



OUR EXPERIENCE IN TREATING DOG BITE INJURIES IN DEPARTMENT OF PLASTIC SURGERY: RETROSPECTIVE STUDY

Plastic Surgery

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ABSTRACT

Dog bite injuries in humans remain a public health concern. Children are the most frequent victims of dog bite injuries. The face is often the commonest site. Injuries range from a scratch, laceration (superficial /deep), avulsion with or without tissue loss. Accordingly, the reconstructive options vary from debridement and procedure like Primary closure, Delayed primary closure, Skin grafting and Flap cover. When significant soft tissue loss occurs, more complex methods are required to restore function and cosmesis without risking widespread infection or disfigurement. These options must be chosen carefully.

Objectives:

To study

- different types of dog bite injuries.
- different types of procedure and their outcome.

KEYWORDS

INTRODUCTION:

Dog bite injuries in human remain a public health concern. The bond between humans and dogs remains so close that allowing dogs as a pets to live among and with us⁵. After snake bite the second most common animal injury is from the dogs. In Cape Town at Red Cross war memorial children's hospital 1.5% of emergency cases includes dog bite injuries⁴. Most of the studies have shown that children less than 7 years of age considered more prone for dog bite injuries⁴. Head and neck involvement is more commonly seen in children, while in adults it is extremities⁴. As per national action plan, the number of animal bites reported under the integrated disease surveillance project, has increased from 42 lakhs in 2012 to 72 lakhs in 2020. In India, about 96% of the mortality and morbidity due to rabies is associated with dog bites¹. Due to the bite force of the dog, there will be a serious disfigurement and loss of tissue noted in dog bite injuries, especially in the face, which is an exposed area and well recognised part of the body. There will be a physical, emotional, psychological trauma to the patient, especially in the face. Guidelines for the management of dog bite includes irrigation, debridement, antibiotic therapy, consideration of TT, rabies vaccination, immunization, reconstruction.

MATERIALS AND METHODS:

This is a retrospective study, it includes 25 cases of dog bite injuries who were admitted between March 2022 to January 2024 in the department of Plastic Surgery, Government general hospital, Vijayawada. The spectrum of injuries varied from lacerations, avulsion injuries to loss of tissue. Only fraction of these injuries (i.e) complicated ones are referred to plastic surgery department. Admitted patients were thoroughly evaluated. Thorough wound wash done repeatedly for 15 minutes under running saline and debridement of devitalised tissue is done. In consultation with anti-rabies department, anti-rabies vaccination was done. Rabies immunoglobulins administered to all admitted patients. TT was administered to all patients who were not immunized previously or those who did not remember their last booster dose.

Detailed analysis of these 25 cases with dog bite injuries are done in terms of age, sex, type of dog, site of injury, type of the defect, procedures done, complication. After discharge patients were followed up initially once weekly for 15 days followed by once in a month.

Inclusion And Exclusion Criteria:

Patients needed surgical intervention (wounds more than 2cm) were included in the study. Patients having wound less than 2 cm, small laceration, immunocompromised, autoimmune disease are excluded.

RESULTS:

Majority of the patients were male (17), females include (8) patients. Common age group is between 0 to 7 years. The common site of injury is face in children and in adults is extremities. The most common type of dog is stray dog (i.e 15 (60%) and pet dog includes (i.e) 10 (40%). The most common type of treatment was delayed primary closure in 60% of cases and 24% local flaps and 16% grafts. The type of anaesthesia used for children is general anaesthesia. There was no case of human rabies among admitted dog bite cases. None of the patients had secondary infection. The study shows that delayed primary closure of all dog bite injuries is safe and yields good cosmeses.

S.No	Sex	Age	Pet/stray dog	Site of injury	Method of Reconstruction	Complications
1	Male	3y	stray dog	lower lip	advancement flap	nil
2	Male	56y	pet dog	lower 1/3rd leg	SSG	nil
3	Male	8y	stray dog	cheek	Primary closure	nil
4	Female	4y	pet dog	middle 1/3rd leg	Primary closure	nil
5	Male	26y	pet dog	nose tip	nasolabial flap	nil
6	Female	52y	pet dog	middle 1/3rd leg	SSG	nil
7	Male	5y	stray dog	cheek	Primary closure	nil
8	Male	18y	pet dog	forearm	Primary closure	nil
9	Female	60y	stray dog	lower 1/3rd leg	Primary closure	nil
10	Male	6y	stray dog	cheek	advancement flap	nil
11	Male	3 1/2y	stray dog	upper lip	Primary closure	nil
12	Female	28y	pet dog	hand	Primary closure	nil
13	Female	54y	stray dog	lower 1/3rd leg	SSG	nil
14	Male	1 1/2y	pet dog	cheek	Primary closure	nil
15	Male	57y	stray dog	right lumbar region	Primary closure	nil
16	Male	2y	stray dog	scalp	transposition flap	nil
17	Male	5y	stray dog	lower eyelid	Primary closure	nil
18	Female	24y	stray dog	lower 1/3rd leg	Primary closure	nil
19	Male	4y	stray dog	scalp	rotation flap	nil
20	Male	35y	pet dog	forearm	SSG	nil
21	Male	4y	stray dog	left lumbar	Primary closure	nil
22	Female	32y	pet dog	middle 1/3rd leg	Primary closure	nil
23	Male	3y	pet dog	lower eyelid	advancement flap	nil
24	Male	37y	stray dog	forearm	Primary closure	nil
25	Female	2y	stray dog	middle 1/3rd leg	Primary closure	nil

S. NO	SITE	0-10 Y	11-40Y	ABOVE 40Y
1.	SCALP	2		
2.	EYELID	2		
3.	CHEEK	4		
4.	NOSE		1	
5.	LIP	1	1	
6.	UPPER EXTREMITY		3	1
7.	LOWER EXTREMITY	2	2	4
8.	ABDOMEN	1		1

S.NO	TYPE OF INJURY	NO
1.	DEEP LACERATION	12
2.	AVULSION	8
3.	TISSUE LOSS	5

S.NO	MODE OF RECONSTRUCTION	NO
1.	DELAYED PRIMARY CLOSURE	15
2.	SKIN GRAFTING	4
3.	FLAP COVER	6

S.NO	FLAPS	NO
1.	ADVANCEMENT FLAP	3
2.	TRANSPPOSITION FLAP	1
3.	ROTATIONAL FLAP	1
4.	NASOLABIAL FLAP	1



Fig-A

Fig-B

FIG A-B showing A 3year old male child was admitted with stray dog bite injury over face, complete avulsion injury of entire left lower eyelid with multiple soft tissues injuries. Lower lid reconstruction and other soft tissue repair was done with good functional and aesthetic result.



Fig-D

Fig-E

FIG:D-E showing nasal tip soft tissue defect with intact cartilage and lining. A superiorly based nasolabial flap is raised to cover the defect with good aesthetic outcome and minimal complications.

Dog bites to the nose can avulse multiple aesthetic subunits, making primary repair difficult, inadvisable, or impossible. Dog bites to the face can create immediately disfiguring injuries that may initially seem devastating.

DISCUSSION:

Animal bites, especially dog bites are considered a public health problem, which is under reported in our country. Our study shows most common mode of reconstruction is primary delayed closure of the wound (15(60%)), ⁽¹⁾In sreeramaraju et al study common mode of reconstruction is primary closure (90/105:(85.7%)). In our study the most common age group is 0-7 years, ⁽¹⁾in sreeramaraju et al most common age group is 0-10 years. In our study the most common site in children is face especially cheek, ⁽¹⁾in sreeramaraju et al the most common site in the face is cheek. In our study all patients were administered immunoglobulins to the wound site and anti-rabies vaccine according to the CDC schedule. In our study patients were operated 72 hours after the injury. Strategies for dog bite prevention includes closed supervision of child dog interaction, public education about responsible dog ownership and dog bite prevention, strong animal control laws and better reporting of dog bite cases.

GENDER	STUDY	SREERAMARAJU ETAL
MALES	17(68%)	71(67.6%)
FEMALES	8(32%)	34(32.4%)
TOTAL	25	105

S. No	Site	Study	Sreeramaraju Et Al
1.	SCALP	2(8%)	1(1%)
2.	EYELID	2(8%)	2(1.9%)
3.	CHEEK	4(16%)	34(32.4%)
4.	NOSE	1(4%)	
5.	LIP	2(8%)	30(29.5%)
6.	UPPER EXTREMITY	4(16%)	

7.	LOWER EXTREMITY	8(32%)	
8.	ABDOMEN	2(8%)	

S. No	Mode Of Reconstruction	Study	Sreeramaraju Et Al
1.	DELAYED PRIMARY CLOSURE	15(60%)	90(85.7%)
2.	SKIN GRAFTING	4(16%)	6(5.7%)
3.	FLAP COVER	6(24%)	9(8.6%)

CONCLUSION:

Dog bite injuries range from minor abrasions to major avulsion and even tissue loss leading to considerable functional and aesthetic concern. Management includes thorough debridement, rabies and TT prophylaxis and reconstruction. Reconstruction includes primary delayed suturing, flap cover, grafting. Strategies to prevent dog bite injuries by educating the public should be taken up.

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