When Toothbrush Troubles!!!! Toothbrush Trauma - A Case Series

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Abstract: Toothbrushing forms a vital part of the daily oral hygiene program and toothbrush is the most widely used oral hygiene aid. However wrong or improper toothbrushing could result in trauma to the soft and hard tissues of the oral cavity. This article presents a case series of toothbrush trauma and its management following non-surgical intervention.

Keywords: Toothbrush, trauma, injury, toothbrushing, gingival

1. Introduction

Plaque control refers to the preventive measures aimed at removing dental plaque and preventing its recurrence. To maintain a healthy oral environment, most of the preventive measures are directed towards elimination of the plaque and minimising its effect.

Toothbrush is the principal mechanical tool and the most widely used oral hygiene aid. Toothbrushing is a vital part of the daily oral hygiene program. The basic purpose of toothbrushing is to remove bacterial plaque from the tooth surfaces. However, if brushing is not done judiciously it could result in trauma to the soft and hard tissues of the oral cavity.

This article describes a case series of trauma to the soft tissues due to vigorous toothbrushing which healed uneventfully following a non-surgical intervention.

2. Case 1

A healthy 24 year old young woman presented to the Outpatient Department of Periodontics, Nair Hospital Dental College complaining of bleeding gums in the lower front jaw region. The patient gave history of accidentally injuring the gums while brushing her teeth vigorously 1 week back. Following the incident, the patient had stopped brushing her teeth using a toothbrush due to fear. On examination 2×1cm oval laceration was present with respect to the free and attached gingiva and alveolar mucosa of 31 exposing the underlying connective tissue. The site was tender. No active bleeding was observed. The tooth 31 suffered most damage because it was positioned buccally as compared to the other lower anteriors. The patient was anxious regarding the injury.

Scaling and root-planing was done using topical local anaesthesia with respect to that site. The wound was copiously irrigated with an antiseptic solution. The patient was prescribed analgesics, antibiotics, topical 2% Chlorhexidine gel and Povidone iodine gargles. The wound was not sutured. The use of sutures would have caused further damage and impaired healing. Oral hygiene instructions were given and the Modified Bass brushing technique[1] was demonstrated to the patient. The patient was instructed to change the toothbrush after every 3 months[2] and not wait till the bristles of the toothbrush frayed with use. The injury had occurred due to overzealous toothbrushing and negligence by the patient. On re-examination after 1 week, the wound edges had healed and spontaneously re-approximated.

The patient returned for follow-up twice in a month. There was absence of scar formation and satisfactory healing was observed.
Photograph showing traumatic toothbrush injury (frontal and side views)

Post-operative photograph showing satisfactory healing

3. Case 2

A healthy 21 year old boy presented to the Outpatient Department of Periodontics, Nair Hospital Dental College with the chief complaint of ulcer in the lower front jaw region. The patient gave history of vigorous toothbrushing in the posterior and superior direction after which he suffered burning sensation in the same region. On examination an oval ulceration was present with respect to the attached gingiva and alveolar mucosa of 32 and 33.

Ultrasonic scaling was done after applying topical local anaesthesia with respect to that site. Oral hygiene instructions were given and the Modified Bass brushing technique[1] was demonstrated to the patient. The patient was prescribed topical local anaesthesia gel for relief from the burning sensation related to the ulceration. On re-examination after 1 week, satisfactory healing was observed.

4. Case 3

A healthy 40 year old female patient was referred to the Department of Periodontics for oral prophylaxis. The chief complaint of the patient was replacement of lower front missing teeth. During the check-up, a 7×3cm oval ulceration was noted in the vestibular region involving the attached gingiva and alveolar mucosa with respect to 34,35,36 and 37 teeth. On inquiry regarding the site, the patient gave history of slippage of toothbrush in the vestibular region while brushing her teeth 2 days ago. After the injury, the patient gave history of application of ghee over the site and thought that it would heal on its own. Due to persistent burning sensation in that area the patient preferred chewing food from the opposite side.

Thorough scaling and root-planing was done after applying topical local anaesthesia over that site. The wound was copiously irrigated with an antiseptic solution. Oral hygiene instructions were given and the Modified Bass brushing technique[1] was demonstrated to the patient. The patient was prescribed topical local anaesthesia gel for relief. The patient was recalled twice in a month for follow-up. On re-examination, satisfactory healing was noted and then the patient was referred further for replacement of missing teeth.
perforation of soft tissues but the toothbrush has already
penetratin
Blunt injury

Injuries caused by a toothbrush may be classified as below
- Blunt injury – When there is no mucosal break or perforation
- Penetrating injury – When there is deep laceration or perforation of soft tissues but the toothbrush has already
been extricated from the wound at the time of presentation to the hospital

Impalement injury – When the toothbrush is impacted within
the soft tissues due to fish-hooking of bristles
Embedded injury – When the head of toothbrush breaks and
is retained deep within the tissues

These injuries do not imply that one type of injury may be
more severe than the other. Local management of the wound
is very essential depending on the type of injury to avoid the
complications.

6. Conclusion

Daily chores like toothbrushing can cause injuries to the oral
cavity. In case of such injuries, it is important to report to the
hospital however minor the injury may seem to avoid
complications. The combined effect of soft to medium
toothbrushes, low abrasive toothpastes and better patient
education about less aggressive and right brushing technique
will contribute to less concern regarding traumatic gingival

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5. Discussion

Toothbrushing is the gold standard of mechanical plaque
control. However, wrong or improper toothbrushing can be
considered traumatic to the gingiva. It has been found to
result in moderate to severe injuries to the gingiva in many
cases[3]. Vigorous tooth-brushing has been traditionally
linked with gingival abrasion and recession but research has
been unclear due to the multi-factorial etiology of gingival
recession[4]. Gingival recession is a fairly common
phenomenon[5],[6] whereas gingival abrasion is not a
common finding[3].

Most gingival abrasions were located in the mid-gingival
aspect and were mostly defined as small to medium whereas
large abrasions were found to be relatively uncommon[3],[7].

The optimal force to be applied while toothbrushing is
between 300 to 400g. Also, many authors concluded that no
correlation has been found between force and efficacy of
toothbrushing[8],[9]. Factors other than force like brushing
technique, frequency and duration have been found to be
equally important[12].

Injuries caused by a toothbrush may be classified as below
(on the basis of clinical presentation alone)[10]:
- Blunt injury – When there is no mucosal break or
perforation
- Penetrating injury – When there is deep laceration or
perforation of soft tissues but the toothbrush has already
been extricated from the wound at the time of presentation to the
hospital

Photograph showing traumatic toothbrush injury (side view)

Post-operative photograph showing satisfactory healing

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