Degloving Injury of the Mandibular Mucosa Following an Extreme Sport Accident: A Case Report

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ABSTRACT

The increasing popularity of high-risk extreme sports such as acrobatic biking, mountain biking, skateboarding, or rollerblading is becoming a notable cause of maxillofacial injuries. Dentists should, therefore, be familiar with the presentation and management of uncommon maxillofacial injuries as a result of these extreme sports. The purpose of this article was to detail a case report of a 7-year-old male with a degloving injury of the mandibular mucosa following an extreme sport accident and to present a description of the patient's multidisciplinary management and follow-up. (J Dent Child 2005;104-106)

KEYWORDS: DEGLOVING INJURY, MANDIBLE, MAXILLOFACIAL INJURY

In young children, traumatic injuries involving the oral cavity often result from falls or collisions with stationary objects.[1] In older children and adolescents, sports-related accidents, motor vehicle accidents, and assaults frequently result in injury to oral structures.[2,3] Lacerations to the lip account for 62% of these injuries, followed by injuries to the oral cavity's other soft tissue structures.[1] Injuries of the teeth and bones collectively account for only about 22% of the total injuries.[2]

In degloving injuries, external forces shear the skin from the underlying tissues, usually in a tissue plane between the subcutaneous fat and deep fascia.[4-6] This type of injury is found with a high frequency in the upper and lower extremities.[7-9] Severe degloving injuries are classically associated with roller-type machinery such as conveyor belts or when a vehicle's tire runs over a limb.[10] Other causes of degloving injuries include escalator injuries[11] or degloving injuries due to oblique blows to the skin by a blunt object.[12] Less severe, though more common, is the degloving injury seen in elderly patients who strike their legs against a low object such as a table or a bus platform.[7] The skin is degloved between the fixed obstacle and the moving limb. In elderly patients with thin fragile skin, healing can be delayed and morbidity prolonged if the injury is not recognized in a timely fashion.[13]

The increasing amount of leisure time in today's society allows more patients to become involved in sports.[4] Nowadays, extreme sports such as acrobatic and mountain biking, skateboarding, and rollerblading are becoming more common among children and adolescents.[4] This case report describes a degloving injury of the mandibular alveolar mucosa. While partaking in acrobatic biking in a park with some friends, the patient in question sustained trauma when he was challenged to perform a "high-jump."

CASE REPORT

A 7-year-old male presented at the emergency department of a local community hospital, having sustained trauma to the maxillofacial region after falling from his bicycle while trying to perform an acrobatic stunt approximately 1 hour earlier. The patient's neurological and cervical spine status was cleared both clinically and radiographically by the emergency room physician. Extraoral radiographs were obtained to rule out the presence of facial bone fractures (Figures 1a, 1b, and 1c). The assessment performed by the emergency room physician at the local community hospital revealed an intraoral injury,

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Figure 1a. Postero–anterior view of the maxillofacial complex, showing no signs of facial bone fracture.

Figure 1b. Water's view confirming no fractures in the maxillofacial complex.

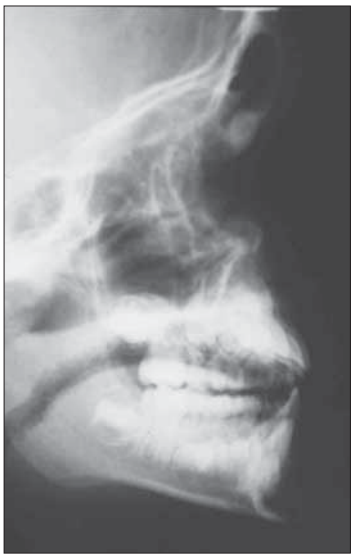

Figure 1c. Lateral cephalometic view showing no signs of facial bone fracture.

which was thought to require immediate attention.

Since the local community hospital has no access to pediatric dentists, arrangements were made to transfer the patient to The Hospital for Sick Children to obtain a more complete evaluation and treatment by the Dental Department. One hour later, the patient presented to the Emergency Department at the Hospital for Sick Children, Toronto, Ontatio, Canada, and a thorough evaluation was performed by the emergency room fellow who confirmed the patient's normal neurological and cervical spine status. A consultation with the dental department was requested.

Upon extraoral examination of the patient, small lacerations around the tip of the nose and the border of the lip on the left side were noted. The intraoral exam revealed a deep laceration of the mandibular alveolar mucosa approximately 1.0 cm by 1.5 cm inferior to the gingival margin, extending across the midline from the area mesial to the primary canine teeth (Figure 2). The function of cranial nerves V and VII were found to be normal. The mandibular bone was exposed, and the wound was covered with much debris consisting of dirt and grass. No fractures were noted on direct examination, which was confirmed by radiographic images. There were no dental fractures of the teeth. No mobility of the primary or permanent dentition was noted. The surrounding mucosa was swollen with no signs of necrosis or infection. A discussion took place between the dentist, the emergency room fellow, and the parents regarding sedation to facilitate proper wound debridement.

Figure 2. Extension of the degloving injury inflicted to the mandibular mucosa involving the area between both primary canines.

Figure 3. 3–0 polypropylene sutures loosely approximating the wound edges.

After IV access was established, the patient was sedated with 0.6 mg of atropine, 2 mg of midazolam, and 25 mg of ketamine by the emergency room fellow. The patient was carefully monitored by the emergency room nursing personnel at all times and monitored with a pulse oxymeter. When a satisfactory level of sedation status was achieved, the dentist performed a thorough wound inspection followed by copious normal saline irrigation to remove all debris. The wound margins were easily approximated and sutured with a 3-0 polypropylene suture (Figure 3). The patient emerged from the sedation uneventfully and was discharged to his home with a regimen of 500 mg of amoxicillin 3 times a day for 10 days, as recommended by the emergency room fellow. Parents were advised to encourage patient to perform warm saline rinses, as tolerated. A follow-up appointment was scheduled for the following week.

During the follow-up examination, the patient had minimal pain and some tenderness to palpation. Visual examination of the wound revealed that the alveolar mucosa was healing as expected with no signs of infection (Figure 4). The sutures were removed, and the patient was referred for follow-up and routine dental recall visits to his family dentist. Prior to the patient's discharge, the use of adequate headgear with facial shielding and the use of a mouthguard were discussed.

Figure 4. At 1 week follow-up, after removal of sutures, the alveolar mucosa shows signs of healing.

DISCUSSION

Degloving injuries of the oral mucosa are not common.[4-6] There is a previous report in the literature of a degloving injury of the mental protuberance acquired during a skiing practice.[4] In that case, healing occurred by secondary intention because delayed presentation and the presence of superimposed infection contraindicated primary closure. This healing pattern was also reported in 2 cases following bicycle accidents.[6] In the present case, the almost immediate presentation and absence of infection made primary closure possible.

Currently, a wide variety of suture materials are available. In the present case, polypropylene was used since it was the material ready available in the emergency room; however, resorbable materials would have been preferred in this case. Sutures were placed loosely to allow wound drainage during healing. Antibiotics were prescribed to avoid postoperative soft tissue infection or osteomyelitis due to bone exposure. The dose was determined by the emergency room fellow, following the protocol used in the Hospital for Sick Children. Patients with this type of injury must have their tetanus vaccination status verified and, if required, tetanus toxoid or tetanus immune globulin must be administered.

Oral hygiene and rinsing with normal saline should be encouraged during healing. The present case resolved without complications.

Advising the patient to use adequate protective headgear with facial shielding as well as mouthguards when performing extreme sports is an important preventive measure that every dental practice should recommend to patients and families who undertake extreme sporting activities.

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