http://dx.doi.org/10.1590/1981-86372021002220190095

Important aspects during advanced lingual laceration management: report of 2 cases

Aspectos importantes para o manejo das lacerações complexas da língua: relato de 2 casos

Angélica A. Faria de **MACHADO**[1] https://orcid.org/0000-0001-7941-0560

Soraya da Silva **OLIVEIRA**[1] https://orcid.org/0000-0001-7466-7797

Jonas Dantas **BATISTA**[1] https://orcid.org/0000-0001-5649-6883

Lair Mambrini **FURTADO**[1] https://orcid.org/0000-0002-6418-4932

Flaviana Soares **ROCHA**[1] https://orcid.org/0000-0002-6759-2229

ABSTRACT

Intraoral injuries affect the stomatognathic system, creating difficulties in mastication and speech articulation, especially when they affect the tongue. In this context, the quality of the suture and local care are important to proper recovery and the patient's brief return to their normal functions. Oral lacerations resulting from trauma require specific approaches. Treatments of this type of trauma may primarily be performed by professionals who conduct emergency care; however, they may require the attention of specialists. This article contains recommendations for the primary approach, treatment, and postoperative care of complex lacerations in the tongue.

Indexing terms: Lacerations. Tongue. Wounds and injuries.

RESUMO

As lesões intraorais afetam o sistema estomatognático, gerando dificuldades na mastigação e na articulação da fala, principalmente quando afetam a língua. Nesse contexto, a qualidade da sutura e o cuidado local são importantes para a recuperação adequada e o breve retorno do paciente às suas funções normais. As lacerações orais resultantes de trauma requerem abordagens específicas. Os tratamentos desse tipo de trauma podem ser realizados principalmente por profissionais que realizam atendimento de emergência; no entanto, eles podem exigir a atenção de especialistas. Este artigo contém recomendações para a abordagem primária, tratamento e cuidados pós-operatórios de lacerações complexas da língua.

Termos de indexação: *Lacerações. Língua. Ferimentos e lesões.*

INTRODUCTION

Many lacerations seen in the emergency department setting require specific management based on anatomic location. The lacerations including lips, forehead, nose, eyes and tongue are the most common, and two-thirds of all these traumas are represented by lip lacerations,

[1] Universidade Federal de Uberlândia, Faculdade de Odontologia. Av. Pará, 1720. Bloco 4T, Umuarama, 38400-902, Uberlândia, MG, Brasil. Correspondece to: FS ROCHA. E-mail: <flavianasoares.rocha@gmail.com>.

How to cite this article

Machado AAF, Oliveira SS, Batista JS, Furtado LM, Rocha FS. Important aspects during advanced lingual laceration management: report of 2 cases. RGO, Rev Gaúch Odontol. 2021;69:e20210022. http://dx.doi.org/10.1590/1981-86372021002220190095

followed by tongue lacerations [1]. The etiology of tongue laceration commonly includes motor vehicle accidents [2], human or animal bites [1,3], or some form of direct trauma to the face.

Tongue lacerations can make it difficult for emergency physicians to take some decisions, due to difficulty with controlling hemorrhage, shock and direct threat to the airway [2,4,5]. Hemorrhage and disfigurement are the two most common concerns in relation to these injuries, although loss of function, infection, deficient speech articulation and swelling, which compromises the airway, are also mentioned as being sequelae 2,6. Some of the factors associated with increased infection rates include bacterial contamination and the presence of devitalized tissue 4. Additionally, oral intubation is frequently necessary and may complicate laceration repair because it takes priority over tongue repair in emergency oral trauma situations [4,6,7].

At present, optimal treatment of tongue lacerations is still conflicting due to contradictory recommendations and lack of up-dated guidelines. The recommendations include suturing injuries located on the dorsum and lateral border; and those that are longer than 2cm in extent, or when hemostasis is not achieved [2]. Some authors have also indicated suturing "through and through" injuries of the edge of the tongue [8,9]. The purpose of primary wound closure is to approximate the wound edges to facilitate the healing process to ensure normal function with minimal risk of infection and satisfactory cosmetic results. Despite controversies, there is a consensus that deep tongue lacerations should be sutured in layers, preferably with resorbable sutures, and before extensive edema occurs [3,10]. Another important aspect to consider is the presence or absence of infection [3]. According to these authors, all recent, uninfected wounds should be evaluated for possible primary closure. On the other hand, infected wounds should heal by secondary intention with later revision if necessary. Whereas, in children most tongue lacerations do not require suturing due to the tongue's marked capacity for regeneration [9].

The purpose of this article was to report two cases of extensive tongue lacerations that were treated with immediate surgical closure or surgical reintervention.

CASE REPORT

Case 1

The patient, a 25-year-old man, with normal health, presented to the emergency dental service of his home city with severe intra-oral bleeding. While reviewing his medical history, the patient related that he suffered physical aggression, resulting in extensive tongue laceration that was evident in the clinical exam. Primary wound closure was performed in the emergency room within 2 hours of the injury; in addition, a tetanus toxoid injection, and amoxicillin 500 mg 3 times daily, for 7 days were prescribed. After 24 hours of the suturing procedure, the patient developed an extensive sublingual hematoma that was drained under local anesthesia.

During follow-up of 10 days, the patient presented extremely painful swelling of the tongue, with areas of tissue necrosis in the anterior region. At this time, the patient was referred to the Federal University of Uberlândia for proper treatment of tongue necrosis. Firstly, under local anesthesia, the necrotic tissue was removed, and the tongue was scarified and left to heal by secondary intention. Amoxicillin 500 mg was prescribed for 7 days, and careful tongue cleaning with gauze soaked in 0.12% chlorhexidine gluconate was recommended. The healing period was uneventful with appropriate closure of the wound.

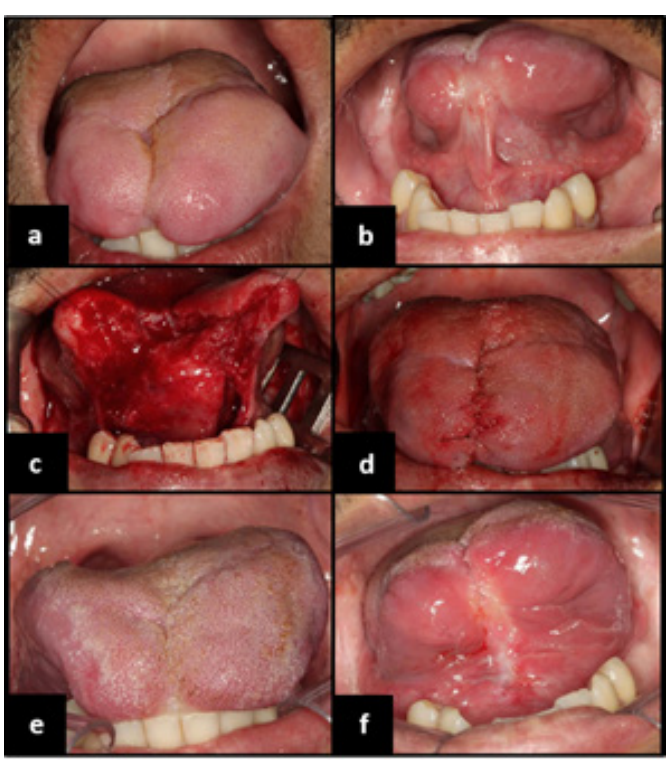

Figure 1. Anatomical lingual alteration that not allow the patient to speak or eat properly (a and b). Frenotomy for better lingual mobility, facilitating phonetics and feeding and tissue after divulsion using a blind tip instrument and fibrous tissue removal of the tongue dorsum followed by tongue suture (c and d). Ten days of postoperative with good tissue repair and preserved tongue function (e and f).

After four months, we observed the absence of infection and presence of a lingual defect with anatomic alteration and areas of fibrosis that resulted in difficulties with eating and speech (figure 1a-b). The patient was submitted to lingual plastic surgery under local anesthesia for proper correction. Frenotomy was performed to improve mobility of the tongue. The fibrous tissue was removed, and the lingual muscles were separated with a blunt instrument. The tongue was repositioned, internal suture was performed with monocryl 4.0 and external suture with nylon 5.0 (figure 1c-d).

The patient continued to be monitored and, on the 10th, postoperative day the nylon sutures were removed (figure 1 e-f). After two months of follow-up, improved anatomy of the anterior region and tongue mobility could be observed, thus enabling improvement in the patient's functional performance.

Case 2

The patient, a 21-year-old man, with normal health, presented to the Oral and Maxillofacial Surgery Service of Federal University of Uberlândia with extensive intra-oral bleeding. He presented a painful self-inflicted bite wound of the tongue after a motorcycle accident. Clinical examination revealed a large, deep laceration on the dorsal surface in the anterior region of the tongue (figure 2 a-b).

After local anesthesia, tissue cleaning with gauze soaked with saline solution and copious irrigation were performed. After achieving control of bleeding by means of compression, a primary suture was performed with vicryl 4.0 (figure 2c). Amoxicillin 500 mg was prescribed for 7 days, and tongue cleaning with gauze soaked in 0.12% chlorhexidine gluconate, 2 times a day were recommended. The patient was continually monitored during the first 10 post-operative days, after which sutures were removed. After 1 year of follow-up, evidence of satisfactory healing of lacerations was shown, as well as the maintenance of masticatory and phonetic functions (figure 2d).

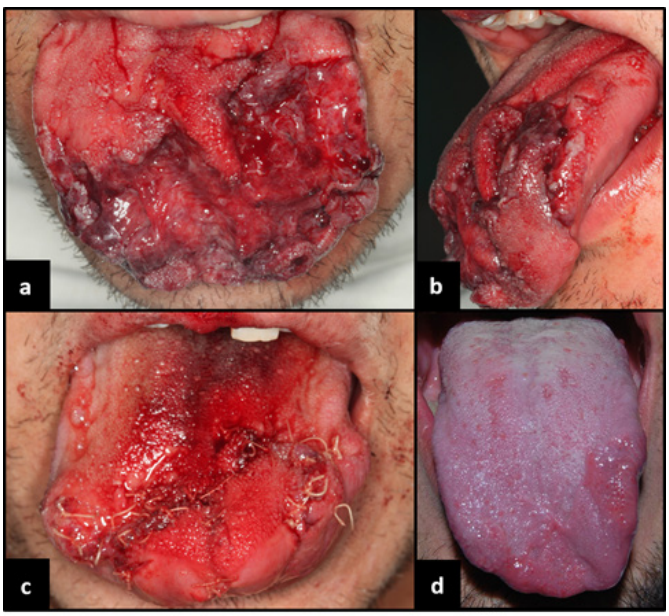

Figure 2. Extensive and deep laceration on the two-thirds of the tongue dorsum (a and b). Immediate suture of the tongue dorsum using absorbable suture vycril 4.0 (c). One year of postoperative with good tissue repair and preserved function (d).

DISCUSSION

Partial or complete tongue loss after trauma can be a devastating injury. The tongue has important functions in speech, swallowing, oral hygiene, and airway protection. Surgical attempts must be made to achieve its functional integrity [4]. A wound located on the surface of the tongue should always be examined carefully. Possible dental crown fractures, pieces of teeth or restoration fragments may be located within the wound and should be removed completely to reduce the risk of infection. Suturing these lacerations may predispose the tongue to invasive closed space infection [9] and wound contamination is a risk that must be taken into consideration. Various precautionary measures are indicated, such as the correct debridement technique and proper antibiotic coverage. Devitalized and necrotic tissue in a traumatic wound should be identified and removed to reduce risk of infection. All patients with tongue lacerations, irrespective of the treatment performed, should be instructed to clean the area with antiseptic mouthwash containing 0.12% chlorhexidine gluconate 5 as indicated in our case reports.

Wounds heavily contaminated with 24-Hour delay of surgical debridement, injuries associated with jaw fractures, immunocompromised patients or sustained in human or animal bites should be considered as candidates to receive antibiotic treatment [4]. Some authors have claimed that early closure is important to reduce the risk of infection and necrosis of the wound [3,5], as observed in Case 1 in our study. Furthermore, Lamella et al. [6] recommend that in the setting of deep lacerations, repair must be performed

before excessive edema occurs, approximately within 8h of injury, since delaying treatment for longer than 24 hours would adversely affect the outcome, determining whether vessels, tendons, nerves, joints, muscles, or bones are damaged, which was corroborated by our findings.

On the other hand, when Kizzy [8] specifically evaluated lacerations in children, they suggested that clinicians should not be in a hurry to suture wounds, because doing so does not improve the outcome or reduce the morbidity associated with this type of injury. However, it is important to emphasize that these authors evaluated small sized lacerations. Seiler et al. [9] also evaluated lacerations in children, and generally recommended suturing the wounds, or more frequently advised secondary wound healing.

The tongue has a rich blood supply, and injuries may cause serious hemorrhage that potentially threatens the airway [2]. In addition, rupture of the lingual artery could impair the repair of these lacerations and revascularization of the tongue, leading to necrosis. Hemostasis controls bleeding, prevents hematoma formation, and allows for deeper inspection of the wound. Anesthesia may be necessary to achieve hemostasis and to appropriate explore the wound. Tongue surgical repair in the setting of a total section requires integrity of arterial and venous flow [10,11], so immediate anastomosis must be executed. The anastomosis of the lingual artery and vein is difficult but increase the rate of success. When a primary anastomosis of the vein cannot be achieved a vein graft can be applied [4]. Additionally, the management of lingual nerve damage depends upon the mechanism of injury, the duration of the nerve injury and the patient's symptoms.

Some authors have presented opposing forms of treatment for tongue lacerations, and to determine the best treatment choice some criteria must be considered such as: the presence of an open wound when the tongue remains at rest, irrespective of the location of the wound; presence of active bleeding; depth, length, and width of the lesion; and presence of infection [5]. Simple linear and superficial lingual lacerations smaller than 1 cm, generally do not need intervention and heal by secondary intention, with low infection rates [5,8]. Extensive lacerations need surgical closure, and the treatment includes cleaning the wound, removing foreign bodies, controlling bleeding, and reestablishing the vascular supply, and suturing the dorsal and ventral aspects of the laceration. In deep lacerations the muscular planes must be closed with absorbable sutures to prevent hematoma formation and maintain muscle integrity [4]. The administration of anesthesia (local, regional, or general in some cases) is important. In case 2, the early correct suturing achieved success, with a reasonable outcome. However, in Case 1, tissue necrosis was present when the patient arrived at our service. According to Burma's and Monto [3], when the patient is seen late, has extensive tissue edema and the edges of the wound are crushed and contused with presence of devitalized tissue, the goal would preferably be to delay wound closure until the conditions for primary healing are favorable. In these situations, proper debridement and secondary healing is a better choice, with later surgical procedures for revision of the defects, if necessary.

Suture of the tongue should preferably be done with absorbable suture, but in some cases, nylon can be used in the superficial plane to reduce inflammation associated with absorbable sutures and improve healing. The sutures are made with wide margins and deep penetration to close all layers and are placed on the superior, inferior, and lateral borders as required. In some cases, for effective function after correct tongue repair, the patient should perform stretching exercises that should continue until the complete period of wound repair and contracture has passed.

CONCLUSION

The treatment of complex and extensive tongue lacerations should be immediate closure when possible, antibiotics and strict control of the post-operative period for a successful outcome. In late cases, appropriate planning of the surgical correction will allow good results.

Collaborators

All the authors collaborated in the development of the work, and their contributions are detailed below: AAF MACHADO responsible for bibliographical update of the article and photo editing. SS OLIVEIRA responsible for performing the surgeries as well as postoperative follow-up of the patients. JD BATISTA, LM FURTADO and FS ROCHA responsible for supervision of the surgeries, writing and revision of the manuscript.

REFERENCES

1. Donkor P, Bankas DO. A study of primary closure of human bite injuries to the face. J Oral Maxillofac Surg. 1997;55(5):479-481. https://doi.org/10.1016/S0278-2391(97)90695-9

2. Hino S, Takeda A, Kaneko T, Horie N, Shimoyama T. Oral lacerations during motocross: a case report. Dent Traumatol. 2017;33(6):482-484. https://doi.org/10.1111/edt.12357

3. Baurmash HD, Monto M. Delayed healing human bite wounds of the orofacial area managed with immediate primary closure: treatment rationale. J Oral Maxillofac Surg. 2005;63(9):1391-1397. https://doi.org/10.1016/j.joms.2005.05.165

4. Hernández-Méndez JR, Rodríguez-Luna MR, Guarneros-Zárate JE, Vélez-Palafox M. Traumatic partial amputation of the tongue. Case report and literature review. Ann Med Surg. 2015;29(5):110-3. https://doi.org/10.1016/j.amsu.2015.12.049

5. Brown DJ, Jaffe JE, Henson JK. Advanced laceration management. Emerg Med Clin N Am. 2007;25(1):83-99. https://doi.org/10.1016/j.emc.2006.11.001

6. Lamell CW, Fraone G, Casamassimo PS, Wilson S. Presenting characteristics and treatment outcomes for tongue lacerations in children. Pediatr Dent. 1999;21(1):34-8.

7. Wells MD, Edwards AL, Luce EA. Intraoral reconstructive techniques. Clin Plast Surg. 1995;22(1):91-108.

8. Kazzi MG, Silverberg M. Pediatric tongue laceration repair using 2-octyl cyanoacrylate (dermabond(®). J Emerg Med. 2013 ;45(6):846-8. https://doi.org/10.1016/j.jemermed.2013.05.004

9. Seiler M, Massaro SL, Staubli G, Schiestl C. Tongue lacerations in children: to suture or not? Swiss Med Wkly. 2018;148:w14683. https://doi.org/10.4414/smw.2018.14683

10. Hernández-Méndez JR, Rodríguez-Luna MR, Guarneros-Zárate JE, Vélez-Palafox M. Traumatic partial amputation of the tongue. Case report and literature review. Ann Med Surg (Lond). 2015;5:110-3. https://doi.org/10.1016/j.amsu.2015.12.049

11. Egozi E, Faulkner B, Lin KY. Successful revascularization following near-complete amputation of the tongue. Ann Plast Surg. 2006;56(2):190-3. https://doi.org/10.1097/01.sap.0000194945.84826.fd

Received on: 6/6/2019
Final version resubmitted on: 3/12/2019
Approved on: 19/2/2020