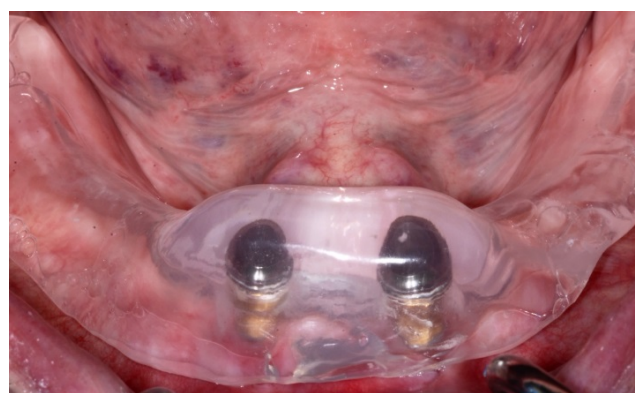
**Fig. 1:** Soreness in the lower lip around implant abutment.



**Fig. 2:** Hyperactive lower lip.



**Fig. 3:** Soft and hard tissue guard with metal housings and inserts.



**Fig. 4:** Intraoral placement of Soft and hard tissue guard over the abutments using the attachments.

### 1.1. Technique

1. Make an abutment level impression and fabricate the master cast using attachment analogs.
2. Design an attachment retained guard by marking with colored pencil and demarcating the extension of the appliance.
3. Complete the wax-up and process the guard in clear autopolymerizing acrylic resin (Hygenic Orthodontic Resin, Coltene).
4. Incorporate metal housings (Female component of the attachments) into the guard during processing (Figure 3). This step may also be achieved as a chairside, direct technique.
5. Use pressure indicating paste (PIP, Mizzy Inc., Cherry Hill, NJ, USA) to check the pressure points and adjust the guard during the delivery appointment. Assure a light tissue contact and adjust overextensions of the flanges. (Figure 4)
6. Give home care instructions to the patient.

## 2. Discussion

Implant related complications are unavoidable. However, careful planning can minimize the effects of complications on mechanical and biological components. The tissue soreness because of overlaying tissue is not uncommon. Prevention of trauma from opposing dentition has been documented by making occlusal guard over the opposing dentition.<sup>3,4</sup> The tissue trauma due to implant attachments is not well reported. One way the tissue injury can be mitigated is by providing the patient with an attachment retained soft-hard tissue guard. An appliance made in silicon soft liner has been described in the past.<sup>5</sup> However, a smaller size can be a choking hazard and the retention of soft liner over the attachment abutments is not long term.

An implant attachment retained soft-hard tissue guard provides multifold protection to:

1. Lips and labial vestibular tissues.
2. Floor of the mouth, including the sublingual glands.
3. Tongue getting caught between attachment and opposing dentition/fixed prosthesis.
4. Opposing dentition/prostheses from wear, chipping or fractures.

#### Other Uses

1. Protects attachments from opposing prostheses or dentition and vice-versa
2. Can be used as a training device for patients prone to gagging.
3. Maxillofacial prosthodontics postsurgical tissue protection eg. Mandibulectomy,<sup>6</sup> Posterior maxillary resection.
4. Can be used as a surgical stent to protect the surgical site in situations such as maxillary torus removal when implants are present. Other surgical uses can be after vestibuloplasty to protect the graft if used and to maintain vestibular depth during the healing process.
5. The prosthesis can be used as a carrier for topical medications in edentulous patients with lesions associated with mucosal pemphigoid and other autoimmune oral conditions.

#### Requirements

1. Assure minimum tissue contact.
2. Smooth and polished cameo surface.
3. Extension enough to prevent accidental ingestion.
4. Timely monitoring of retention by the patient and dentist.

### 3. Summary

The attachment retained soft-hard tissue guard is a simple solution to mechanical and biological complications due to mechanical prosthetic components. This easy to fabricate guard provides several advantages to protect soft and hard tissue/prostheses in various clinical scenarios.

### 4. Source of Funding

No financial support was received for the work within this manuscript.

### 5. Conflict of Interest

None declared.

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**Cite this article:** Dhingra A, Vegh G, Taylor T. Prevention of soft and hard tissue injuries from implant attachments by using an attachment retained soft-hard tissue guard. *IP Ann Prosthodont Restor Dent* 2022;8(4):225-227.