

“When its Bite is Worse Than its Bark”



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Patient Presentation

CC

Dog bite injury to lids OS

HPI

41 yo F who presented as transfer from an outside hospital with a dog bite to adnexal region OS. Pt states she had been around dog before though it was not hers. States that her face to that of the dog's. Of note, pt is also somewhat intoxicated. No previous significant ocular history. Denies ocular pain or vision changes.



History

Past Ocular Hx – none

Past Medical Hx – noncontributory

Past Surgical Hx – no ocular or adnexal surgeries

Fam Hx - Noncontributory

Meds – none

Allergies - NKDA

Social Hx – lives at home with husband and kids



External Exam

	OD		OS
VA sc N	20/20-2		20/25+1
Pupils	4→2mm	No rAPD	4→2mm
IOP	14mmHg		17mmHg
EOM	Full, no pain		Full, no pain
CVF	full		full



Anterior Segment Exam

SLE	OD		OS
External/Lids	WNL		2cm full thickness laceration to LUL with additional Z- shaped 2 cm skin laceration overlying tarsus, 3.5cm L-shaped laceration of LLL, 2cm laceration of lateral skin approx 1 cm lateral to lateral canthus
Conj/Sclera	WNL		WNL
Cornea	Clear		Clear, no defects
Ant Chamber	Formed		Formed
Iris	Flat		Flat
Lens	Clear		Clear



Posterior Segment Exam

Fundus	OD		OS
Optic Nerve	c/d ratio 0.3		c/d ratio 0.3
Vitreous	Clear		Clear
Macula	WNL		WNL
Vessels	WNL		WNL
Periphery	WNL		WNL





Assessment

- 41 yo F without significant past ocular history who presents with multiple lid lacerations due to dog bite to face. No apparent globe or lacrimal system injury.



Plan

- Primary closure performed at bedside in ED
- Pt sedated with ketamine, soft tissues anesthetized with lidocaine/epinephrine
- Wound irrigated
- Primary closure performed with:
 - 4 6-0 vicryl sutures to tarsus
 - 3 6-0 vicryl sutures along margin
 - 17 5-0 fast absorbing gut sutures to skin of upper and lower lids



Animal Bites

- Incidence of 200 cases per 100,000 in US that seek treatment, approx. 1% of all ED visits annually
- Account for 4.0% of all unintentional injuries in the US 2015-2017
 - Up to 9% in children under age 10
- 49-57% of American households have pets as of 2016
 - 38.4% of households with a dog
 - 25.4% of households with a cat
 - 13% of households own another type of animal



Animal Bites

- 60-80% of animal bites are caused by dogs, 20-30% by cats and 1-2% by other mammals
- Little consensus on dog breed
 - Wide variability reported on studies, many dogs of mixed breed background makes study difficult
 - Larger, more powerful breeds such as pit bull, doberman, rottweiler, german shepherd associated with more severe injuries



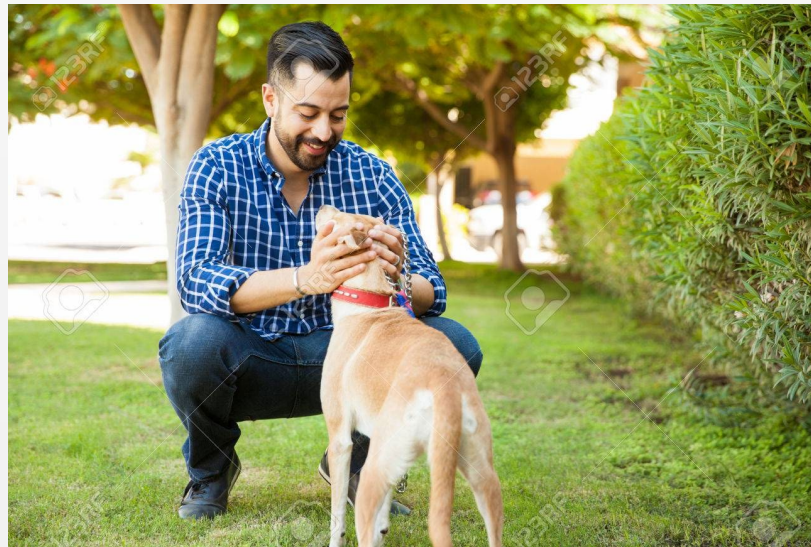
Dog Bites

- In children younger than 9, 73% of bites included the face
 - Likely due to height relative to the dog
 - Adults by contrast receive 75% of bite injuries on the extremities



Dog Bites

- A veterinary study was conducted of 132 dog bites to the face, looking at human behavior preceding events
 - Victim was bending over the dog in 79% of cases
 - Face was close to the dog's face in 19% of cases
 - Prolonged gazing being dog and victim in 5% of cases
- 30% of victims lived with the dog permanently
- Only 49% of victims sought medical attention



Dog Bites

- In children younger than 9, 73% of bites included the face
 - Likely due to height relative to the dog
 - Adults by contrast receive 75% of bite injuries on the extremities
- 16% of children sustained ocular or adnexal injury (n=227)
 - 22-35% of lid lacerations involved canaliculus
 - 1% had cornea abrasion
 - 1% had facial nerve injury
 - No globe ruptures reported in this study



Dog Bites

- Bratton EM et al. looked at 1,989 children aged 0-17 from 2003-2014 with dog bite injuries
- 71% suffered bites to face, 16% of children sustained ocular or adnexal injury (n=227)
 - 22-35% of lid lacerations involved canaliculus
 - 1% had cornea abrasion
 - 1% had facial nerve injury
 - No globe ruptures reported in this study
- Complications occurred in 14% (n=32) of patients with lid injury
 - 9 with epiphora, 8 with upper lid ptosis, prominent scarring in 4
 - 5.7% of patients (n=13) required additional surgery



Pathogens

- Approx 30-50% of cat bites and 10-20% of dog bites become infected without antibiotics
 - Most commonly are mixed pathogens from animals oral flora
 - Most common isolates are:
 - Staphylococcus ssp.
 - Streptococcus ssp
 - Pasteurella ssp
 - Capnocytophaga canimorsus
 - Bacteroides ssp



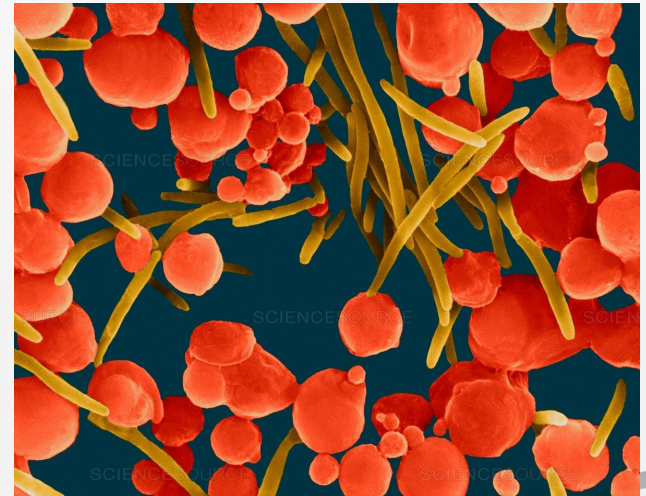
Pasteurella

- Most common species include
 - *P. multocida*, *P. canis*,
P. dagamatis
- Gram-negative coccobacillus
- Very susceptible to penicillins
- Usually presents with symptoms within 12-24 hours of initial bite



C. canimorsus

- *Capnocytophaga canimorsus*
- Gram-negative rod
- Susceptible to penicillin, clindamycin, tetracyclines, cephalosporines
 - Resistant to aminoglycosides
- Usually presents with symptoms after 5-8 days
 - Most common cause of sepsis after bite injuries
- Can lead to gangrene or DIC



Treatment

- Primary closure with irrigation of wounds
- Antibiotic prophylaxis is recommended in all facial bite wounds
 - Typical recommendation is amoxicillin-clavulanate 875/125mg bid for 7-10 days
 - Alternatively can give doxycycline or TMP-SMX plus clindamycin for anaerobic coverage
- 82% of injuries involving lacrimal system had successful recovery with stenting/Crawford tubes without second operation



Follow Up

- 1 week f/u
 - VA sc D 20/30-2
 - Lacerations healing with good approximation and margin contour
 - MRD 1 of 3mm, fair levator function (5-7mm)



Follow Up



Follow Up

- 6 month f/u
 - VA 20/25-2
 - Lid lacerations well healed, some mild residual scarring of cheek, good function
 - MRD 1 of 3mm, good levator function 8-12mm



References

- Bratton EM, Golas L, Wei LA, Davies BW, Durairaj VD. Ophthalmic manifestations of facial dog bites in children. *Ophthalmic Plast Reconstr Surg*. 2018 Mar/Apr;34(2):106-109
- Rezac P, Rezac K, Slama P. Human behavior preceding dog bites to the face. *Vet J*. 2015 Dec;206(3):284-8
- Sadiq MA, Corkin F, Mantagos IS. Eyelid lacerations due to dog bite in children. *J Pediatr Ophthalmol Strabismus*. 2015 Nov-Dec;52(6):360-3
- Savar A, Kirsztot J, Rubin PA. Canalicular involvement in dog bite related eyelid lacerations. *Ophthalmic Plast Reconstr Surg*. 2008 Jul-Aug;24(4):296-8.
- Rothe K, Tsokos M, Handrick W. Animal and human bite wounds. *Dtsch Arztebl Int*. 2015 Jun 19;112(25):433-42
- Slonim CB. Dog-bite induced canalicular lacerations. *Ophthalmic Plast Reconstr Surg*. 1996 Sep;12(3):218-22
- Toure G, Angoulangouli G, Meningaud JP. Epidemiology and classification of dog bite injuries to the face. *J Plast Reconstr Aesthet Surg*. 2015 May;68(5):654-8



