

# Studies on some surgical affections of the oral cavity in dogs



**PRESENTED**

**BY**

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# Introduction

- From the economical point of view, the orodental affections represent an important field of interest.
- The Veterinary Pet Insurance (VPI) mentioned that dog and cat owners spend much more money fixing problems in their pet's mouth than they do preventing them.

- The buccal cavity is an important subject for surgical investigation as it consists of many structures involving **hard and soft tissue parts** that offer a variety of surgical affections (Fossum, Hedlund, Johnson, Schu, Seim, Willard, Bahr & Carroll, 2007 and Niemiec, 2011) .

-The oropharynx is a normal contaminated medium with aerobic and anaerobic bacteria so the lack of oral hygiene causes plaque deposition and calculus formation, which harbors the bacteria and induces gingival inflammation that considered the beginning of many orodental diseases. (Javdani & Nikousefat ,2011).



# **Aim of work**

- 1. Study the incidence and prevalence of oral affections in dogs ; to diagnose the affected cases using different suitable diagnostic tools.**
- 2. Correlate the relationship between the nature of habitation and the most common oral affections to help taking suitable preventive measures.**
- 3. Determine the most suitable treatment methods for each case.**

## **Materials and Methods:**

- In the present study a total number of examined dogs was 639 dogs.**
- This work was applied in the following places in Egypt :**
  - The Surgery Clinic at the Faculty of Veterinary Medicine, Cairo University.**
  - The Military Veterinary Hospital, Cairo, Egypt.**
  - Some private clinics in Cairo, Egypt.**

## **General examination :**

**1-Case History:** included age, sex, breed, owner complaint, family medical history, previous illness etc...

### **2-Clinical Examination:**

**a- Clinical evaluation** of the general health condition through visual examination, pulse rate, respiration and rectal temperature.

**b- Orofacial examination:** 1-Examination of the lips for lacerations, depigmentations, inflammations. Dental tissue ; periodontal examination and evaluation of the internal oral cavity including soft palate, hard palate and the tongue. Observation of any outer changes on the skull and jaws, any masses ,dropped jaw and facial asymmetries

## Examination under general Anesthesia:

-- The patient was placed in dorsal recumbence and a suitable sized mouth gag was used to open the mouth. Cases were pre-medicated with s/c injection of atropine sulphate 0.05 mg /kg. I.V injection of a Xylazine 1mg / kg.b. ; I.V. Induction by ketamine 10 mg/ kg.b.w. Maintenance by I.V. injection of 25 mg/ kg.b.wt 2.5% solution of Thiopental sodium.

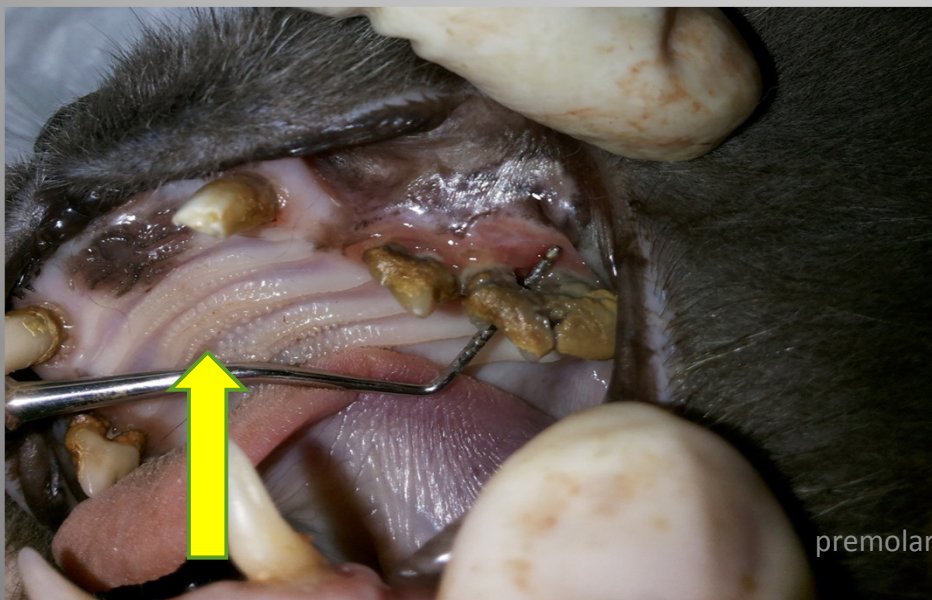
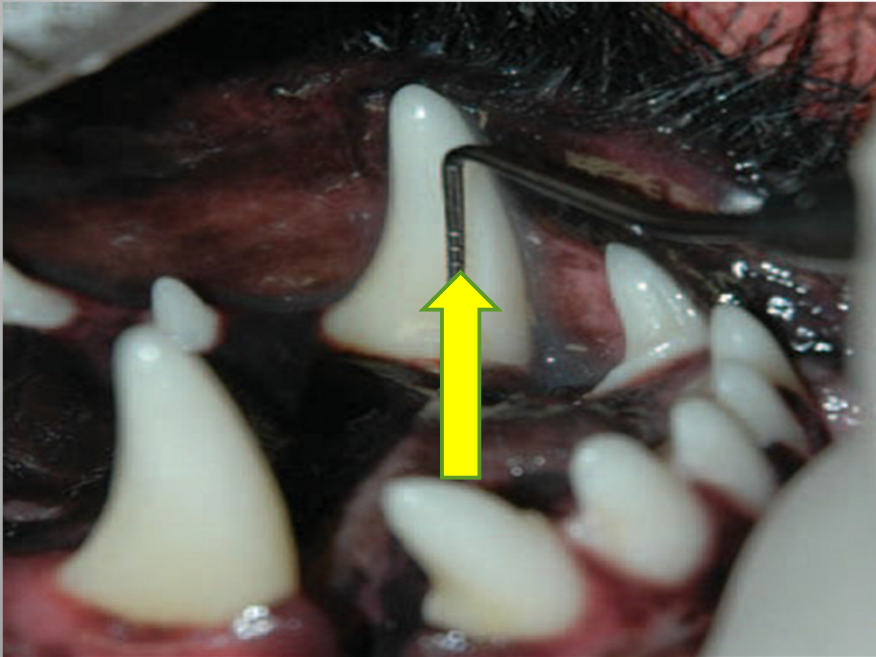
- Canine formula of the permanent teeth is

$$2 \times (I 3/3; C 1/1; P 4/4; M 3/2) = 42$$

- Canine formula of the deciduous teeth is

$$2 \times (I 3/3; C 1/1; P 3/3 ) = 28$$

## Intraoral examination



**Pocket depth and attachment loss levels were measured** using the periodontal probe. Plaque and Calculus were examined by passing the probe all around the tooth and gently pressing on the sulcal floor. Normal sulcal depth was 3 mm in dogs



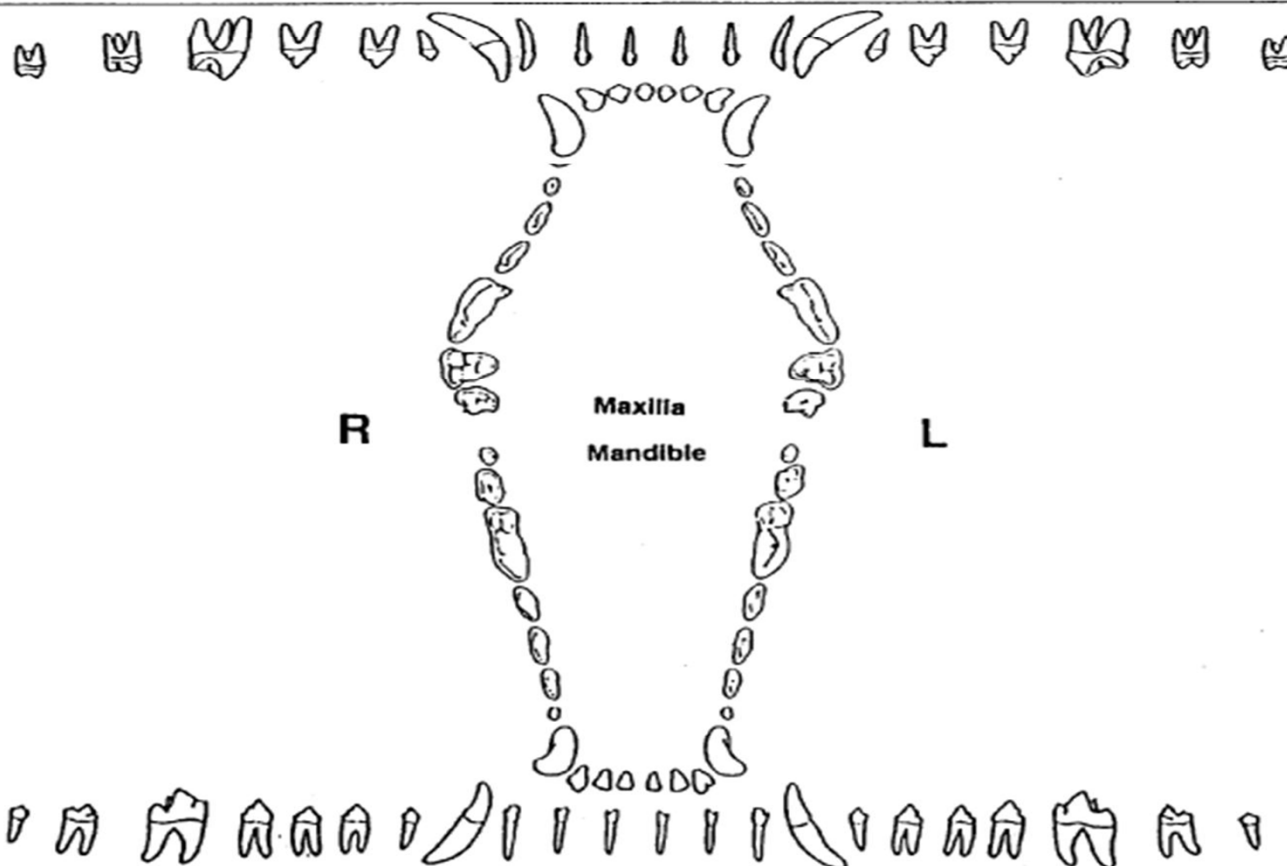
# CANINE DENTAL CHART

Owner: \_\_\_\_\_ Patient: \_\_\_\_\_ Date: \_\_\_\_\_

Breed: \_\_\_\_\_ Sex: \_\_\_\_\_ Age: \_\_\_\_\_ RDVM/VMD: \_\_\_\_\_ Fax: \_\_\_\_\_

History: \_\_\_\_\_

Diagnostic Notes: \_\_\_\_\_



Scale/Polish/Fluoride     Intraoral X-rays: \_\_\_\_\_ views     Local Anesthesia: \_\_\_\_\_

Treatment Notes: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Radiography** : X-ray was applied for confirmation of fractures. Dental radiography was performed with 40-70 K.V.P, 100 -200 M.A.s. and 0.1 second exposure time .

**Blood samples** were collected for blood picture and for serum biochemical profile and glucose estimation.

**Histopathological Examination:** A confirmative diagnosis in cases of abnormal masses of the oral cavity.

**Surgical interference** : Done according to the case.

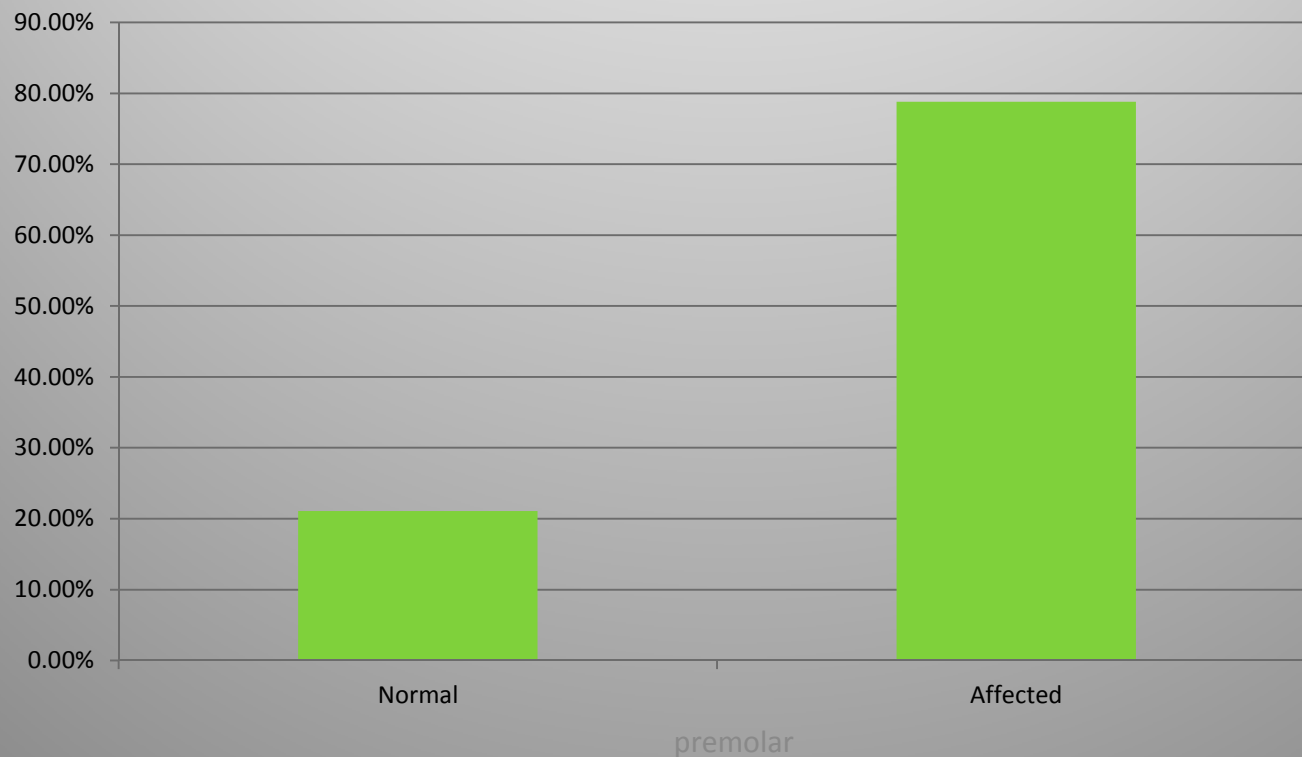


# Result

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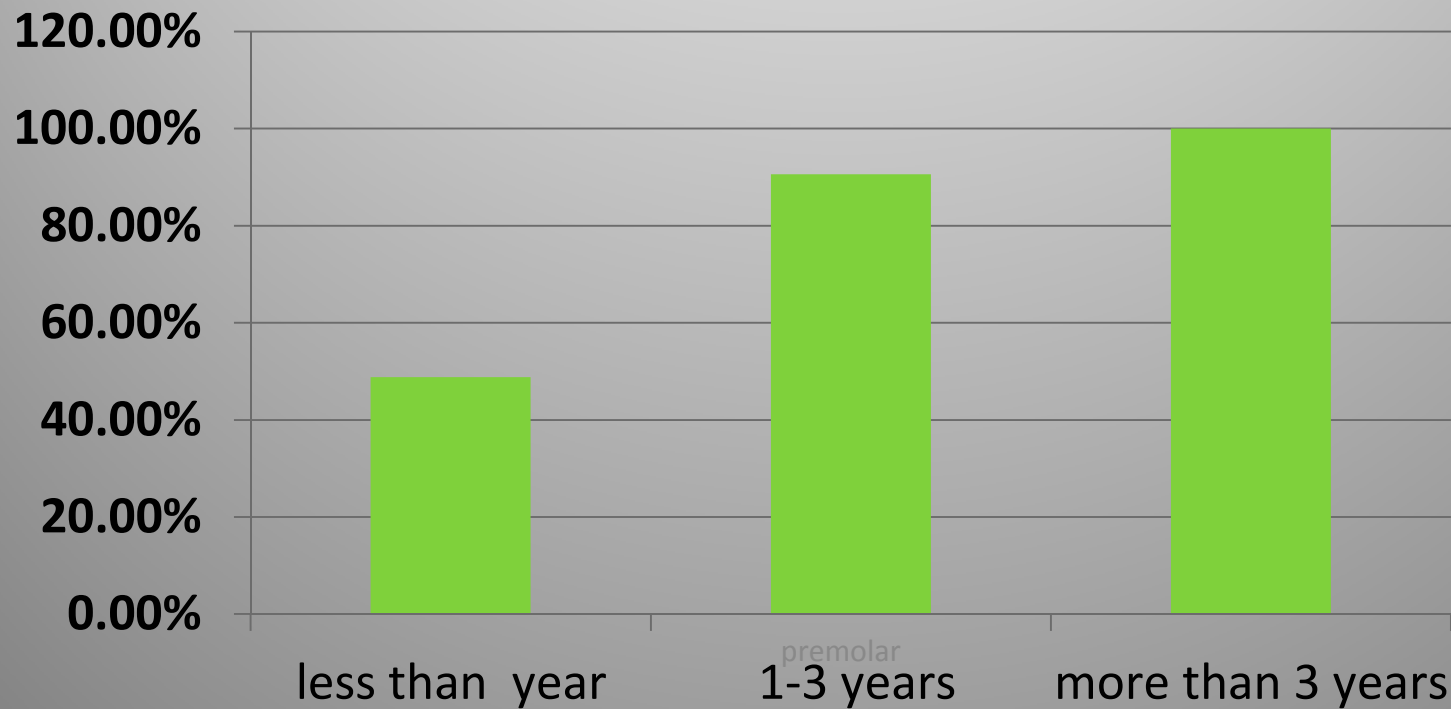
## Incidence of normal and affected cases related to species.

Species	Normal	Affected
Dogs=639	135(21.1%)	504(78.8%)



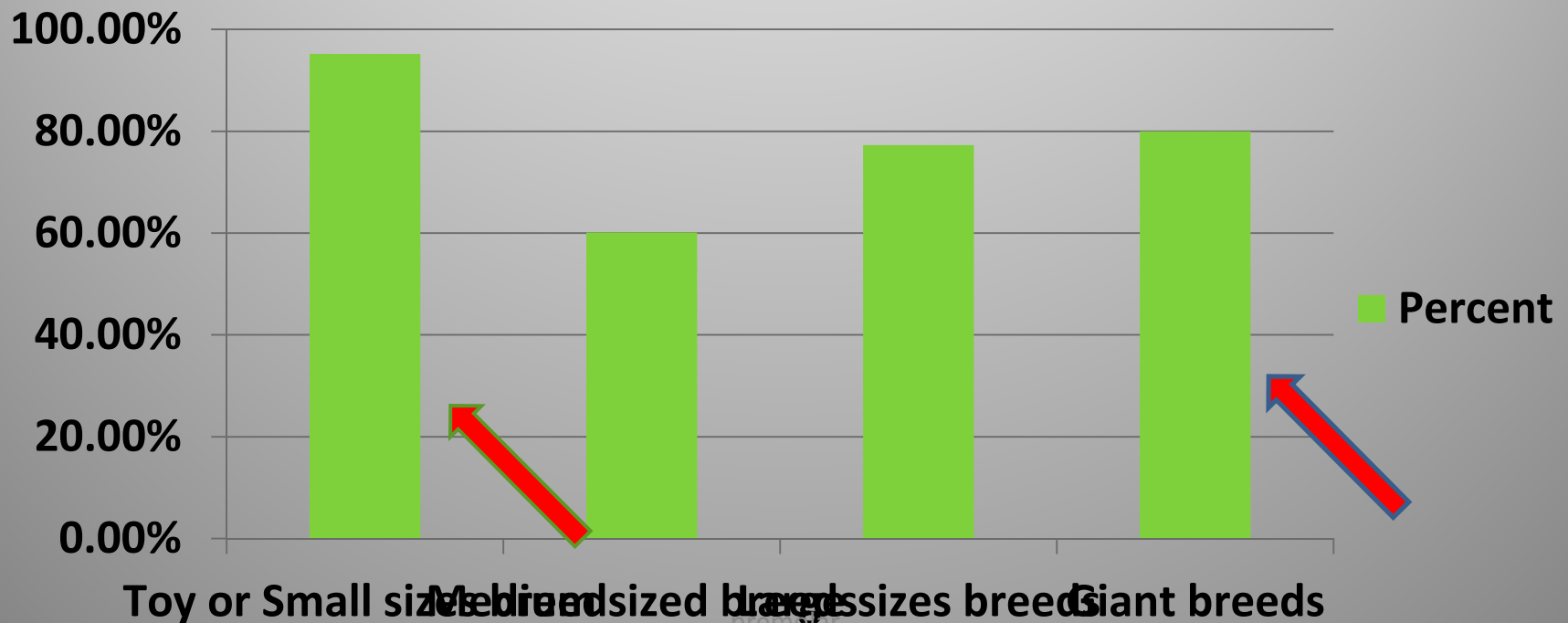
**Number of normal and affected cases in the total examined dogs related to their ages and sex.**

species	Age	Sex				Total
		male		female		
		normal	affected	normal	affected	
Dogs	Less than 1 year	50	72	65	38	225
	From 1-3 years	12	123	8	70	213
	more than 3 years	---	111	----	90	201
	Total=639	62	306	73	198	639
		368		271		



### Incidence of oral cavity affections among different dog breeds.

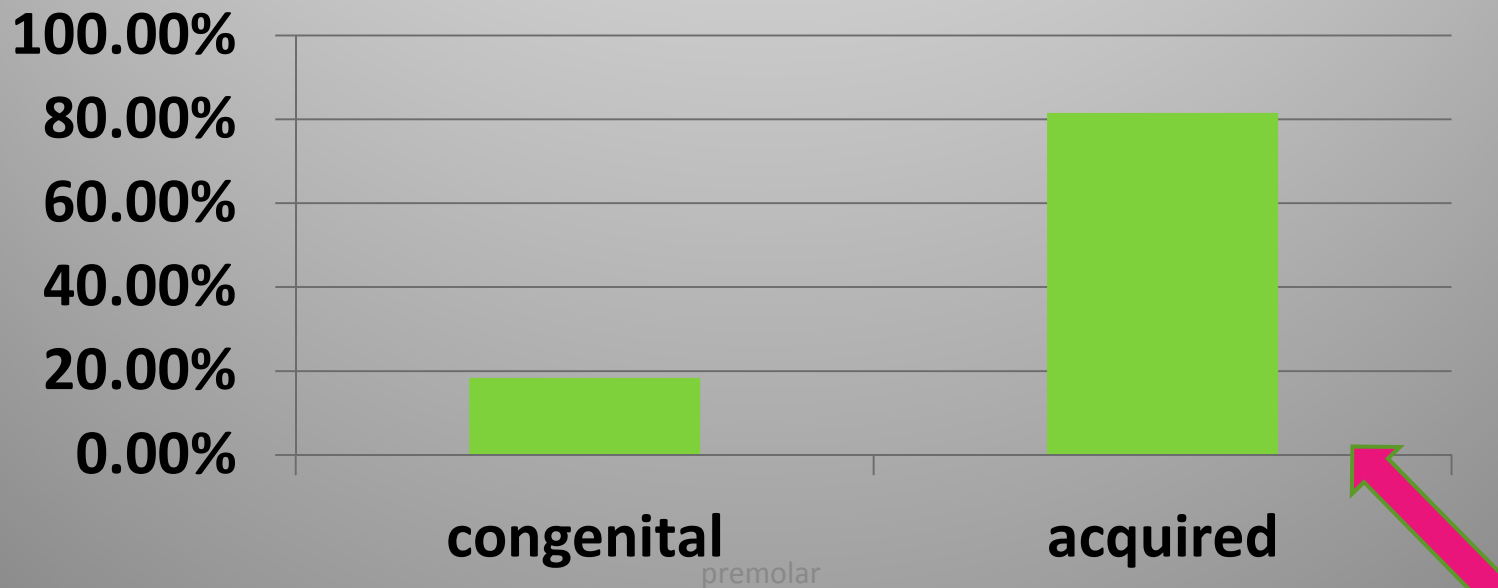
Breeds	Total	Affected	Percent
Toy or Small sizes breed	170	162	(95.2%)
Medium sized breeds	123	74	(60.1%)
Large sizes breeds	331	256	(77.3%)
Giant breeds	15	12	(80%)
Total	639	504	(78.8%)



The examined cases were classified into 2 main groups according to the nature of the affection into congenital and acquired.

The incidence of congenital and acquired affections in dogs and cats .

species	congenital	acquired	Total
Dogs	93(18.4%)	411(81.5%)	504(100%)

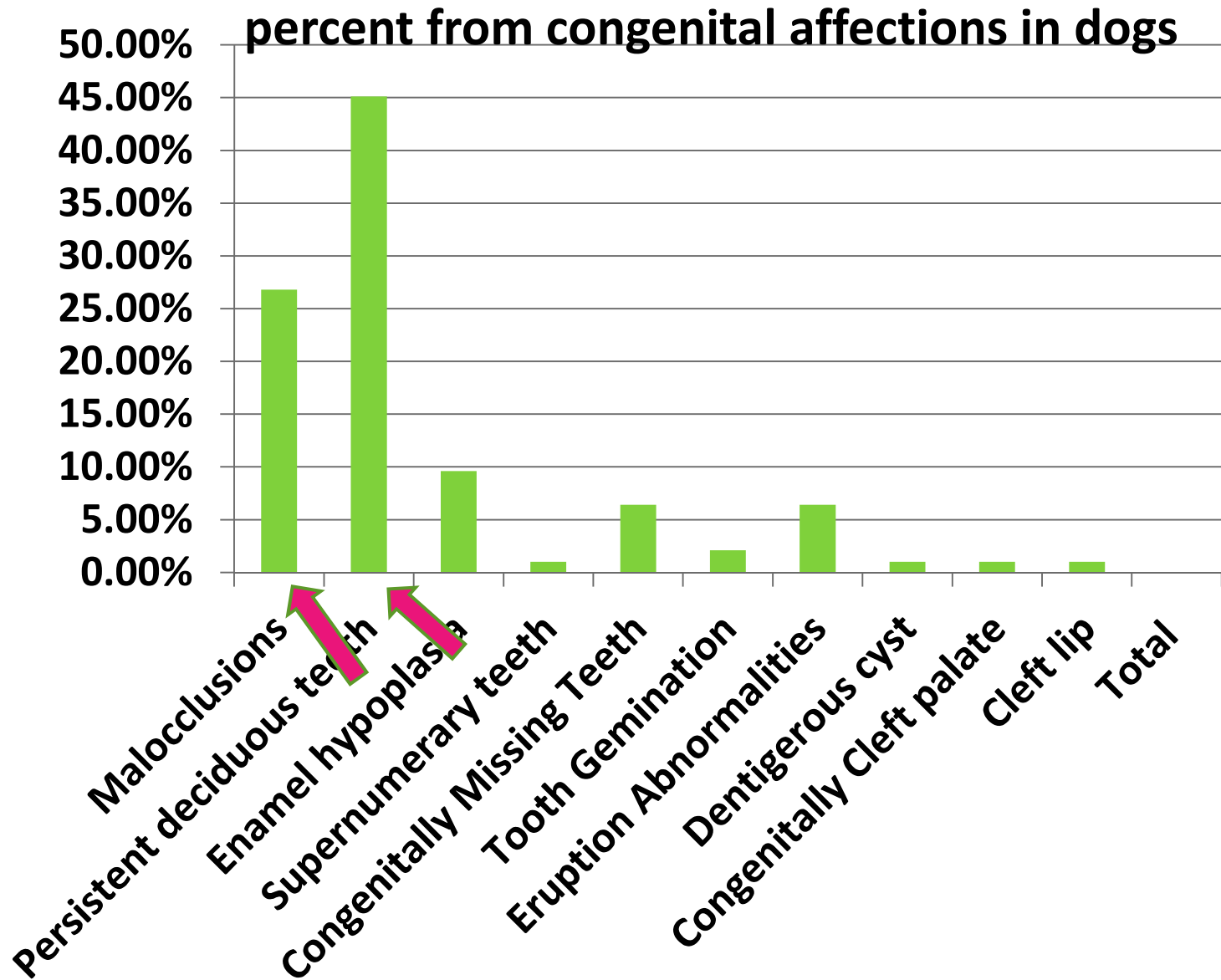


# CONGENITAL AFFECTIONS

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Congenital affections(C.A.)	Affections	Dogs		
	species	No.	% C.A	% all A.
	Malocclusions	25	26.8%	4.9%
	Persistent deciduous teeth	42	45.1%	8.3%
	Enamel hypoplasia	9	9.6%	1.7%
	Supernumerary teeth	1	1%	0.009%
	Congenitally Missing Teeth	6	6.4%	1.1%
	Tooth Gemination	2	2.1%	0.003%
	Eruption Abnormalities	5	6.4%	1.1%
	Dentigerous cyst	1	1%	0.009%
	Congenitally Cleft palate	1	1 %	0.009%
	Cleft lip	1	1%	0.009%
	Total	93		





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# Malocclusion

Represented **25 cases (26.8% of congenital affections )**

Two classes of malocclusions were recorded:

**-Class I (Dental malocclusion) which constituted 72%, class II (skeletal type constituted 28% from total malocclusion cases.**



A- Normal occlusion in a 5 years old Pekingese normal brachycephalic breeds.  
B- An 11 months old Rottweiler the incisors are considered abnormal in mesocephalic breeds.  
C: A six years old male Rottweiler with lower incisors not in the same alignment .



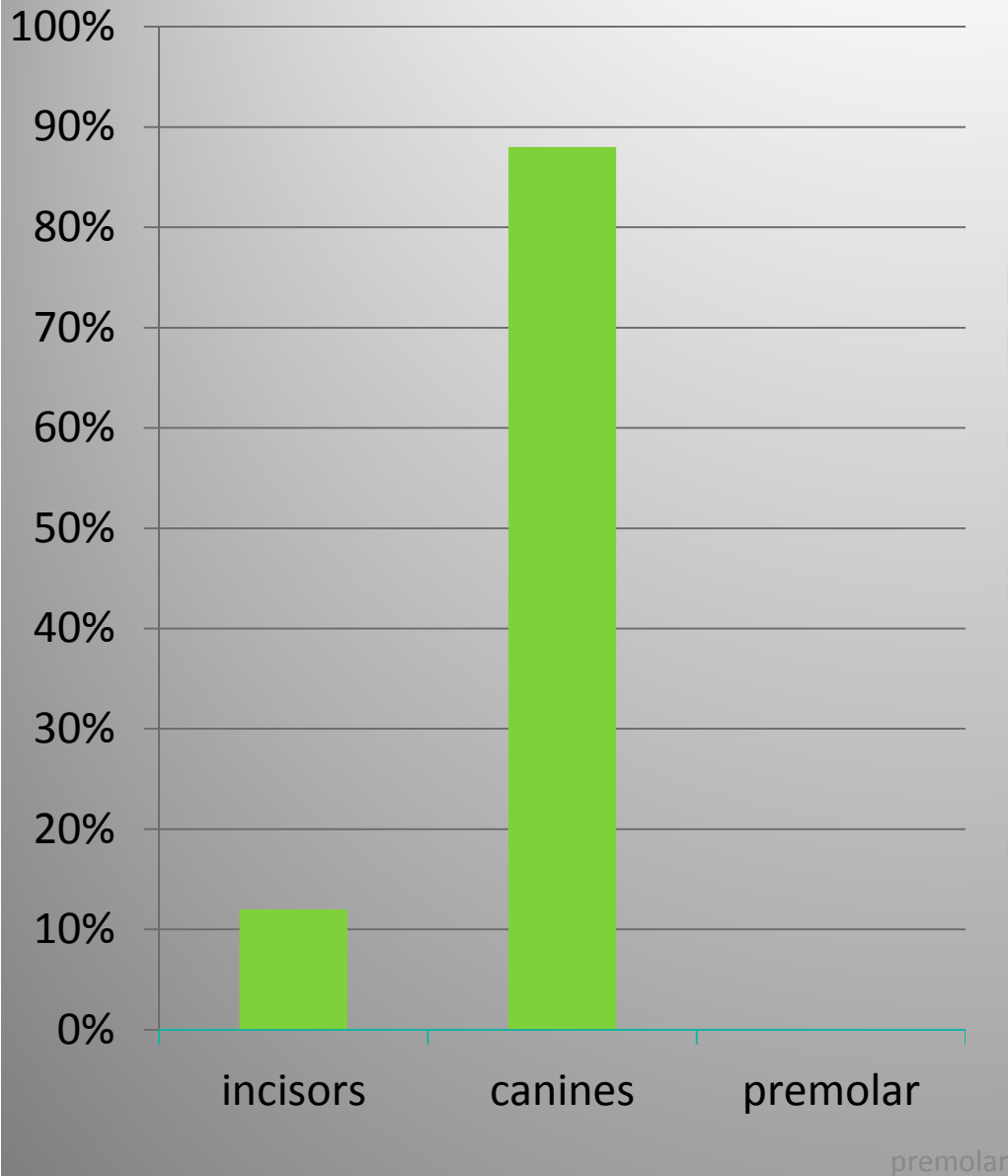
**Class II (skeletal II) malocclusion ( parrot mouth ).**

**A: Frontal view in a 10 months old male German shepherd showing the mandible is shorter than the maxilla.**

**B: Ventrodorsal radiographic view for an 8 months old male Rottweiler showing that the mandible was shorter than the maxilla.**



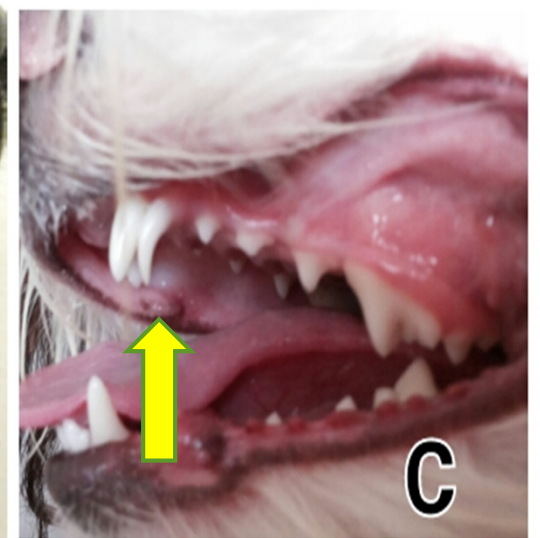
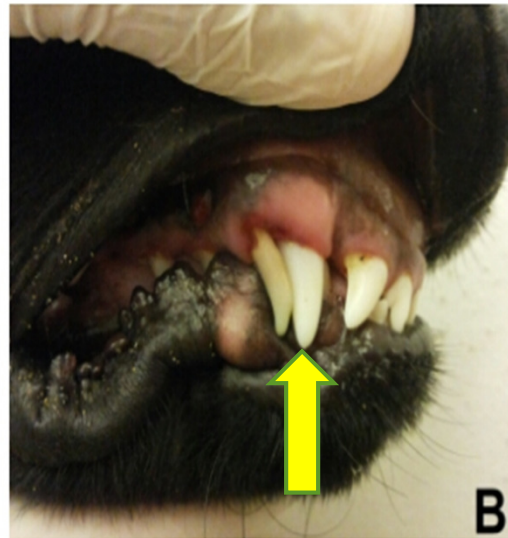
# Persistent (retained) deciduous teeth



**Persistent canines and incisors in an 8 months Yorkshire Terrier**

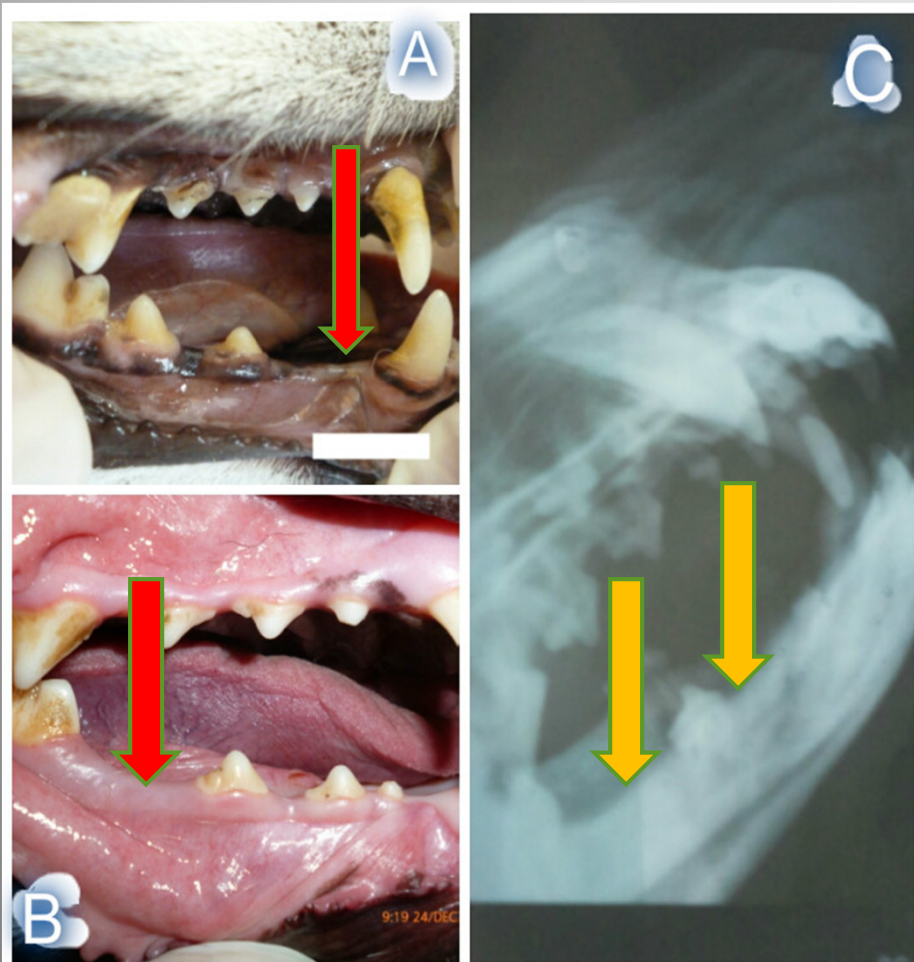
**A- Five months old German shepherd showing persistent canine teeth in upper and lower right side canines .**

**B -& c : Six months old Griffon showing persistent canine teeth in upper left side canine. Note mesial displacement of the permanent tooth.**



# Congenital missed teeth

Encountered in 6 dogs of 93 congenitally affected .



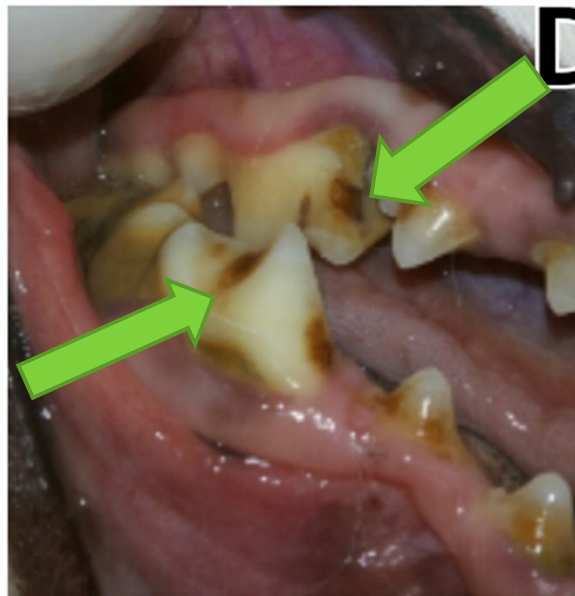
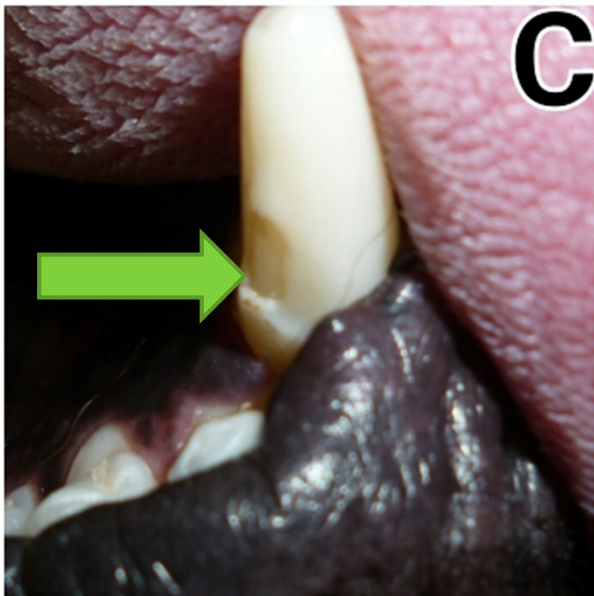
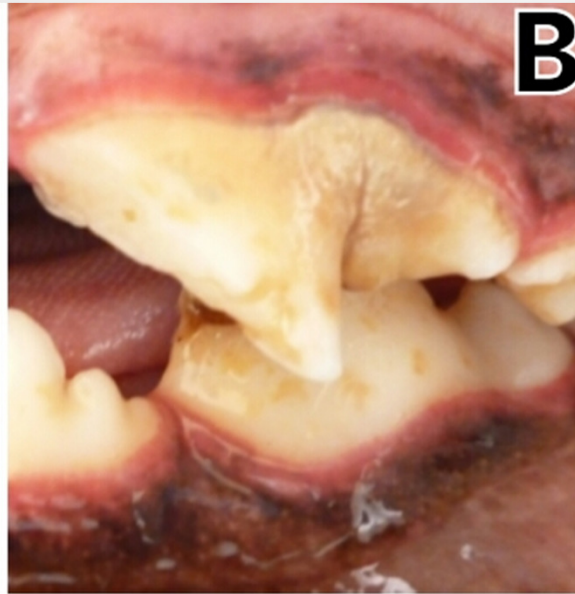
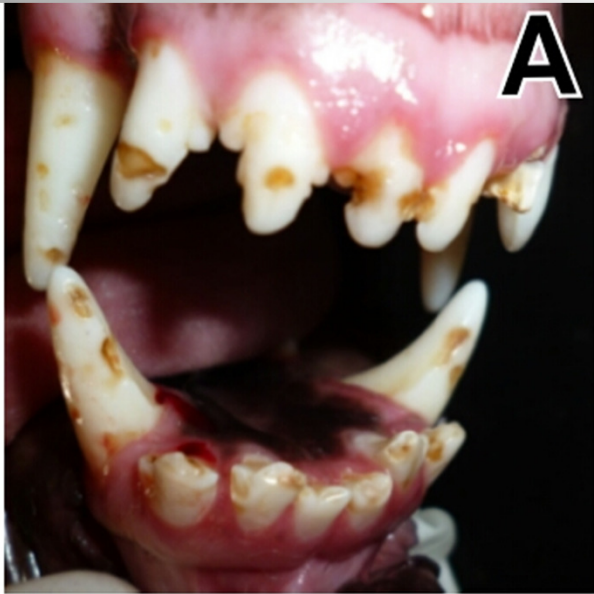
**A-** A Griffon 1 year 6 months had missed right 1st lower premolar .

**B:**A Dalmatian had missed 4<sup>th</sup> right premolar .

**C:** lateral radiographic view for a German Shepherd had missed 2<sup>nd</sup> & 4<sup>th</sup> lower premolar bilaterally .



# Enamel hypoplasia



Enamel hypoplasia were recorded in 9 dogs represented (9.6%) from total with congenital affections (93)

A: An eight months old German shepherd seen in incisors and canines that appeared as brown rough areas in the teeth .

C: Localized enamel hypoplasia in a one year old German shepherd .

D: One year old Griffon showing widespread enamel hypoplasia appears in lower 1st molar teeth .



## Supernumerary teeth (polydontia)



Extra upper incisor teeth in one year old male Rottweiler,(arrow).Recorded in one case of 93 congenital cases

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## Congenital Cleft palate and lip

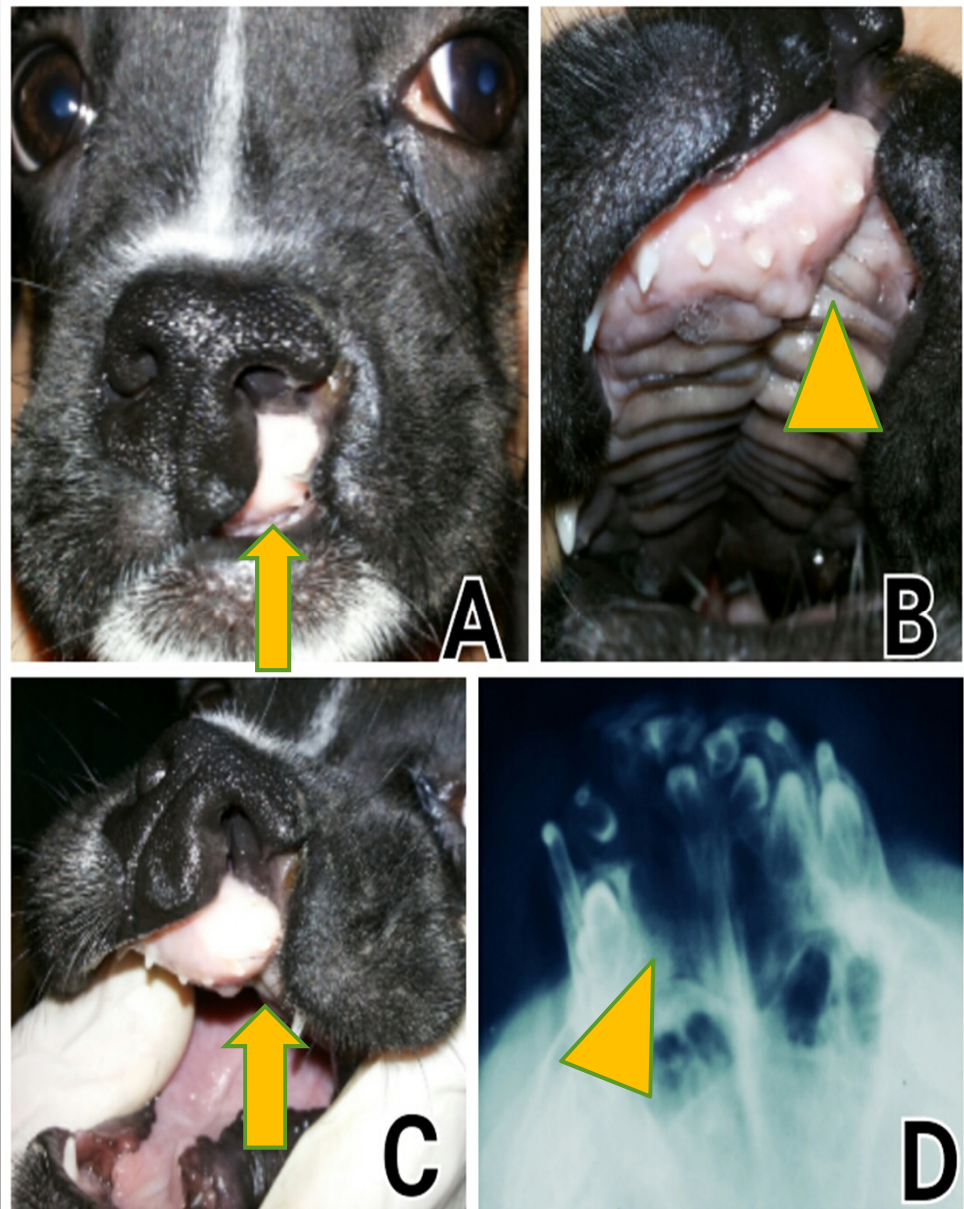
Cleft palate and cleft lip in a 45 days old female Boxer .

A: Frontal view showing the cleft lip.

B: Intraoral picture showing primary cleft palate. Notice (dental) malocclusion, which appeared as deviation of teeth .

C: Frontal view for the same animal showing both affections.

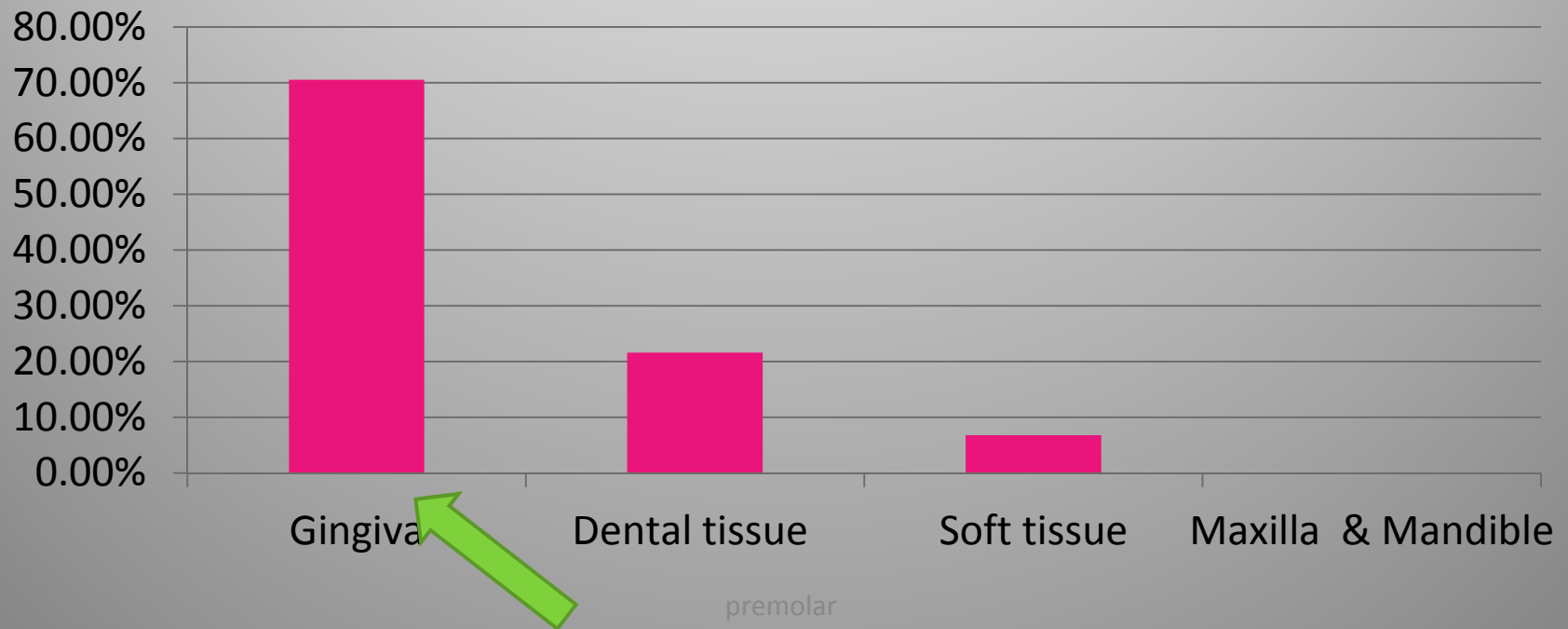
D: Dorsoventral intraoral radiographic view showing the extent of the affection to the midline of the maxillary bone.



# **ACQUIRED AFFECTIONS**

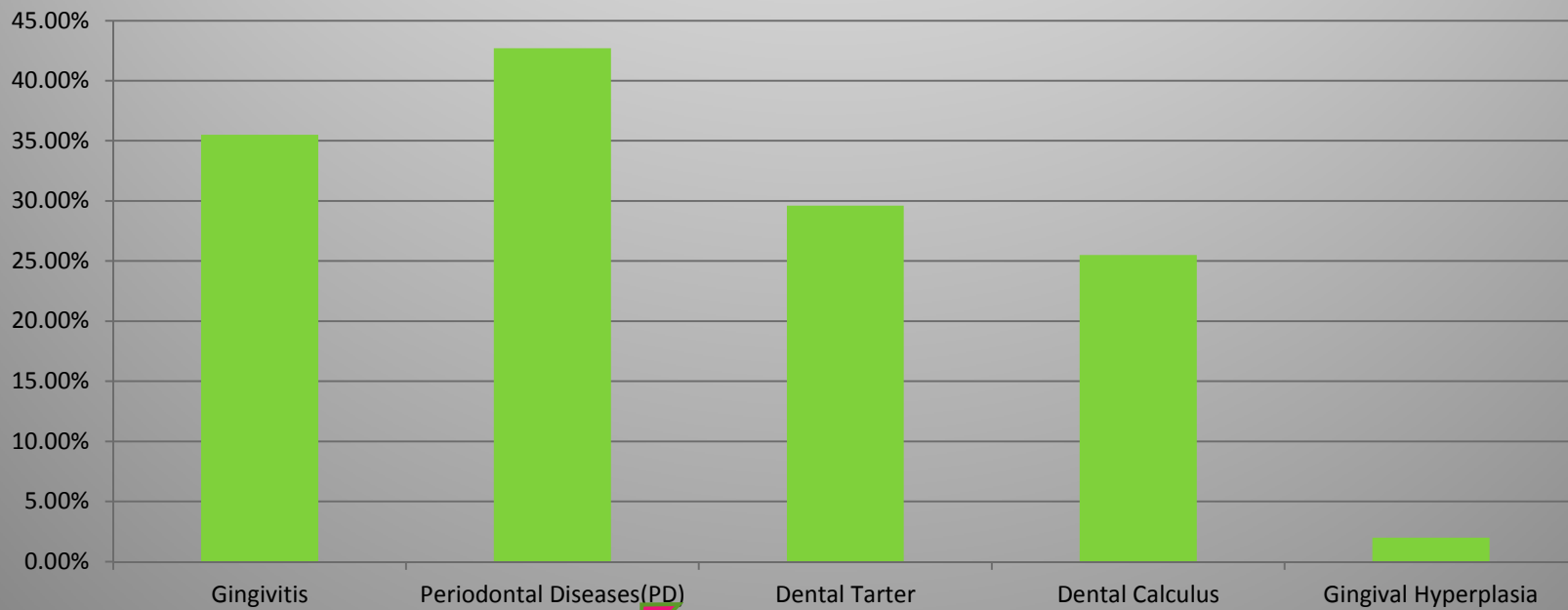
**Table representing the acquired oral affections in dogs**

affected	Gingiva	Dental tissue	Soft tissue	Maxilla & Mandible	Total
Dogs	290 (70.5%)	89(21.6%)	28 (6.8%)	4 (0.009%)	411(100%)



## Diseases related to the Gingiva

affections	Gingivitis	Periodontal Diseases(PD)	Dental Tarter	Dental Calculus	Gingival Hyperplasia	Total affected animals
Number of affected dogs	103 (35.5%)	103+21=124 (42.7%)	86 (29.6%)	74 (25.5%)	6 (2%)	290 (100%)





Gingivitis were recorded in **(103)** dogs represented **25%** from total acquired affections **(411)** .

Intraoral picture showing :

**normal gingiva**

A: A 2 years old Mastiff shows pink in colour gingiva. There was no evidence of gingival inflammation or plaque / calculus on the teeth. .

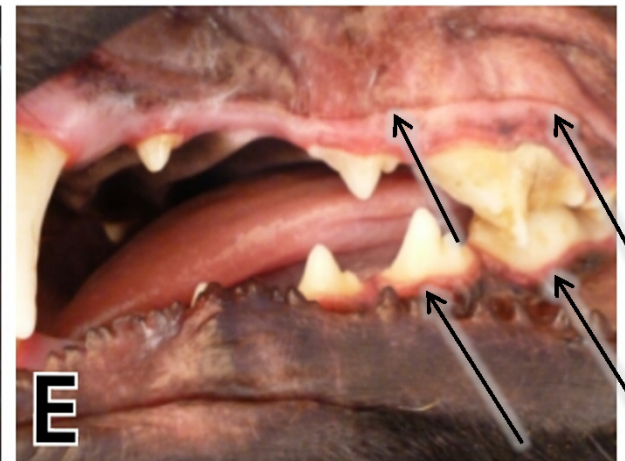
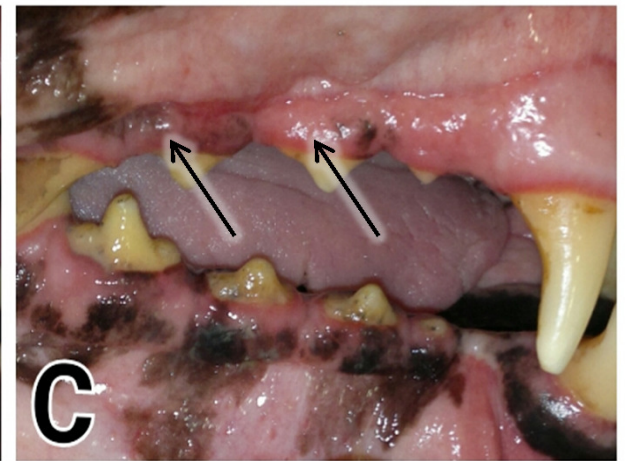
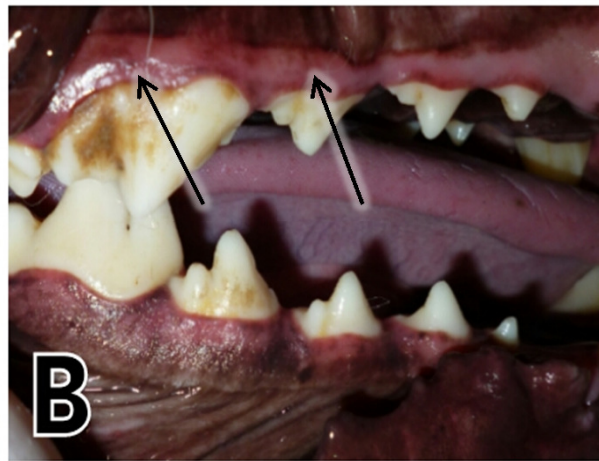
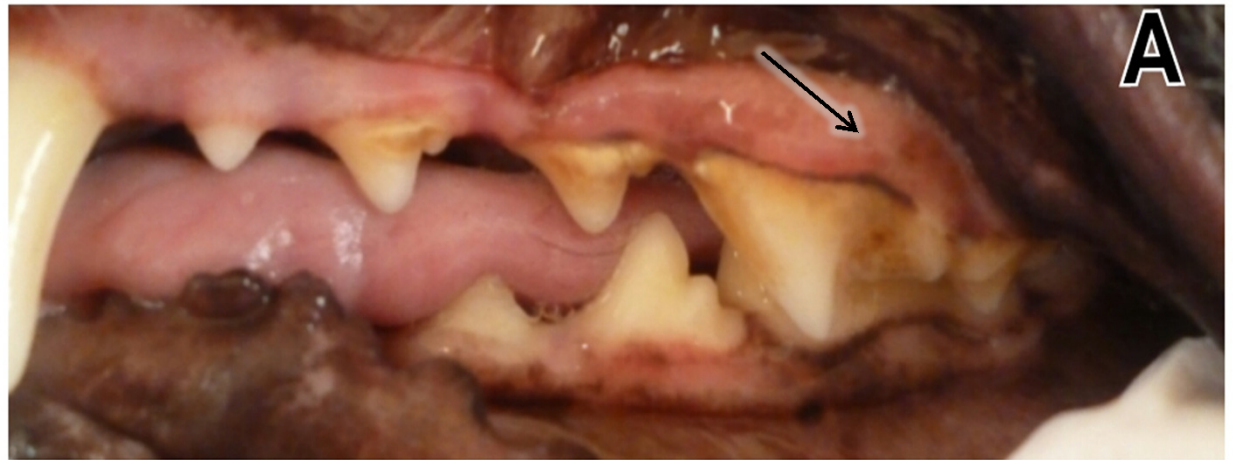


# Gingivitis

**A:** left maxillary 4<sup>th</sup> premolar in a 14 months German shepherd with early marginal gingivitis).

**B & C:** Mild to moderate inflammation of the entire marginal gingiva in an 11 months old Golden Retriever and a 3.5 years old German shepherd.

**D,E:** Severe inflammation in the maxillary left 4th premolar teeth with gingival enlargement and moderate calculus formation

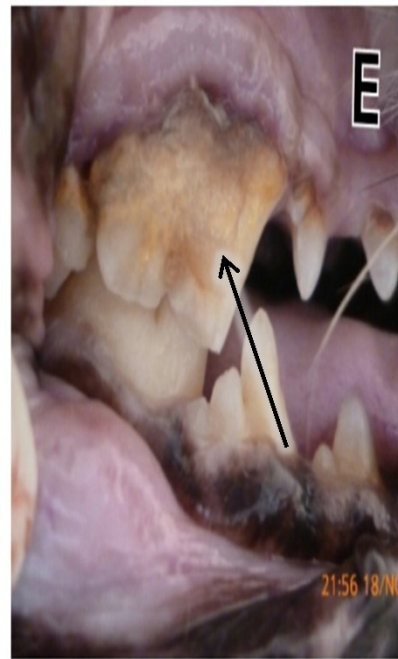




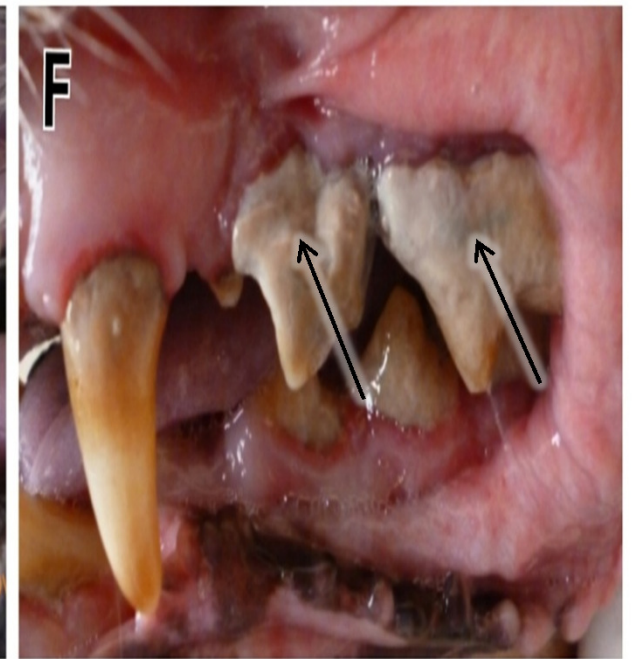
# Dental Tarter

Recorded in **86 dogs** represented **20.9%** of the total number of dogs with acquired affections (**411**).

**E:** A 4 years old female Golden Retriever showing plaque accumulation on the buccal surface of upper right 4th premolar teeth .



**F:** An 11 years old female Griffon showing plaque covers more than two-thirds of buccal surface of the affected teeth.



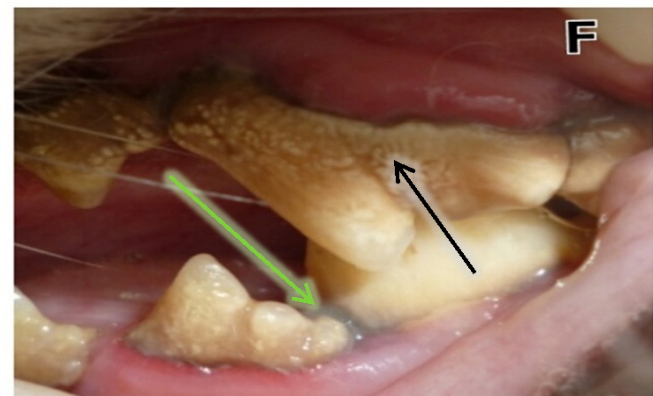
# Dental Calculus

Dental Calculus was recorded in represented **18%** from total number of acquired affections (**411**)

B- Three years old female Cocker Spaniel showing a ring calculus in the upper left canine .

D - upper right 4<sup>th</sup> premolar teeth that cover about 2/3 of its surface .

F- Six years old female Yorkshire Terrier with calculus formation on the buccal surface of upper right 3rd and 4th premolar teeth. Notice the purulent pus accumulation between the teeth .



## Treatment of the affections related to the gingiva

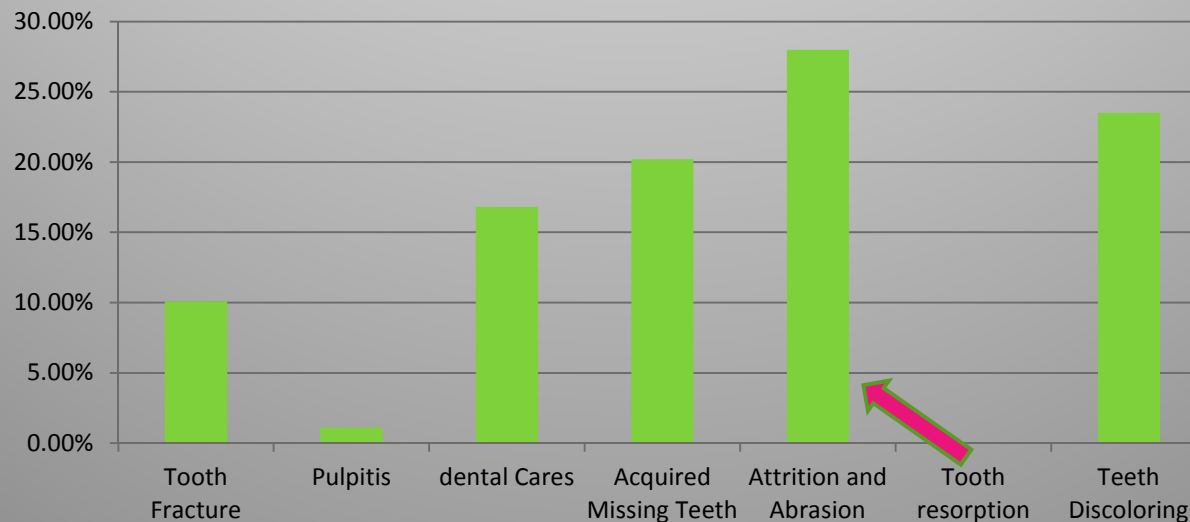
1- Most cases received **medicinal treatment** and the remaining were untreated.

2-Treatment by **feeding of dental diet and treats**. this included all cases with mild to moderate degree of gingivitis, dental tarter and dental calculus. **Home care** and follow up every 3 months.

3-**Surgical treatment**: Manual scaling and high speed micro motor.

# Affections of the dental tissue related to the whole oral affections

Affections	NO of dogs
Fractured teeth	9 (10.1 %)
pulpitis	1(1.1 %)
Dental caries	15 (16.8 %)
Acquired missed teeth	18 (20.2 %)
Attrition and abrasion	25 (28 %)
Discoloration of the teeth	21 (23.5 %)





# FRACTURED TEETH



**A: Intra oral picture of 3 years old male Rottweiler showing fracture the upper canine**

**B: Intra oral picture of 10 years old female Cocker Spaniel showing lower canine fracture .**

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# Pulpitis

intra oral picture of a 3 years old male Rottweiler showing the left lower canine teeth that has irreversible pulpitis secondary for neglected complicated fracture due to biting on a metal object .

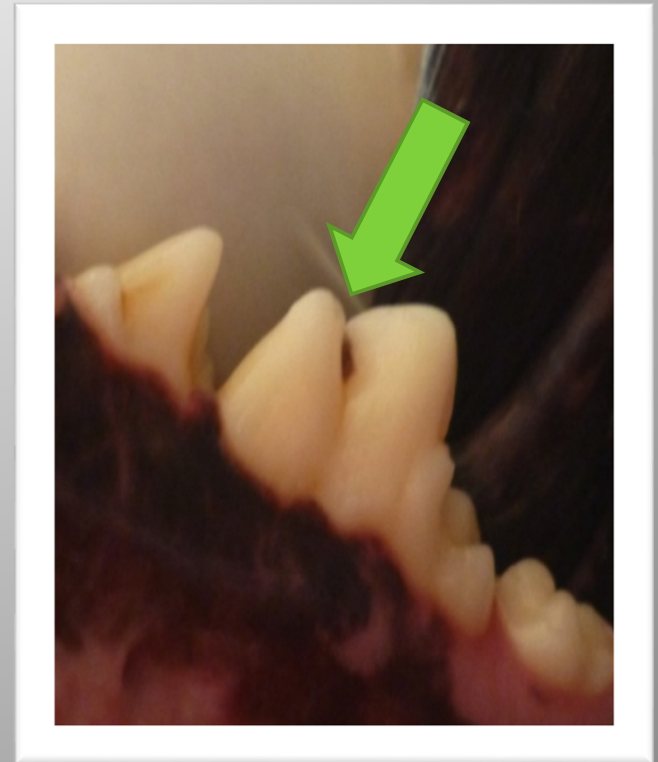


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# Dental Caries

Dental caries were recorded in 15 dogs and represented (2.9%) from the total affected dog (504),

intra oral picture of a 2.3 years old female German shepherd showing dental caries that appear as a black spot on the occlusal surface of the 1st lower molar teeth.



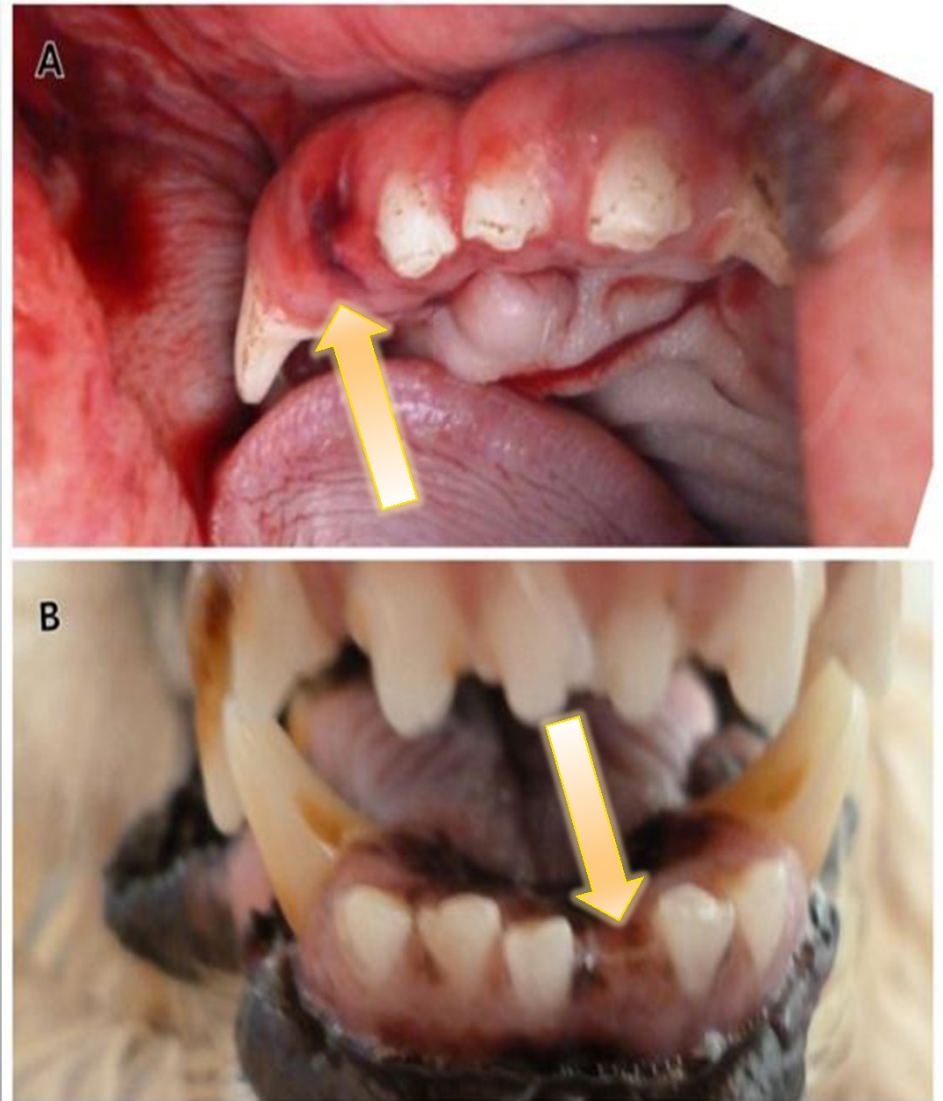


# Acquired Missed Teeth

Acquired missing teeth were recorded in 18 dogs that represented (3.5%) from the total affected dogs (504) ,

A: Intraoral picture of a 2.5 years old female Pit Bull showing missed 2nd upper right incisor due to fight with other dog (black arrow).

B: Intraoral picture of a 5 years old male Golden Retriever showing missed lower right incisor



## Attrition and Abrasion

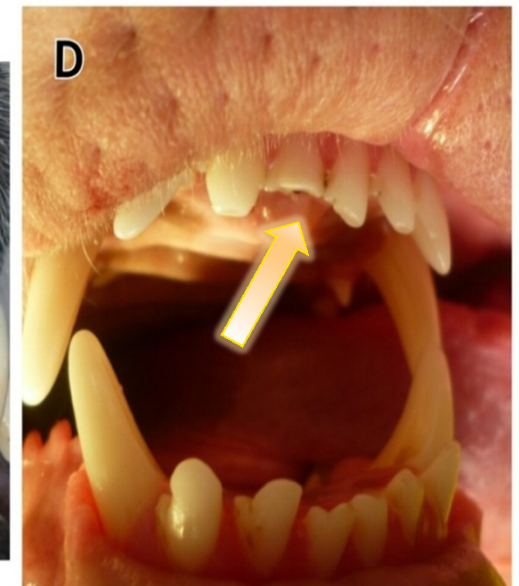
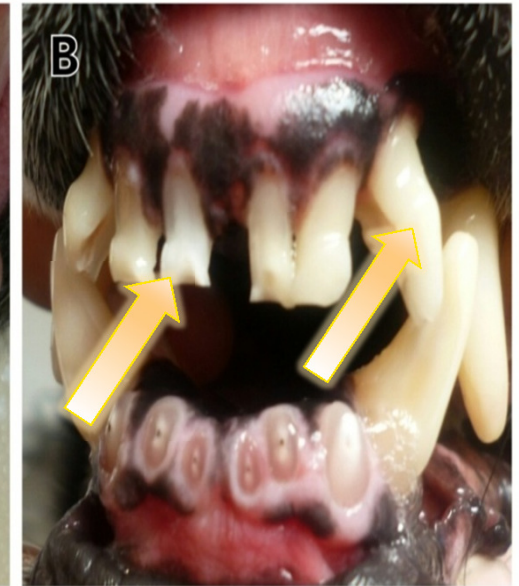
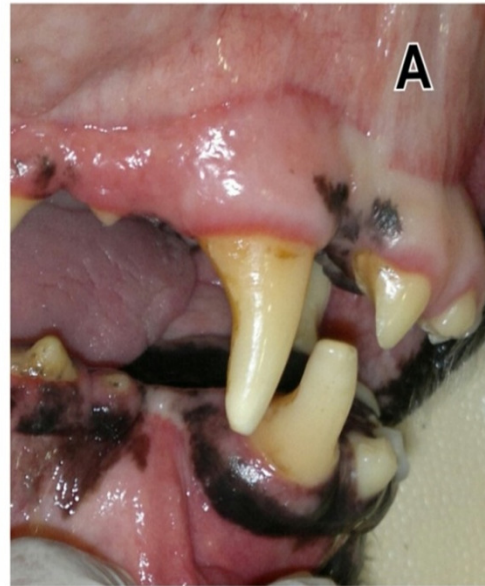
Recorded in 25 dogs that represented (4.9%) from the total affected dogs (504)

**A:** German shepherd showing abrasion in the canines and incisors due to rock and cage eating.

**B:** Seven years old German shepherd with attrition in incisors due aging.

**C:** Two years old Saint Bernard showing abrasion in incisors and canines due pica in hard objects.

**D:** Intraoral picture of a 1.5 years old Pit Bull showing abrasion in 1st upper right incisor due to fighting .





# Discolored Teeth

Discolored teeth were recorded in 21 dogs that represented (4.1%) from the total affected dog (504)

intraoral picture of a 10 months old male German shepherd with teeth discoloring in all the teeth.



# **ACQUIRED AFFECTIONS**

**Diseases related to the  
soft tissue of the oral  
cavity**

## Diseases related to of oral soft tissue (28 cases)

	Dogs
affections	
→ Oro-nasal fistula	3(10.7%)
Eosinophilic granuloma complex	----
Acquired Cleft palate	-----
→ Stomatitis (gingivostomatitis)	4(14.2%)
→ Wound of the oral cavity	5(17.8%)
→ Ulcers of the oral cavity	4(14.2%)
→ Foreign bodies in oral cavity	3(10.7%)
→ Epulis	2(7.1%)
→ Oral Neoplasia	5(17.8%)
Candidiasis	-----
Infectious viral diseases “calici “	-----
→ Salivary mucoceles	2(7.1%)
Total	28(100%)

# Oronasal fistula

Radiographic picture of a 3 years old Griffon showing radiolucent space above the 4<sup>th</sup> premolar teeth.(the blue circle)

Cases were admitted suffering from an open wound oozing blood or purulent material that differ in place according to the affected teeth.



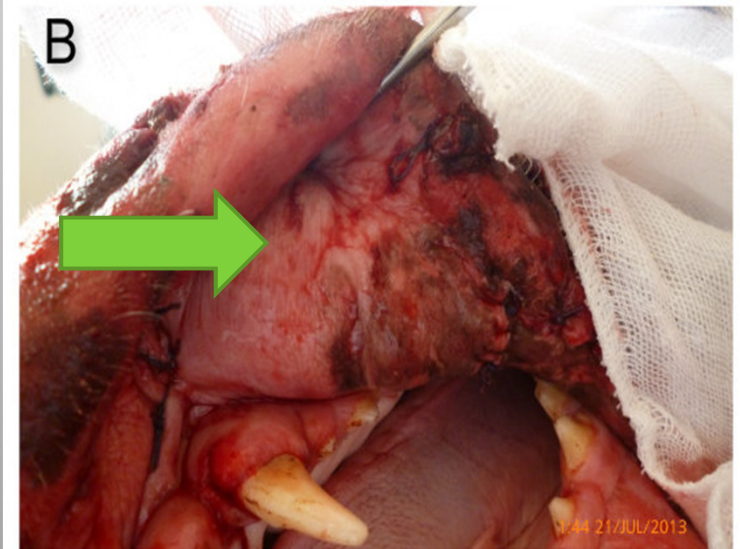
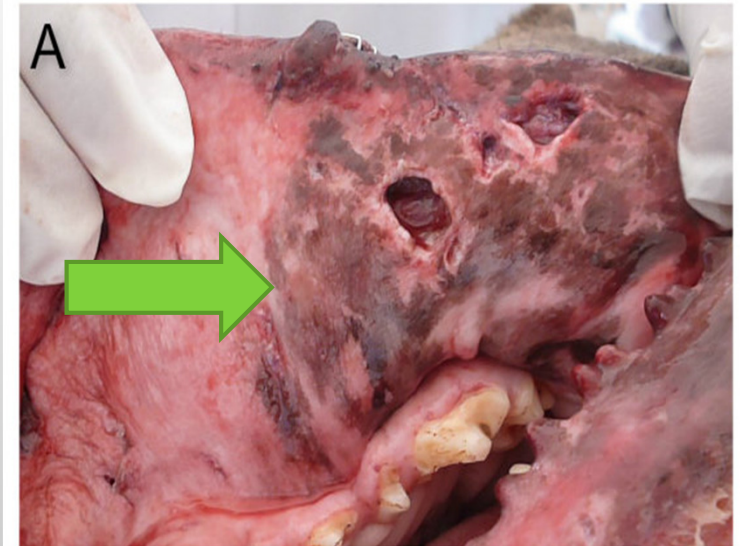


## Wounds of the oral cavity



Three years old Pit Bull showing a recent wound in the cheeks and lips.

A & B: before and after treatment by suturing .



intra oral picture of an 11 months old German Shepherd had a severe injury in the mucosa of the hard palate at the level of the 4th upper premolars due to wooden stick lodged in and removed under anesthesia.



## Ulcers of the oral cavity

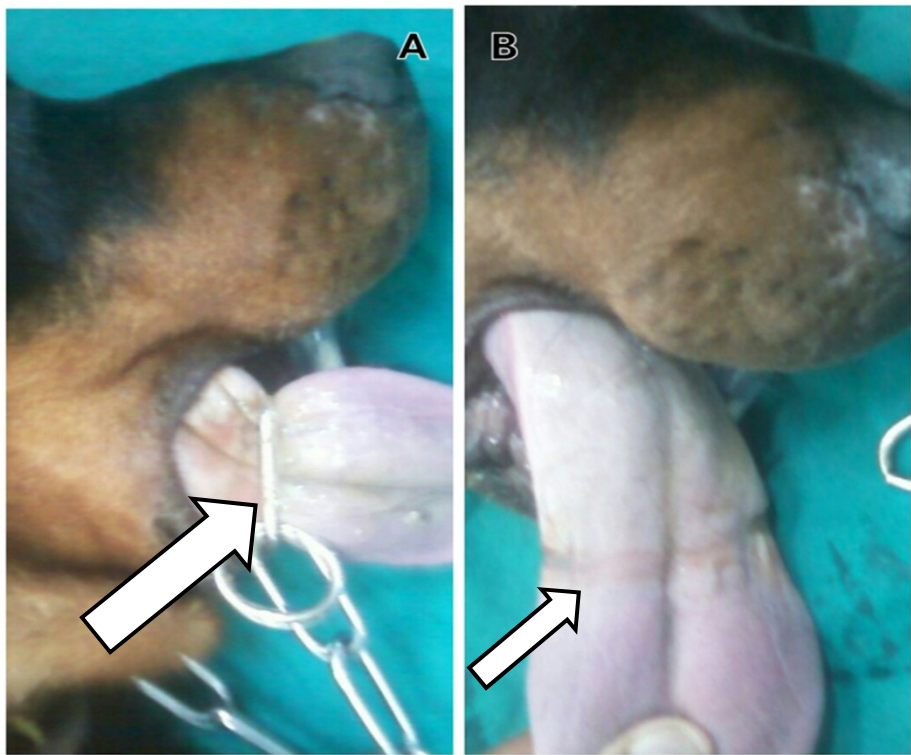
Ulcers in the oral cavity were recorded in 4 dogs that represented (1.3%) from the total affected dogs (504),

intraoral picture for 2.5 years old male golden retriever showing ulcers on different parts of the oral cavity due to poisoning by rat poison.



# Foreign bodies in the oral cavity

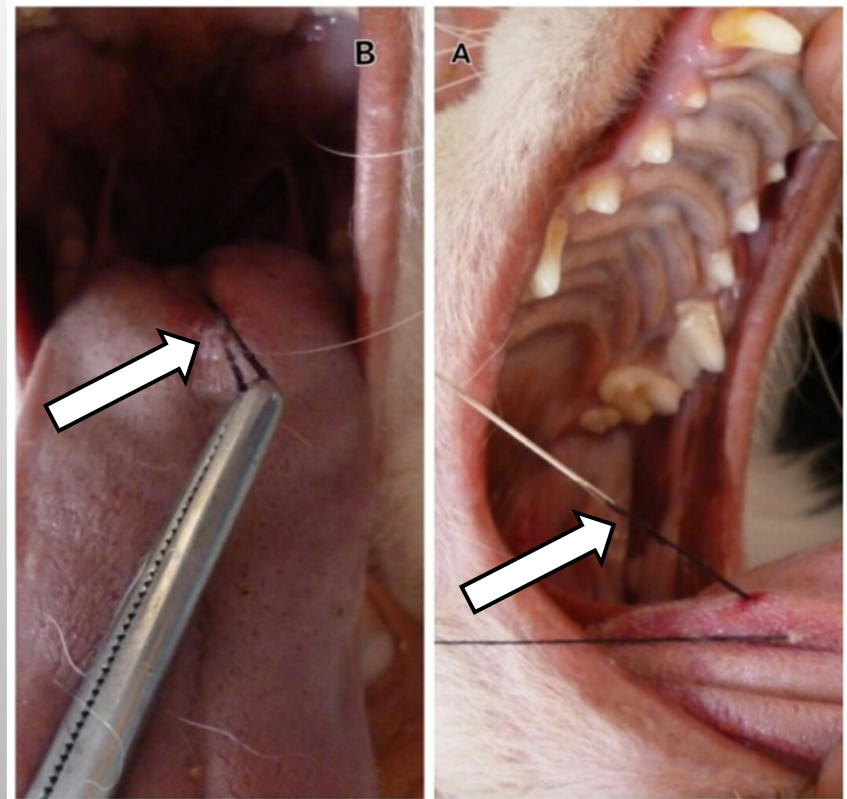
Three cases of 28 cases of soft tissue affections



An 11 months old male Rottweiler showing a ring lodged around his tongue.

A & B : before and after removing.

Notice the cyanotic part formed due to the ring compressed the tongue.



One year old male Griffon Swallowed a needle that penetrated the tongue.

B: Pulling of the needle from inside the mouth .

# Epulis

Two cases showed Epulis that represented (7.1%) from the total of found cases related to the soft tissue parts (28)

**A:** a 6 years old male German shepherd showing Epulis over the left maxillary canine tooth

**B:** A 13 years old cocker spaniel showing Epulis over the maxillary incisors.





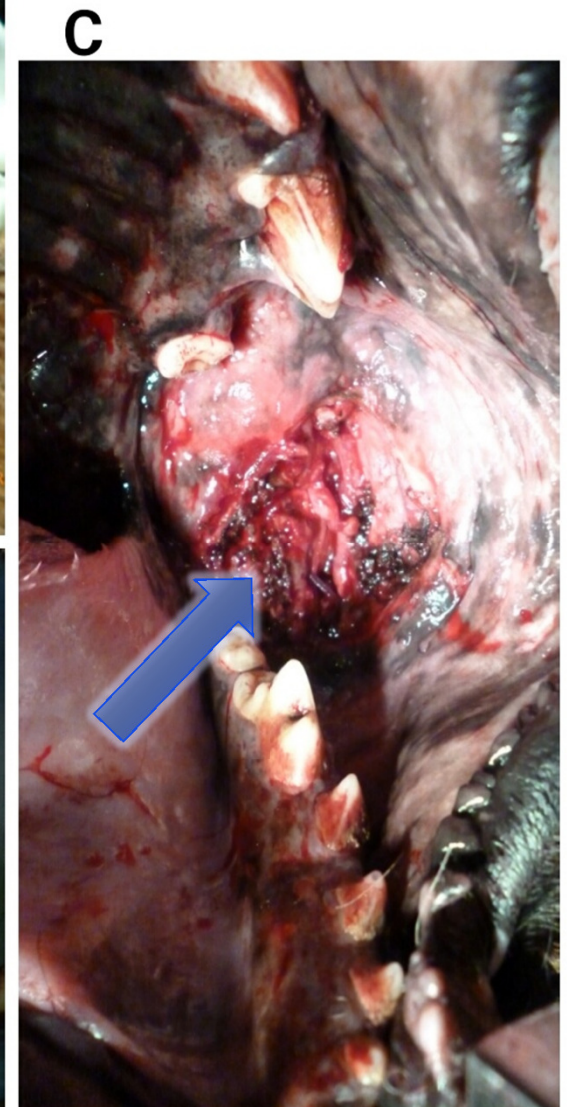
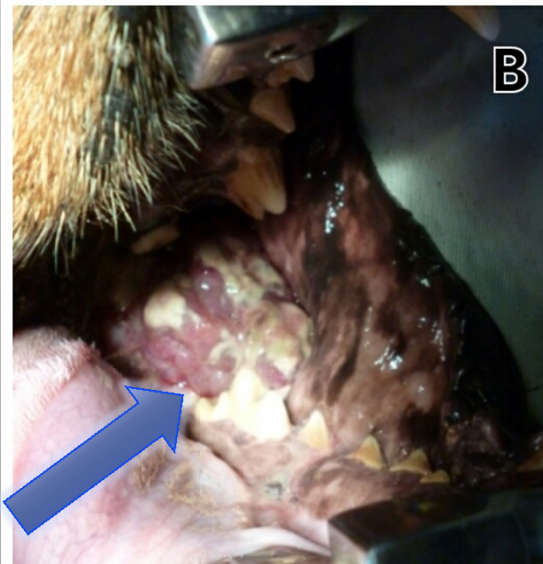
# Oral Neoplasia

Oral neoplasia were recorded in 5 cases represented (17.8%) from the total oral soft tissue (28)

- A 10 years old female Rottweiler showing Oral tumor .

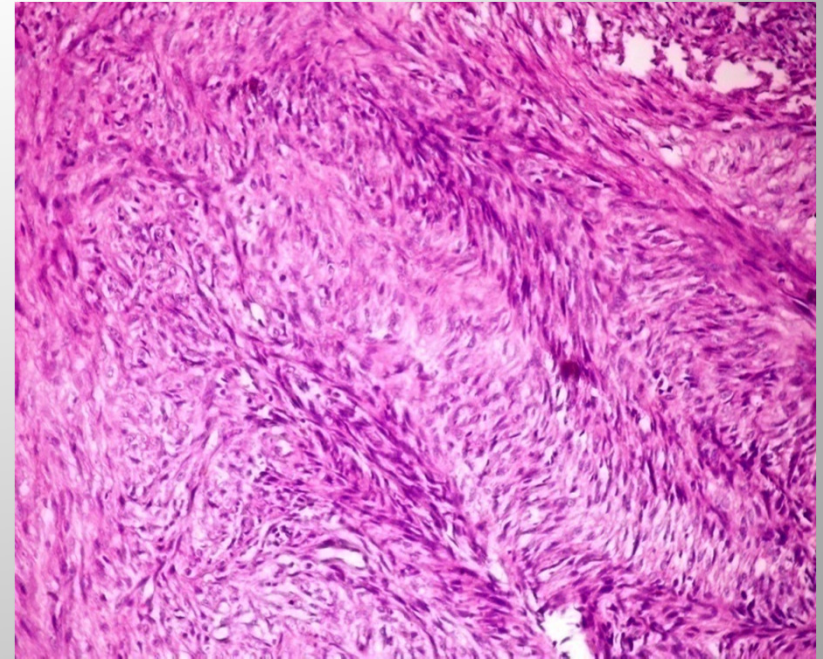
A&B: The lesion before excision . Notice the accumulation of purulent material on the outer surface . The lesion was located in the mouth commensure

C: After surgical excision of the tumor. Notice the origin of the tumor from the mucosa of the caudal mouth part .





# Oral Neoplasia (fibrosarcoma)



A-2.5 years old male German Shepherd showing tumor in the gum .

B: Same case after surgical excision.

C: Recurrence of the tumor after 1 month

D: After 3 months. The tumor increased in size covering the underlying teeth.

- Herring bone pattern pathognomonic lesion of fibrosarcoma

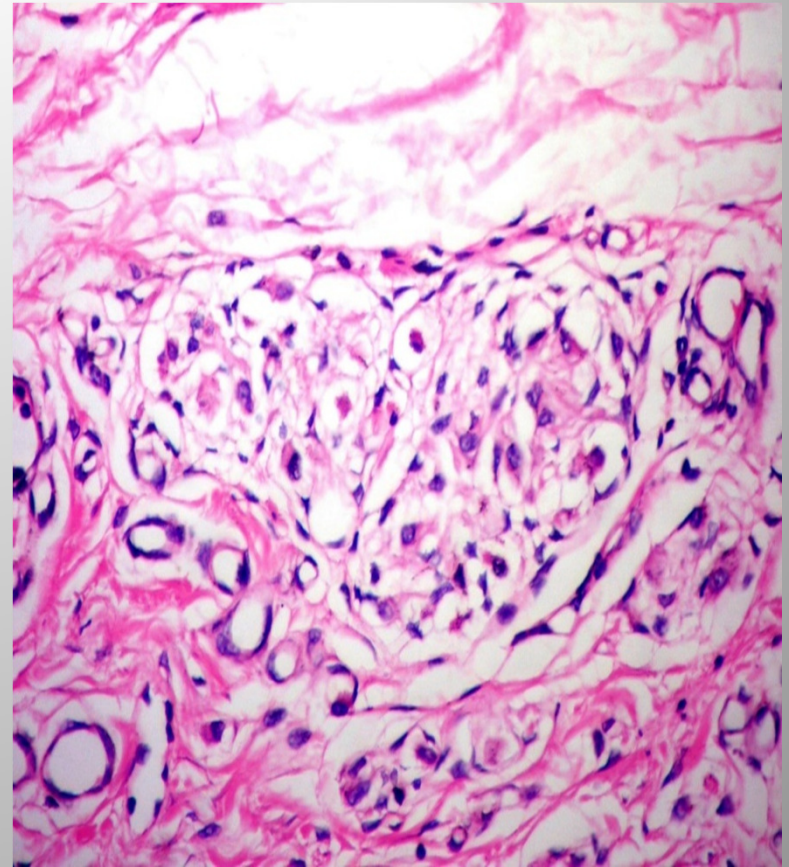


## Oral Neoplasia (liposarcoma)



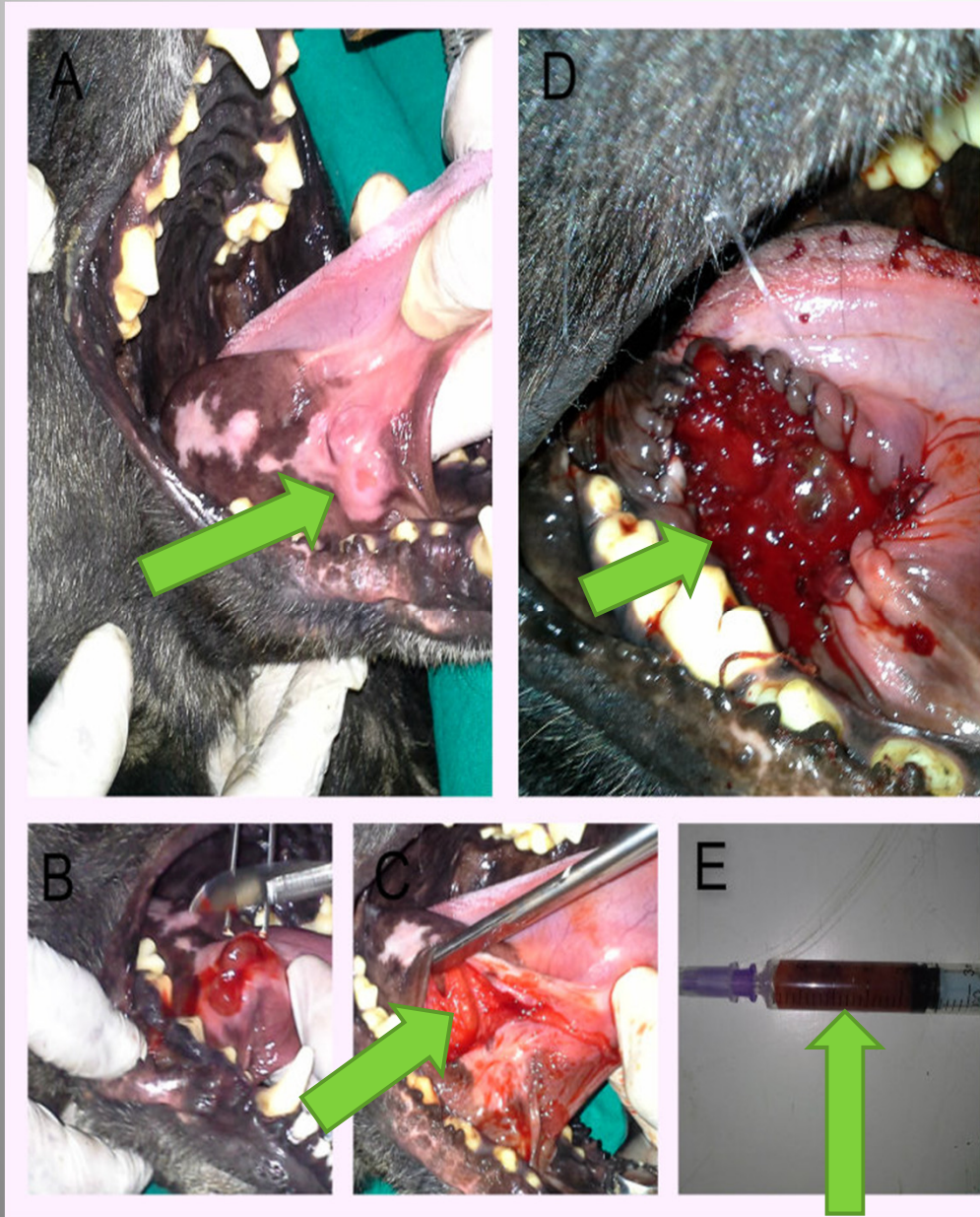
A-Five months old male German Shepherd showing oral mass in the cheek.

B: intra oral picture after surgical excision and suturing .



Pathognomonic lesion lipoblasts with signet ring appearance.

# Salivary mucoceles



Two cases , represented (7.1%) from the total cases related to the soft tissue parts (28).

Three years old male German shepherd

A- Ranula in base of the tongue.

C- Opening of the mucosa covering the ranula .

D- Marsupialization operation as the mucosa has reflected and sutured to the surrounding structures.

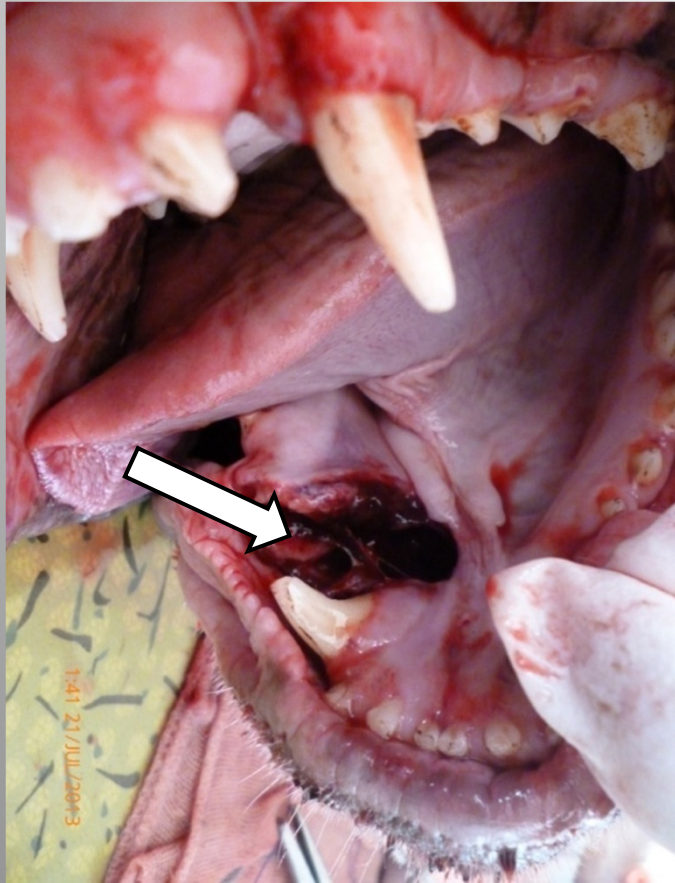
E: The aspirated fluid .



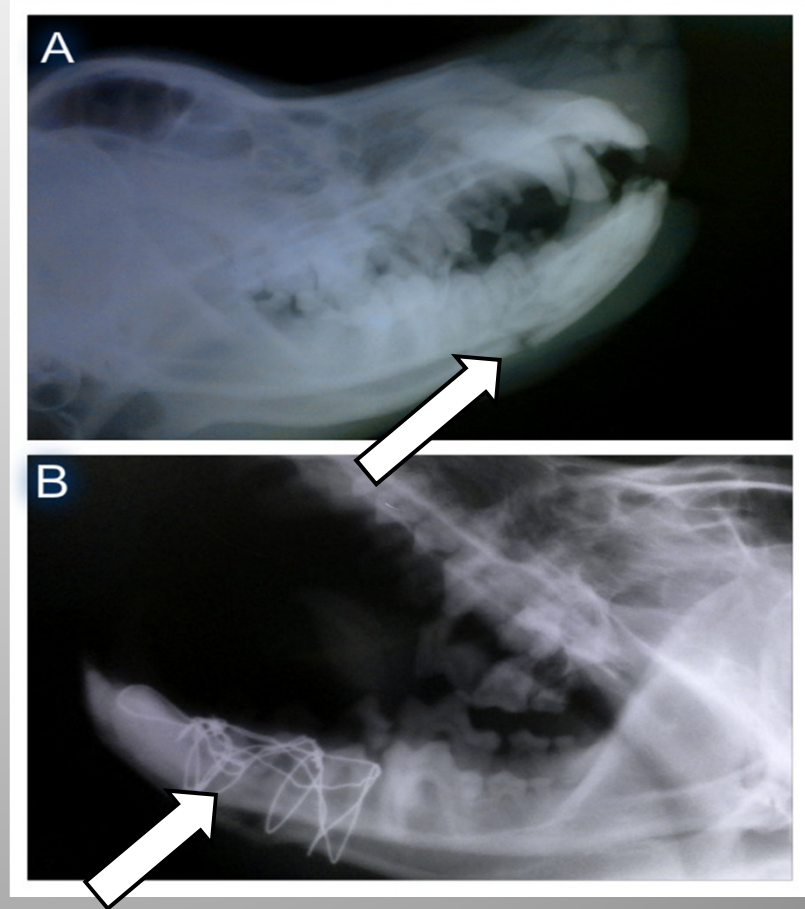
# **ACQUIRED AFFECTIONS**

**Maxilla and  
Mandible  
Disorders**

# Fracture of the maxilla



3.5 years old female pit bull showing mandible fracture due to a fight with other dog.



Mandible fracture in a 3.5 years old male germen shephered .before and after treatment with circlage wire.



**CONCLUSION**

- In the present study, The Oro dental affections showed a very high incidence in the examined dogs of different breeds, sexes and ages.
- In Egypt, it is a fact that, most of the dog's owners do not take a good care of their pet's mouth. It was estimated that over 80 % of the dogs have a significant oral pathology.
- Appropriate instructions concerning dental hygiene to the pet owners is helpful to lower the incidence of oral cavity affections .

Thank you

- **these cases proved to be effective after continuous successive therapy for one month with the proper dose. These results agreed with**
- **Who mentioned that nutritional imbalances are potential causes of persistent deciduous teeth**
- Enamel hypoplasia recorded in two cases suffered from Canine distemper
- In the current work, gingivitis as a reversible form of periodontal diseases **Our results revealed that, using of calcium supplement with achieving suitable calcium phosphorous ratio in**

From the collected data, there were a great relation between type of animal food and periodontal diseases as our study revealed that, most of affected cases with periodontal diseases (90.4%) were fed on fresh or homemade food and the rest of them were used either mixed food or dry food.

Softer food are inefficient in abrading plaques from the teeth and hard food requiring prehension and mastication that help in normal cleaning of the teeth every time the animal eats

In the present study, a great relation were found between periodontal diseases and housing life style

pica on objects such as stones, hard objects and toys, metal cages caused roughness of the outer surface of the teeth and continuous injuries to the gingiva so easy accumulation of tarter and calculus on teeth surfaces and easily penetration to supragingival tissue



From the obtained data, the relation between periodontal diseases and other internal organs was investigated. Liver, kidney diseases were detected by ultrasonography and the suitable lab tests and glucose level were estimated. The results revealed that, severe periodontal diseases were accompanied by degree of liver and kidney dysfunction and degree of hyperglycemia.

- Cases with **severe dental tarter and calculus** had a complete recovery dental diet and home care were recommended to keep teeth clean for the long time.

-Cases with **severe periodontal diseases** achieved an acceptable degree of recovery and the animals start to eat normally considering some changes in the diet.

-Severe cases with bone loss or teeth attachment loss had a bad prognosis.

**4-Complications:** Non treated and neglected home care showed complications that ranged from severe calculus and plaque accumulation , different degrees of periodontal diseases to **oronasal fistula and bone loss** .