

Pattern of presentation and management of lip injuries in a Nigerian hospital

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Abstract

Aim: Human lip injuries, although uncommon, present major challenges in terms of reconstructive options and the outcome of surgical management. The reconstructive techniques are usually varied but the ultimate objectives of treatment are to achieve healing, function, and aesthetics. The aim of this study was to report the etiology, pattern of presentation, and surgical management of lip injuries in Lagos University Teaching Hospital (LUTH).

Materials and Methods: A prospective study of consecutive cases of lip injury was conducted at the Oral and Maxillofacial Surgery Clinic of the Lagos University Teaching Hospital. Data collected included age and sex of patients, etiology, pattern of presentation, and surgical techniques of repair.

Results: A total of 13 patients with lip injury to the lip were included in the study (M = 6, F = 7). Human bite (11 cases) was the most common cause of injury followed by electric burns (2 cases). The most (81.8%) frequently affected site was the lower lip. Most patients presented within 72 hours after injury with infected wound. Treatment offered included thorough debridement and primary repair using various surgical techniques. A one-stage surgical technique was employed in all cases. Healing was uneventful in all cases and satisfactory.

Conclusion: Most of the lip injuries in the present study were due to human bites with almost equal sex distribution. Lower lip was most commonly affected. All cases were successfully treated by debridement, broad spectrum antibiotic coverage, and one-stage surgical repair with a favorable outcome.

Key words: Bite, human, injury, lip, wounds

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Introduction

Human traumatic lip injuries, although uncommon, present major challenges in terms of reconstructive options and the outcome of surgical management.^[1,2] Since the lips have such centrally important aesthetic and functional roles, successful maintenance of these roles after reconstruction is of paramount importance. The reconstructive techniques are usually varied but the ultimate objectives of treatment are to achieve healing, function, and aesthetics.^[1] Every successful surgical reconstruction of the lip must aim at the restoration of all the anatomical components which consist of the cutaneous, muscular, and mucosa layers.^[1]

Etiology of lip injuries varies, depending on socio-environmental

factors. These include road traffic accident, human bite, animal bite, burns and electrical injuries, as well as interpersonal violence (including domestic violence).^[1-13] But irrespective of etiology, the operative techniques are similar for surgical correction of these defects. However, pharmacologic management of lip injuries varies depending on etiology.^[4-6,8,10] Pathogens in human bite infections have been shown to be different from those present in animal bites.^[14,15] Higher prevalence of *Staphylococcus aureus* and *Eikenella corrodens* have been demonstrated in human bites compared with animal bites.^[14,15] Based on this, some authors have advocated for prophylactic antibiotic in all cases of human bite injuries.^[4]

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The aim of this study is to report the etiology, pattern of presentation, and surgical management of lip injuries in Lagos University Teaching Hospital, Lagos, Nigeria. This study adds to the existing literature regarding the pattern of presentation and clinical management of lip injuries with ultimate intention of improving the clinical management of these injuries.

Materials and Methods

A study of 13 consecutive patients who presented with avulsive lip injuries between January 2007 and May 2009 was conducted at the Oral and Maxillofacial Surgery Clinic of the Lagos University Teaching Hospital. A proforma was designed to collect the following information: patients' demographics (age and sex), etiology of injury, time of presentation after the injuries, nature, and circumstances of the injuries and complications. Congenital lip defects and defects resulting from surgical excision of other pathologies were excluded from the study. Treatment offered to the patients and treatment outcomes also were documented.

Data was analyzed using SPSS for Windows (12.0 version, Chicago, IL). Data are presented in descriptive and tabular forms.

Results

Demography

A total of 13 patients aged between 21 and 54 years (mean \pm SD, 32.6 ± 8.8 years) with avulsive lip injury to the lips were included in the study. Most patients (84.6%) were found in 3rd and 4th decade of life. There were six males and seven females [Table 1].

Etiology, site of injury, and pattern of presentation

Human bite (11 cases) was the most common cause of injury followed by electric burns (2 cases). Most patients (12 out of 13) presented within 72 hours after injury with infected wound. One of the 13 patients presented few weeks after injury with healed deformed upper lip defect. The most frequently affected site was the lower lip ($n = 11$, 84.6%). In all cases of human bites, all the assailants were known to the patients. The injuries were sustained during fights while at work and during matrimonial conflicts. Ten (91%) of the 11 cases due to human bite affected the lower lip [Table 1]. The avulsive injuries due to human bite affected only one lip site while those due to electrical burns affected multiple sites. All the resultant lip defects were between one third and two-third of the lip [Figures 1 and 2]. The two victims of electrical burn were male electrical technicians, and the mechanism of injury in the two cases was the use of the teeth to hold live wire while at work [Figures 3 and 4]. In one of the patients with electrical burn injury, upper left infraorbital soft tissue was affected [Figure 3]. The other

patient with electrical burn injury also sustained extensive injury to the tongue and cheek [Figure 4].



Figure 1: Avulsive lower lip injury in a young woman due to human bite



Figure 2: Preoperative appearance of a young man with avulsive lower lip injury due to human bite



Figure 3: Upper lip injury resulting from electrical burns

Management and surgical outcome

Treatments offered included thorough debridement, broad spectrum oral antibiotic coverage (Amoxicillin 500 mg 8 hourly for 5 days and Metronidazole 500 mg 8 hourly for 5 days), and one-stage primary repair using various surgical procedures which included wedge excision (V or W) and direct closure in 10 patients [Figure 5a-c], Tension-

Randall triangular technique in 1 patient [Figure 6a and b], Karapandzic flap in 1 patient [Figures 7a and b], and Bernard’s flap in 1 patient. Healing of the left infraorbital laceration in patient in Figure 3 resulted in ectropion due to scar contracture [Figure 7b]. The ectropion was repaired using the Z-plasty technique; and the result was satisfactory [Figure 8]. All patients were placed on a 7 days course of antibiotics. Follow-up period ranged between 1 and 3 months. In 12 (92.3%) patients, healing was satisfactory with no need for revision surgery [Table 1]. Partial wound dehiscence occurred in one patient. The dehiscent wound was revised, and healing was subsequently satisfactory.

Discussion

Reports in the literature show that most lip defects occurred as a result of trauma, infection (Cancrum Oris), burns or following a surgical ablation for malignancy.^[1-10] But irrespective of etiology, the operative techniques are similar for correction of these defects.^[11] The reconstruction of lip defects may be a relatively simple procedure, and in some cases may be challenging and laborious.^[11] However, the basic principles of reconstruction include the utilization of the remaining portions of the lip, borrowing of tissue from



Figure 4: Lip and cheek injuries due to electrical burns



Figure 5: One stage W-excision and repair of lip defect. (a) Preoperative, (b) W-excision, (c) immediate postoperative appearance

Table 1: Characteristics of Patients with Avulsive Traumatic Lip Injuries						
Age	Sex	Site of injury	Etiology	Technique of repair	Outcome	
38	M	Upper lip	Electric burns	Karapandzic flap	Satisfactory	
21	M	Lower lip	Human bite	V-shape wedge repair	Satisfactory	
34	M	Lower lip	Human bite	W-shape wedge repair	Satisfactory	
42	M	Lower lip	Electric burns	V-shape wedge repair	Satisfactory	
54	M	Lower lip	Human bite	Bernard’s flap	Satisfactory	
30	M	Lower lip	Human bite	V-shape wedge repair	Satisfactory	
28	F	Upper lip	Human bite	Tennison-Randall technique	Satisfactory	
34	F	Lower lip	Human bite	V-shape wedge repair	Satisfactory	
35	F	Lower lip	Human bite	V-shape wedge repair	Satisfactory	
23	F	Lower lip	Human bite	V-shape wedge repair	Dehiscence	
28	F	Lower lip	Human bite	W-shape wedge repair	Satisfactory	
25	F	Lower lip	Human bite	W-shape wedge repair	Satisfactory	
32	F	Lower lip	Human bite	V-shape wedge repair	Satisfactory	



Figure 6: Tennison-Randall triangular technique for repair of upper lip defect. (a) Preoperative (b) Postoperative



Figure 7: Repair of upper lip defect of patient in figure 3 using Karapandzic flap. (a) Immediate postoperative appearance, (b) healing after 2 months. Note ectropion of the lower left eyelid



Figure 8: Repair of the ectropion using the Z-plasty technique

the opposite lip and/or the cheek, and advancement of adjacent flaps.^[11,12]

Most patients with lip injury in the present series were found in 3rd and 4th decade of life. The explanation may be that men and women in this age group drive are active and young, and are most likely to be involved in violence. These individuals are likely to resolve conflicts often through physical means.^[2-5]

The most common etiology of lip injury in the present study was human bite, in agreement with most African studies.^[2-5,13] The reason for this might be that teeth are the most readily available weapon of defense or attack in times of great emotional anger. Madukwe *et al.*^[13] reported a series of human bite injuries to the lip resulting from

interpersonal violence, majority of which occurred in polygamous/extended family setting. In the present series, 7 (63.6%) out of the 11 patients with lip injuries due to human bite were females. This is in agreement with most studies^[2,3,5,13] in Africa but contrasts that of Olaitan *et al.*^[4] with report of male predominance.

The two victims of electrical burn were electrical technician who sustained these injuries during work. It is interesting to note that the mechanism of injury was the use of the teeth to hold live wire while at work. It might be speculated that either these electricians were ignorant of the hazard of electricity or choose to ignore this fact.

In this study, the lower lip was more commonly involved than the upper lip. Most cases (91%) due to human bite occurred in the lower lip. This finding is in agreement with the works of Obukwe^[5] and Donkor and Bankas.^[4] The lower lip occupies a conspicuous position in the face which makes it vulnerable to attacks. In addition, the upper and lower lips were not involved simultaneously in this study in agreement with previous reports in the literature.^[2,4,5]

In the present study most patients presented within 72 hours after injury with infected lip defect. This is in agreement with reports in the literature that alluded to the fact that lip injury especially ones due to human bite are infected at presentation.^[2-4] Human bite injuries carry the risk of being infected with the bacteria flora of the oral cavity and these infections are polymicrobial in nature.^[4] This often leads surgeons to consider initial debridement and delayed closure because of the fear of wound infection.^[4] Prophylactic antibiotic treatment and primary closure of bite wounds remain areas of controversy. Opinions tilt towards the fact that primary surgical repair is the treatment of choice for most clinically uninfected facial bite wounds, whereas delayed closure should be reserved for certain high risk or already infected wounds.^[12] However, satisfactory results were obtained in the present series with thorough debridement before repair and broad spectrum antibiotics coverage for all the infected cases.

The management of the resulting lip defect from traumatic lip injury remains a significant reconstructive challenge, requiring meticulous preoperative planning and surgical technique to optimize the functional and cosmetic outcome.^[2-4,11,12] The main goals of reconstruction remain the restoration of oral competence, maintenance of oral opening, and the restoration of normal anatomic relations such that both the active (smile) and passive (form) cosmetic outcome is acceptable.^[2-4]

A variety of techniques and modifications of procedures for reconstructing lip defects have been reported in the literature.^[11,12] The reconstruction of lip defects should ideally be by innervated muscle containing flaps, with

inner and outer epithelial linings, and with the free edge covered by vermillion.^[16] A technique of choice essentially depends on the size of defect, site (upper versus lower lip) of defect and experience of the surgeon.^[4,11,12] In the present study, a one-stage technique was used for the repair of the defects. The one-stage technique for the repair of lip defects offers a satisfactory functional and aesthetic result of reconstruction without the need for a second operation.^[11] In this study, wedge-shaped (V or W) excision and primary closure was the treatment of choice in most cases. Most human bite-associated lip defects that are less than one-third of the lip amenable to wedge excision and primary closure.^[4,12] Defects greater than one-third or half of the lip usually require the use of other local flaps.^[8-12]

Other local flaps employed in this series included Tennison Randall, Bernard and Karapandzic flaps. The Tennison-Randal triangular technique, a popular cleft lip repair technique, was favored on one occasion because the defect was located in the upper lip. Karapandzic flap was used in one of the electrical burn patient due to the involvement of the oral commissure. The Karapandzic flap is reputed to lead to greater rounding of the commissure area.^[17] Bernard flap was used in one patient with two third loss of the lower lip in the central region. Function was noted to be excellent with the use of Bernard and Karapandzic flaps, with the patients able to purse lips and blow up balloon-type devices. Bernard and Karapandzic flaps are reliable methods to reconstruct large perioral defects.^[9,11] Other reliable local flaps that have been employed in the reconstruction of lip/perioral defects include Abbe, Estlander, Burrow, and nasolabial flaps.^[4,11,12,18]

The protocol used (debridement, antibiotic coverage, and one-stage repair) in the present series resulted in satisfactory outcome with 92.3% initial success rate. This success rate is similar to previous reports with the use of one-stage surgical repair.^[3,4,11,19]

Although HIV status in our patients was not assessed, some authors have advocated routine HIV test for both victims and assailants of human bites.^[20,21] This has been justified by reports of HIV transmission by human bites and resultant deaths by some of the victims from lack of appropriate detection and treatment.^[20,21]

Conclusion

Most of the lip injuries in the present study were due to human bites with almost equal sex distribution. Lower lip was most commonly affected. All cases were successfully treated by debridement, broad spectrum antibiotic coverage, and one-stage surgical repair with a favorable outcome. Local tissues should be used for the repair of lip defects whenever possible to provide the least donor site morbidity and the best overall tissue color and texture match. It is

hoped that the findings of this study will guide clinicians in choosing the appropriate surgical technique for the repair of traumatic lip injuries with the ultimate aim of improving the clinical management of these injuries.

References

- Nabili V, Knott PD. Advanced lip reconstruction: Functional and aesthetic considerations. *Facial Plast Surg* 2008;24:92-104.
- Shubi FM, Hamza OJ, Kalyanyama BM, Simon EN. Human bite injuries in the oro-facial region at the Muhimbili National Hospital, Tanzania. *BMC Oral Health* 2008;30;8:12.
- Donkor P, Bankas DO. A study of primary closure of human bite injuries to the face. *J Oral Maxillofac Surg* 1997;55:479-81.
- Olaitan PB, Uduezue AO, Ugwueze GC, Ogbonnaya IS, Achebe UJ. Management of human bites of the face in Enugu, Nigeria. *Afr Health Sci* 2007;7:50-4.
- Obukwe ON. A study of human bite injuries to the face. *Cent Afr J Med* 2002;48:68-71.
- Constantinidis J, Federspil P, Iro H. Functional and esthetically oriented reconstruction of lip defects. *HNO* 2000;48:517-26.
- Shteif M, Smith DB, Pour S, Laster Z. Reconstruction of the lips after resection of malignant lesions. *Harefuah* 2005;144:11-5, 71.
- Neale HW, Billmire DA, Gregory RO. Management of perioral burn scarring in the child and adolescent. *Ann Plast Surg* 1985;15:212-7.
- Closmann JJ, Pogrel MA, Schmidt BL. Reconstruction of perioral defects following resection for oral squamous cell carcinoma. *J Oral Maxillofac Surg* 2006;64:367-74.
- Pensler JM, Rosenthal A. Reconstruction of the oral commissure after an electrical burn. *J Burn Care Rehabil* 1990;11:50-3.
- Nwoku AL. A one-stage technique for the repair of large defects of the lips. *Afr Dent J* 1987;1:59-65.
- Stefanopoulos PK, Tarantzopoulou AD. Facial bite wounds: Management update. *Int J Oral Maxillofac Surg* 2005;34:464-72.
- Madukwe IU, Obuekwe ON, Ojo MA. Pattern of human bites of the oro-facial region and the indigenous mode of resolution of the resultant conflict: University of Benin Teaching Hospital experience. *Niger Dent J* 2007;15:52-5.
- Merriam CV, Fernandez HT, Citron DM, Tyrrell KL, Warren YA, Goldstein EJ. Bacteriology of human bite wound infections. *Anaerobe* 2003;9:83-6.
- Yaqub S, Bjørnholt JV, Hellum KB, Steinbakk M, Enger AE. Bite wound infections. *Tidsskr Nor Laegeforen* 2004;124:3194-6.
- Grab WC, Smith JW. *Plastic Surgery*. 3rd ed. Boston: Little Brown and Co, 1979. p. 344.
- Ethunandan M, Macpherson DW, Santhanam V. Karapandzic flap for reconstruction of lip defect. *J Oral Maxillofac Surg* 2007;65:2512-7.
- Coppit GL, Lin DT, Burkey BB. Current concepts in lip reconstruction. *Curr Opin Otolaryngol Head Neck Surg* 2004;12:281-7.
- Uchendu BO. Primary closure of human bite losses of the lip. *Plast Reconstr Surg* 1993;91:136-9.
- Smoot EC, Choucino CM, Smoot MZ. Assessing risks of human immunodeficiency virus transmission by human bite injuries. *Plast Reconstr Surg* 2006;117:2538-9.
- Bartholomew CF, Jones AM. Human bites: A rare risk factor for HIV transmission. *AIDS* 2006;20:631-2.

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