

Primary Repair of Facial Dog Bite Injuries at A Tertiary Centre, Outcome and Review of Literature

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Abstract:

Background: Children are the most vulnerable victim of dog bite injury. Face is a commonly affected site and happens during play. It is a potentially life threatening condition as the wound is severely contaminated with Gram positive and Gram negative microorganisms in the saliva of dog. Because of high contamination rate and chance of severe infection, early attention to be paid for the treatment of that wound by means of antibiotics, wound cleansing and debridement. The opinion regarding repair of facial wound is varied. We describe our experience on primary closure of wound with proper precautions.

Materials & methods: It is a prospective and observational study of 83 cases of facial dog (all were street dogs) bite injury during October 2014 to February 2017 (2 years and 5 months). All patients were referred from peripheral hospital and we did primary repair in our hospital in every case with proper precaution irrespective of duration of injury.

Results analysis: Total 83 cases were analyzed. Among them 62.65% were male and 37.35% were female patients. Commonly affected age group was 2 years to 5 years (50.60%). Different areas of face were affected like cheek, forehead, ear, eye lid, lip, nose scalp and generalised face. Complication rate after repair was 39.75% and most common complication was wound infection. The secondary procedure like secondary stitches, small Z-plasty, skin grafting and injection of steroid for hypertrophic scar were needed in 22.89% of patients.

Conclusion: The primary aim is to restore the facial expression by good closure and cosmetically acceptable scar marks. The key to success is proper debridement, anatomical knowledge of face, good tissue handling, closed follow up and antibiotics coverage. So, primary reconstruction of dog bites is possible with good outcome and should be the method of choice.

Key words: Dog bite, facial, primary repair, outcome.

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I. Introduction

Dog bite injury is a life threatening condition and mostly happens in the pediatric age group. Face is a commonly affected site. The wound is severely contaminated with polymicrobial microorganisms. Because of high contamination rate and chance of severe infection, early treatment by means of antibiotics, wound cleansing and debridement should be started although there are varied opinions regarding repair of facial wound by various surgeons.

II. Materials And Method

It is a prospective and observational study of 83 cases of facial dog (all were street dogs) bite injury during October 2014 to February 2017 (2 years and 5 months). All patients were referred from peripheral hospital and we did primary repair in our hospital in each case with proper precaution irrespective of duration of injury.

III. Results

There were 83 patients during the study period. 52 (62.65%) were male and 31(37.35%) were female. Nine (10.85%) patients were between 1 to 2 years of age, 42(50.60%) were between 2 to 5 years, 22(26.50%) were between 5 to 10 years and 10(12.05%) patients were >10 years of age [Table 1]. Patterns of injury were- ear injury in 7, nose injury in 4, lip injury in 5, eye lid injury in 5, forehead injury in 17, cheek injury in 20, scalp injury in 9 and generalised face injury in 16 patients [Table 2]. Post operative complications was found in 33(39.75%) patients like superficial wound infection in 11, local pus collection in 5, wound dehiscence in 6,

hypertrophic scar in 9 and systemic illness (fever) were found in 2 patients [Table 3]. Secondary procedures were needed in 19(22.89%) patients like skin grafting in 2, secondary suturing in 11, Z- plasty in 2 and steroid injection for hypertrophic scar in 4 patients[Table 4].

The results have been summarized below.

Table-1: Age distribution:

Serial no	Age(years)	No. of patients	%
1	1-2	9	10.85
2	2-5	42	50.60
3	5-10	22	26.50
4	>10	10	12.05

Table-2: site of injury:

Serial no	Types of injury	No. of patients
1	Ear	7
2	Nose	4
3	Lip	5
4	Eye lid	5
5	Forehead	17
6	Cheek	20
7	Scalp	9
8	Generalised face	16
Total		83

Table-3: Complications after repair:

Serial no	Complications	No. of patients
1	Superficial Infection	11
2	Abscess	5
3	Wound dehiscence	6
4	Hypertrophic scar	9
5	Fever	2
Total		33(39.75%)

Table-4: Secondary procedures:

Serial no	Secondary procedure	No. of patients
1	Skin grafting	2
2	Secondary suture	11
3	Z-plasty	2
4	Steroid inj. for hypertrophic scar	4
Total		19(22.89%)

IV. Discussion

Dog bite is one of the commonest type of injury in pediatric age group . About 80-90% of facial bite injuries are due to dog bite ^[1] and aged between 0 to 9 years are more likely to suffer. It is a complex type of wound and causes a combination of avulsion of tissue and puncture wound, known as ‘hole- and- tear’ effect. ^[2] Repair of bite injury is a matter of varied opinions. Different schools of thought follow different ways of management from secondary healing to primary repair with maximum tissue preservation. ^[3] A wide spectrum of medical and surgical complications is mentioned in the literature. Polymicrobial infection is the most common complication due to contamination of the wound by gram positive and gram negative organisms in the saliva. ^[4] Because of severe degree of contamination, urgent attention is required with antibiotics, wound cleansing and debridement. Normal saline and 1% povidone-iodine solution are good irrigation fluids for bite injuries because this solution provides an optimal therapeutic balance between bactericidal capacity and tissue toxicity associated with iodine-containing formulations. If povidone-iodine is used as irrigation fluid, large amount of normal saline irrigation should be done to minimize the risk of cytotoxicity of povidone iodine. ^[5] Debridement of facial wounds should be minimum to avoid sacrifice of tissue particularly in landmark areas such as the vermilion border of the lips, the nasolabial fold, and the eyebrows. A meta-analysis by Callahan has been concluded that antibiotics are essential to prevent infections. ^[6] Another study done by Stierman regarding high-risk avulsion injuries of the ear stated that failure to receive prophylactic intravenous antibiotics for at least 48 hours was associated with an increased risk of infection. ^[7] It has been suggested that primary closure may also increase the risk of infection, thus further justifying prophylactic antibiotics. Amoxicillin/clavulanate is the antimicrobial agent of choice for bite wound and currently recommended as it remains active against most of the bite wound. ^[8] The course of antibiotic prophylaxis is 3 to 5 days and the duration of therapeutic antibiotics varies depending on the severity of the infection. ^[9] Surgical management of facial dog bite injury is a matter of controversy. The various options available are : primary repair, management by wound debridement,

antibiotics, wound cleansing, anti rabies vaccination and secondary repair. According to our centre protocol , primary approximation of the wound is done by fine absorbable polyglactin suture for closure of soft tissue/muscle and simple interrupted stitches by 5-0 monofilament suture for repair of skin with coverage of antibiotics, anti rabies vaccination, tetanus toxoid ,proper wound cleansing, debridement irrespective of age , size and depth of the wound. After repair regular dressing and post exposure prophylaxis is continued. We use Amoxicillin/clavulanate along with metronidazole to prevent anaerobic infection for at least 5 days and only oral Amoxicillin/clavulanate for another 2 weeks after discharge. We removed alternate stitches on 7th day and all stitches on 10th day . Overall results were satisfactory.

V. Conclusion

Primary repair of facial dog bite injury is possible with all the precautions taken before repair. Outcome is satisfactory. So, it should be the primary method of choice for best possible outcome.

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