

# Traumatic Tongue Laceration: An Experience of Two Tertiary Centers in South East Nigeria

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## INTRODUCTION

The tongue is a muscular organ in the mouth that aids in speech, manipulation of food for mastication, and swallowing as part of the digestive process and is the primary organ of taste.<sup>[1]</sup> Embryologically, the development of the tongue starts around the fourth week intrauterine period and its development has a marked influence on the oral cavity; it is embryologically divided into the anterior and posterior parts.<sup>[2]</sup> The anterior part is known as the oral or presulcal, which includes the root attached to the floor of the oral cavity while the posterior part is known as pharyngeal or postsulcal, which includes the base forming the ventral wall of the oropharynx.<sup>[3]</sup> A tongue laceration refers to a cut or tear in the surface of the tongue; it can arise from several means including seizures, falls, sports,

### ABSTRACT

**Background:** Traumatic injuries to the orofacial region are common and can be challenging to the oral and maxillofacial surgeon. The tongue is one of the structures that can be involved; however, the incidence of this injury to the tongue appears rare. Most of the reported work on this topic is on children. **Patients and Methods:** This is a three-year prospective study of traumatic tongue lacerations managed at the oral and maxillofacial centers of two tertiary hospitals in the southeast of Nigeria. **Result:** A total of 37 cases with tongue lacerations among 353 patients with oral and maxillofacial trauma constituting a prevalence of 10.5%. Their age ranged from 6 months to 57 years with a mean of 18.4 years (standard deviation 17.5). Twenty three (62.2%) are males and 14 (37.8%) females in a ratio of 1.6:1. The duration of injury on presentation ranged from 45 minutes to 96 hours with a mean duration of 26.7 hours. Majority of the laceration occurred in the anterior part of the tongue (24) (64.9%). Thirteen falls (35.1%) and nine motor vehicle accidents (24.3%) were the most common etiology. Thirty six (97.3%) were sutured primarily on presentation while only one (2.7%) was delayed before closure. Anesthesia was achieved with only Local Anesthetic agent in 18 (48.6%) cases, whereas in 13 (35.1%) cases a combination of Local Anesthetic agent and sedation. **Conclusion:** Tongue lacerations are not very common in the southeast of Nigeria, and management in children may require sedation. Treatment could involve suturing the wound or being left alone to heal.

**KEYWORDS:** Anesthesia, laceration, suturing, tongue


gunshots, during intubation, and child abuse.<sup>[1,4]</sup> Tongue laceration can occur in any age group, although it is said to be commoner in children.<sup>[1,4,5]</sup> This condition can cause significant pain, bleeding, and swelling leading to functional and other challenges.<sup>[6-8]</sup> The most common location for a tongue laceration is the anterior dorsum with the posterior part the least common.<sup>[3]</sup> Treatment of tongue laceration varies and depends on presentation. The decision whether to suture a tongue laceration is still debated but generally depends on the size of the laceration or the gaping nature of the wound; however,

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complex lacerations may require flaps.<sup>[6]</sup> Actively bleeding or through-and-through lacerations of the tongue are more likely to require repair.<sup>[9,10]</sup> Studies have shown that lacerations or avulsions can be left to heal without intervention due to the highly vascular nature of the tongue with its superb ability to regenerate, as such small lacerations and avulsions can be left untreated.<sup>[11]</sup> As a result, Patel<sup>[12]</sup> suggested that clinicians should not be in a hurry to suture these wounds as doing so does not provide an added advantage. When suturing tongue lacerations it is advisable to use absorbable sutures and the knots should be many and tied relatively loose.<sup>[13]</sup> For deep lacerations it is advisable to suture in layers.<sup>[11]</sup>

Study on this topic on the general population is scarce, although most studies on this topic are in children. The aim of this study is to determine the pattern and treatment of this condition in two tertiary centers in Enugu and Ebonyi states and to add same to existing literature.

## MATERIALS AND METHODS

This is a three-year prospective study of all cases of traumatic tongue lacerations seen at the oral and maxillofacial centers of the University of Nigeria Teaching Hospital Enugu State and Alex Ekwueme Federal University Teaching Hospital Abakaliki, Ebonyi State from June 2019 to May 2022 (Date obtained is May 4, 2019). Information relating to biodata, duration at presentation, site of laceration, cause of injury, length of the wound, anesthesia use, and treatment protocol were recorded for all the patients seen within the study period. Data obtained were analyzed using IBM SPSS statistics for windows version 23 Armonk NY: IBM Corp. Results were presented as tables, charts, means, frequencies, percentages, and standard deviation. Chi-square test was used to compare qualitative variables. *P* value of <.05 was considered significant.

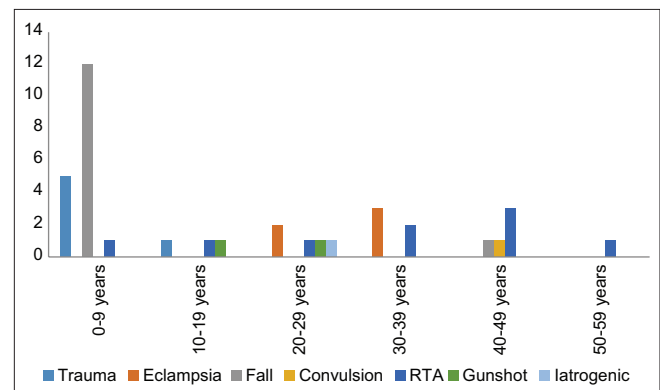
### Wound care and repair protocol

The protocol used in the study centers in the management of this condition involved achieving hemostasis first for those with active bleeding at the time of presentation. Hemostasis was achieved by applying digital pressure with a gauze pack or by ligating the bleeding vessels in large lacerations before commencing closure. Local anesthesia was achieved with 2% xylocaine containing adrenaline which was diluted to 1 in 500,000 for children and 1 in 100,000 in those aged more than 17 years before the size of each wound was determined with a sterile surgical rule. The wounds were then cleaned with povidone-iodine solution and irrigated with normal saline for wounds seen within 24 hours, while for wounds that lasted

longer, the edges were refreshed before treating as previously stated. For children aged less than 10 years, sedation was achieved with intravenous ketamine under anesthetic monitor by the anesthetists assigned to the accident and emergency theatre where these procedures were carried out. The wounds were then sutured in simple interrupted pattern with vicryl 3.0. Patients were placed on antibiotics and analgesics as necessary. Repair was done within 24 hours of presentation under local anesthetic agent (LA) for those who are stable while resuscitation had to be carried out for those in critical condition with fluids and blood transfusion when necessary before suturing the laceration. Those with associated facial fractures had the repair done during the reduction and fixation of the fractures under general anesthesia. Healing was uneventful in all the cases.

## RESULTS

Within the study period, a total of 37 patients presented with tongue lacerations among 353 patients with oral and maxillofacial trauma constituting a prevalence of 10.5%. The age range of all the patients was from 6 months to 57 years with a mean of 18.4 years (standard deviation [SD] 17.5) while the mean age of those aged less than 18 years was 3.1 years. There were 23 (62.2%) males and 14 (37.8%) females in a ratio of 1.6:1. The duration on presentation ranged from 45 minutes to 96 hours with a mean duration of 26.7 hours (SD 28.1). The size of the injuries ranged from roughly 1.0 cm to 6.3 cm with a mean of 2.8 cm (SD 1.4). Majority of the laceration occurred in the anterior part of the tongue 24 (64.9%) followed equally 5 (13.5%) by the posterior part and the anteroposterior part [Table 1]. Fourteen (37.8%) occurred on the right side of the tongue, 10 (27%) on the left, 7 (18.9%) occurred in the midline, and 6 (16.2%) involved both sides of the tongue. Mucosa only was involved in 4 (10.8%). There was involvement of mucosa and muscle in 20 (66.7%)



**Figure 1:** Distribution of patients according to age group and causes of tongue laceration

**Table 1: Age groups, sex and site distribution of patients with tongue laceration**

Age group	Sex	Site			Total
		Anterior	Posterior	Anterior & posterior	
0-9	Male	12	1		13
	Female	4	1		5
	Total	16	2		18
10-19	Male	2			2
	Female	1			1
	Total	3			3
20-29	Male	1	0	1	2
	Female	1	1	1	3
	Total	2	1	2	5
30-39	Male	0	1	0	1
	Female	1	0	2	3
	Total	1	1	2	4
40-49	Male	1	0	1	2
	Female	0	1	0	1
	Total	1	1	1	3
50-59	Female	1			1
	Total	1			1
Total	Male	16	2	2	20
	Female	8	3	3	14
	Total	24	5	5	34

**Table 2: Distribution of patients according to age group and method of anesthesia**

Age group	Anesthesia			Total
	LA	Sedation	GA	
0-9	5	13	-	18
10-19	3	-	-	3
20-29	3	-	2	5
30-39	3	-	2	5
40-49	4	-	1	5
50-59	-	-	1	1
Total	18	13	6	37

P=0.01

**Figure 2:** Tongue laceration arising from eclampsia presenting in u-shape form

while it was through-and-through in 13 (35.1%). Thirty six (97.3%) were sutured primarily on presentation while only 1 (2.7%) was delayed before closure. Anesthesia was achieved with only LA in 18 (48.6%) cases, in 13 (35.1%) cases a combination of LA and sedation, while general anesthesia was used in 6 (16.2%) cases.

## DISCUSSION

Tongue laceration is not very common in the study centers. Literature on this is scanty and most published works are among children population.<sup>[4,6]</sup> A prevalence of 10.5% (37/353) of tongue laceration was recorded among all the patients who presented with orofacial trauma within the study period. There is no previous report from literature search on the prevalence of tongue laceration to the best of our knowledge. The mean age of patients seen within this period was 18.4 (SD 17.5) years; however, the mean age of those aged less than 18 years (3.1 years) appeared similar to that reported by Seiler *et al.*<sup>[4]</sup> which is 4 years.

Majority of those seen were males. This is in agreement with previous reports that demonstrated more males having this condition.<sup>[4]</sup> The reason for this could be due to increased risk of injuries as a result of the adventurous nature of males even from childhood.<sup>[14,15]</sup> Many patients presented to the study centers long after the injuries occurred (mean duration at presentation 26.7 hours). This is a far cry from what was reported by Seiler *et al.*<sup>[4]</sup> where a mean interval at presentation of

2.6 ± 6.1 hours was found showing that majority of their cases were reported within 3 hours of the injury. General late reporting seen here could be attributed to limited oral and maxillofacial surgeons in our environment as many physicians appear to avoid the oral cavity and would prefer to refer these patients to centers where maxillofacial services are available eventually delaying treatment time.<sup>[16]</sup> Absence of effective ambulance services in our environment could also be a factor.

The sizes of these injuries vary, with the larger ones involving both sides of the tongue. In this present study, majority of the cases occurred at the anterior dorsum of the tongue [Table 1]. This finding is similar to that of Farmer and Klovenski<sup>[1]</sup> and Lamell *et al.*<sup>[6]</sup> who all reported that laceration is commoner in the anterior dorsum of the tongue. We also noticed that a large proportion of these injuries occur on the right part of the tongue; the reason for this is not clear to us.

The debate on whether tongue lacerations should be repaired or allowed to heal by secondary intention is still ongoing. It has been suggested that the factors guiding the decision to suture a tongue wound include length of the laceration and if the wound edges were gapping or separated when the tongue is at rest.<sup>[4]</sup> This school of thought suggested that wounds greater than 2 cm should be sutured which is in agreement with our finding where the mean size is 2.8 cm. Most of the lacerations in this present study were sutured primarily with vicryl as they were either deep or through-and-through cuts. In addition to the above factors, the researchers believed that leaving the wound open would be more uncomfortable and would take a longer time to heal.<sup>[16,17]</sup> The only case repaired secondarily was from gunshot to the face; this was to allow the effect of the gunshot to burn out and for the wound to be clean.

There is a statistically significant relationship ( $P=0.002$ ) between the age group and the cause of tongue laceration as fall is most common among those in the first decade of life while motor vehicle accident is most common among those in the fifth decade [Figure 1].

Majority of the cases in this study were done under local anesthesia. There is a statistically significant relationship between age and method of anesthesia used ( $P = 0.01$ ) as all those treated by sedation with local analgesia were children within the first decade of life who could not cooperate with the treatment<sup>[4]</sup> [Table 2]. General analgesia was the choice for those with other comorbidities, especially from seizures arising from eclampsia and associated facial fractures. This finding appears to be in agreement with that of Farmer and Klovenski<sup>[1]</sup> who reported that the repair could be done

under local anesthesia or sedation, although Seiler *et al.*<sup>[4]</sup> seem to disagree with this on the grounds that it could constitute additional trauma for the patients and their guardians and also add to the cost of treatment.

Tongue laceration due to seizure has been reported previously, the most common causes of seizure leading to tongue injury in the literature are eclampsia and epilepsy.<sup>[18-20]</sup> This occurs when teeth on both jaws clinch and trap the tongue in between them causing injury.<sup>[18]</sup> It appears to the researchers that tongue injuries arising from seizures are commonly U-shaped and hence are longer in size than most others [Figure 2].

## CONCLUSION

Tongue laceration is not very common in the study environment; it arises from multiple causes including seizures due to eclampsia. It can occur at any age and there is no consensus on the treatment option yet. Sedation is mostly used in children where cooperation is needed.

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## Conflicts of interest

There are no conflicts of interest.

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