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TEETH AFFECTIONS IN EQUINES
(With 1 Table & 8 Figs.)

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إصابات الإسنان في الفصيله الخيليه

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إستهدفت الدراسة الوقوف على معدل اصابات وأمراض الإسنان والضروس في حيوانات الفصيلة الخيلية. تبين من فحص ٢٠٠٠ حيوانا (١٠٥٠ حمارا، ٧٠٠ حصانا، ٢٥٠ بغلا) أن ٣١٥ حيوان كانت تعاني من العديد من اصابات الأسنان والضروس بنسبة قدرها ١٥ر٨ ٪ . كانت النسبة العظمى من هذه الاصابات مكتسبة(٨٤ر٦٪) بينما كانت نسبة الاصابة بالعيوب الخلقية ٤ر١٥٪. وقد تم تسجيل اصابات لم يتعارف على نظيرها بالمراجع والأبحاث العلمية المختلفة من قبل وهذه سميت بتشققات طبقة المينا المستعرض في قواطع الحمير الأمر الذى يستوجب اجراء دراسات مستقبلية مستفيضة للوقوف على مسبباته ومختلف ظروفه وبالتالي طرق علاجه والوقاية منه.

SUMMARY

It was proved that examination of 2000 animals of equine species revealed that 315 ones (15.8%) were affected with the varieties of teeth affections. Many various acquired troubles were recorded. These represented 84.4%. Other congenital conditions were recorded and represent 15.6%. New records were seen among the acquired troubles. Of these; what was called transverse enamel fissures of the incisor set in donkeys.

INTRODUCTION

Various congenital dental deffects have been recorded in equines. These are, teeth rotation, retention of temporary teeth with permanent tooth eruption, diastasis dentium; polyodontia, prognathism and brachygnathism (COLYER, 1936; BECKER, 1960; BAKER, 1979; O'CONNOR, 1980; FRANK, 1981; MISK and HIFNY, 1982 and JENNINGS, 1984).

Other acquired teeth affections have been reviewed in the literature. These include: irregularities of teeth wear, fractures, dental caries, dental tartar and periodontal disease (BAKER, 1979; O'CONNOR, 1980; FRANK, 1981; MISK and HIFNY, 1982; and AMSTUTZ, ARCHIBOLD, ARMOUR, BLOOD, NEWBERNE, and SNOEYENBOS, 1986).

This investigation throws light on the prevalent teeth troubles in equines. Particular attention has been given to the incidence of these affections in such a species.

MATERIAL and METHODS

A total number of 2000 animals of equine species were subjected for dental examinations. These animals were collected from the clinic of the Fac. Vet. Med. Moshtohor, police centers and from Brook Veterinary Hospital in Cairo.

To achieve a satisfactory and comfortable dental examination, sedation of the animals is necessary especially to a nervous, frightened ones. Combelen was used in a dose rate of 0.1 mg/kg b.w.

Basal narcosis is indicated and conducted in some surgical interferences apllied for treatment of some teeth troubles.

Many cases with dental caries were treated by filling with amalgam alloy* after removal of the caried dental spots as mentioned by SPOHN, HALAWSKI and BERRY (1981).

RESULTS

Examination of 2000 animals of equine species revealed that 315 cases were affected with some varieties of congenital and acquired dental troubles with an incidence of 15.8%.

The congenital dental anomalies were recorded in 49 animals and represented 15.6% of all the affected conditions. While the acquired dental affections were recorded in 266 animals and represented 84.4% from all recorded teeth affections. The number of the affected animals with the different varieties of dental diseases (congenital and acquired) and their incidence are shown in table. 1.

* Agestan (68) (Byer) Silver Alloy.

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I - THE CONGENITAL DENTAL ABNORMALITIES:

Rotation of teeth:

All cases of this conditions were seen in the corners of mandibular incisors. It was recorded unilaterally in 10 cases and bilaterally in 4 cases (Fig. 1/A).

Retained deciduous teeth:

The condition was recorded in the central maxillary incisors. The diciduous incisor remained attached to the permanent teeth after the latter has been erupted (Fig. 1/B).

diastasis dentium:

It was found between the central incisor in 2-donkeys and between the central and lateral maxillary incisors in 4-donkeys (Fig. 1/C). It was also observed in 4-donkeys and one horse between P_2 and P_3 of the mandilular cheek teeth (Fig. 1/D).

Oligodontia:

In 2-cases (1-donkey and 1-horse), the left lateral incisor was not erupted (Fig. 2/A). In a mule, the right corner incisor was not erupted while the canine teeth occupied its place. The last case was recorded in a 10-months old foal in which the all mandibular incisors were not erupted but only a sharp rudimentary dental structure was seen in the interdental space (Fig. 2/B).

Polyodontia:

It was recorded in the form of existence of an extra-incisor in the mandibular corners (Fig. 2/C). The supernumerary tooth was a retained deciduous ones, which was displaced in a labial direction (Fig. 2/C).

Brachygnathism and prognathism:

It was observed that donkeys were the most frequently affected with such conditions. Both of these conditions led to absence of attrition of the non occlused teeth and consequently an abnormal elongation of the incisors was noticed (Fig. 3/A,B). Abrasions of the gingiva were frequently seen. This resulted in pain and discomfort of the affected animals.

II - THE ACQUIRED DENTAL AFFECTIONS:

Sharp enamel points:

It was seen as a sharp enamel edges developed along the unworn surfaces corresponding to the mucous membrane of the cheeks of the maxillary set and lingual edges of the mandibular arcade. The mucous membrane of the cheek was seen lacerated and ulcerated by these sharp enamel points (Fig. 3/C).

Wave formed mouth:

This condition revealed the presence of variation in the plane of the wearing surface of the cheek teeth. The front premolars in 6 cases were seen shorter than the caudal and the reverse was recorded in an other 4 cases (Fig. 3/D).

Hocking:

It was seen in the form of an enamel projection mostely on the rostral point of the 2nd maxillary cheek tooth (Fig. 4/A) and caudal point of the six mandibular cheek tooth. The condition was also recorded in one donkey with a well defined hock on the rostral point of both the first mandibular cheek teeth (Fig. 4/B).

Elongation of one cheek tooth:

The elongated cheek tooth was seen so large enough (Fig. 4/A,B) that they rendered the process of mastication greatly hindered. Through dental examination, the apposing tooth was seen lost, broken or displaced.

Abnormalities of wear (sharp enamel point, wave formed mouth, hocking, elongation of one cheek teeth as well as brachygnathism and prognathism) were corrected by rasping of the extra-longer part of the crown. Recurrency of these conditions were frequently recorded, thus necessitated periodical rasping.

Fractures:

The broken teeth were either longitudinal, horizontal or oblique. The latter two types were seen including about one third of the free part of the teeth (Fig. 5/A,B). In the longitudinal fractures, the pulp cavity was mostly seen exposed (Fig. 5/C). It always occurs along the long axis of the canine tooth (Fig. 5/D).

Enamel cleavage was seen to be removed from the dentine without exposure of the pulp cavity (Fig. 6/A).

Transverse fissures were only seen more or less concised to the enamel layer of the incisor set. The number of these transverse fissures varied from 3 to 7. Such condition was recorded in the mandibular incisors showing prognathism (Fig. 6/D). Also, it was recorded in the maxillary incissors showing brachygnathism (Fig. 6/C).

Dental caries:

The early stages of the disease were indicated by the appearance of a dark spot on the tooth (Fig. 7/A). This was limited to the cement and enamel. In advanced cases, excavation extended to the dentine of the tooth which led to its weakness and fracture (Fig. 7/D). This occured by the force of mastication. Examination of the cheek tooth revealed that the crown as infundibular caried maxillary cheek teeth were

filled with sticking decomposed food materials (Fig. 7/C). It was observed that the incisors (20-case) were more frequently affected than the cheek teeth (6-cases).

The filled caried spot by amalgum alloy were persisted and seen after several months without falling off or recurrency of caries (Fig. 7/B).

Dental tartar:

It was seen more frequently to affect the incisors mainly the lateral ones, and mostly at the neck of the teeth and/or their labial surface. The condition was also recorded all around the canines. The tartar in the early stages was seen in the form of a greyish-yellow film (Fig. 8/A). In advanced cases the condition tended to encroach on the crown, and towards the root of the teeth (Fig. 8/B). In worst cases, the tartar lead to separation of the gum from the teeth and gingivitis. In these cases the calculus was seen as thick greyish-brown deposit that encroached on the teeth. The separated gum exposed the alveolus causing alveolar periostitis, dental caries, fracture and eventually loss of the teeth by a minimal occlusal force (Fig. 8/C). The uncomplicated cases of dental calculus were treated by removal of the tartar film with a tooth scaler. Complicated cases with peridontal disease that were considered hopless and no treatment was seen indicated, were condemned.

Periodontal disease:

It was mainly recorded in the incisor sets. The early stages of the condition begins with marginal gingivitis, hyperaemia and oedema. In the latter stages, gross pocketing, periodontal separation; fracture, loosening of the teeth and finally the tooth was lost (Fig. 8/D). In severe affected cases, condemination of the affected animals was indicated and performed.

Foreign body:

The condition was recorded only in one donkey. It was admitted to the clinic with a history of interference with mastication, discomfort and excessive salivation. Examination of the mouth cavity revealed existence of foreign body lodged between both sides of the maxillary dental arcades at the level of the third premolars.

DISCUSSION

Teeth affections amongst equines seemed not only prevalent but also of relative high incidence (15.8%). The pathological troubles of the teeth met with and recorded in animals of such a species, whatever might be conganital anomalies or otherwise acquired ones are certainly numerous and variable.

The most congenital abnormalities recorded in the present study were teeth rotation. It was mainly found in the mandibular incisors. The condition was recorded both

bilaterally and unilaterally. These findings are in agreement with the statments of COLYER (1936) in cattle.

Retained deciduous teeth were recorded in few cases (3-cases) affecting the maxillary incisors. The condition has been also recorded by JENNINGS (1984) in horses.

Diastasis dentium occupied the second place within the congenital abnormalities (22.5%) in the present study. This simulates approximately the findings of MISK and HIFNY (1982). Meanwhile it differes from the statments of BECKER (1960).

In all cases of oligodontia the history by the owners revealed that the condition was seen and persisted since birth.

Polyodontia was observed in the mandibular corner incisors. However, all recorded cases were considered atypical polyodontia. It this respect, our results are in agreement with that of O'CONNOR (1980).

Of the congenital mal-conformative problems of mal-occlusion recorded in the present study there were brachygnathism and prognathism. These affections were described in other animals by FRANK (1981); MISK and HIFNY (1982) in equines; OTHMAN and EL-MAGHRABY (1987) in cattle; NASER (1985) in camels.

The most acquired teeth affections recorded were mentioned in the literature while others were traced. Some of these affections seemed to be recently recorded of these, the affection which we described as transverse enamel fissure. This might be considered as a sort of incomplete fracture. The affection had not been mentioned in the corresponding available literature. Thus we have the periority of recording it.

It is noteworthy to mention that these transverse enamel fissure are only observable in the maxillary incisors set in the animals suffering from brachygnathism and also in the mandibular incisors of the animals suffering from prognathism.

No definite attribution could be declared about its development. But, however the force pressure induced by the inner incisors against the outer ones in cases of brachygnathism and prognathism; state of previous pregnancies, nature of food, chronic poisoning, enamel hypoplasia or type and nature of water intake might be of relation.

Fractures of the teeth have assumed several forms and degrees. They varied from cleavages, transverse or oblique complete fracture of the crown in the insisors set as well as longitudinal fractures which exposed the pulp cavity. These findings are in agreement with the statments of BAKER (1979) and O'CONNOR (1980).

Sharp enamel points in the present study was the most common form of wear abnormalities. This is in agreement with the statments of O'CONNOR (1980); FRANK (1981) and MISK and HIFNY (1982). The condition was observed at different ages and not limited to the advanced age only as observed in cases of wave formed mouth.

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Elongation of cheek teeth and projection of the 2nd premolar of the maxilla, sometimes accompanied with congenital dental deffects were met with. In our cases branchygnathism, oligodontia lead to such dental affections. In this aspect our results agree with that of FRANK (1981) and MISK and HIFNY (1982).

Caries was recorded in the incisors, canines and cheek teeth in all species of equines. It varied from simple minute spots to a wide surfaced deep areas. Simple and deep caries which did not reach the pulp cavity were treated by filling with tremendous results. These findings agree with AMSTUTZ (1986). On the other hand these results contradict the statments of O'CONNOR (1980) who recommended extraction of the caried tooth.

Relative high incidence of dental tartar has been recorded within the acquired teeth affections (18%). Its density varied from a thin film to a very dense plaque of greyish brown deposite. In advanced cases the calculus encroaches deeper towards the root to separate the tooth from the gum; thus predisposes for marginal gingivities, alveolar periostitis, caries and in some cases fractures or even an entire loss of the affected tooth (O'CONNOR, 1980).

Periodental disease was observed mainly in the incisors of old-aged equines. This observation, differs from that reported by COHRS (1966) who stated that involvement of the incisor teeth is uncommon.

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Table (1)

Shows the numbers of the affected animals with the congenital and acquired dental affections and their incidence in equines

Dental affections	Number of affected animals			Total	Percentage	
	Donkeys	Mules	Horses	315	Within groups	General
I- Congenital dental abnormalities:	(34)	(5)	(10)	(49)		(15.6)
1) Rotation of the teeth	9	1	4	14	28.6	4.4
2) Diastasis dentium	10	-	1	11	22.5	3.5
3) Brachygnathism	5	-	1	6	12.2	1.9
4) Prognathism	4	2	-	6	12.2	1.9
5) Polyodontia	3	1	1	5	10.2	1.6
6) Oligodontia	1	1	2	4	8.2	1.3
7) Retained deciduous teeth	2	-	1	3	6.1	1.0
II- Acquired dental affections:	(151)	(58)	(57)	(266)		(84.4)
1) Sharp enamel points	30	19	16	66	24.4	20.9
2) Dental tartar	25	9	14	48	18.0	15.2
3) Hocking (Projection of P_1)	18	5	6	29	10.9	9.2
4) Fracture	15	5	8	28	10.5	8.8
5) Dental caries	17	7	2	26	9.8	8.2
6) Marginal gingivitis	15	3	4	22	8.3	6.9
7) Traumatic ulceration of the gum	10	3	3	16	6.0	5.0
8) Periodontal disease	10	2	3	15	5.7	4.8
9) Wave formed mouth	5	4	1	10	3.8	3.2
10) Overgrowth	5	1	-	6	2.3	1.9
11) Foreign bodies	1	-	-	1	0.3	0.3

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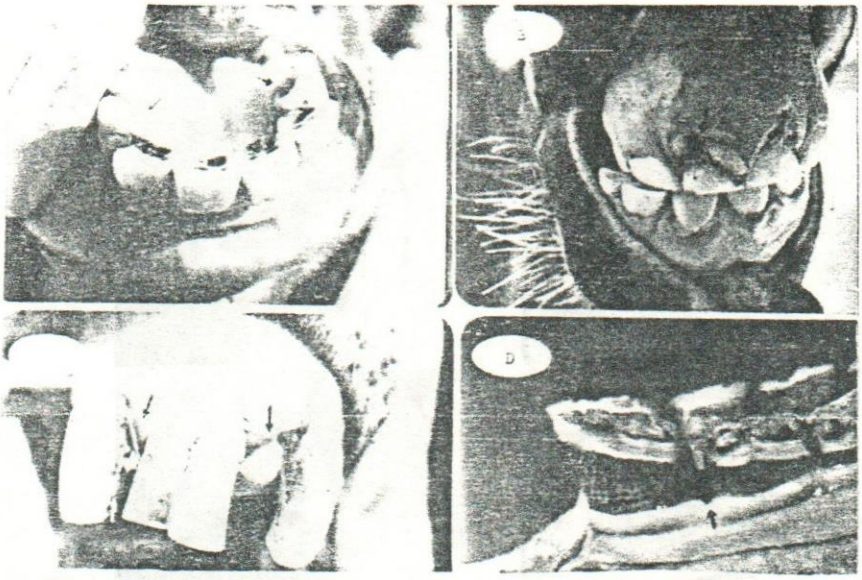

Fig. (1)

A) Rotation of both corners of the mandilular incisors.
B) Retained deciduous maxillary incisors. Note the eruption of the permenent one.
C) Diastasis dentium between P_2 and P_3 of the mandilular cheek teeth.

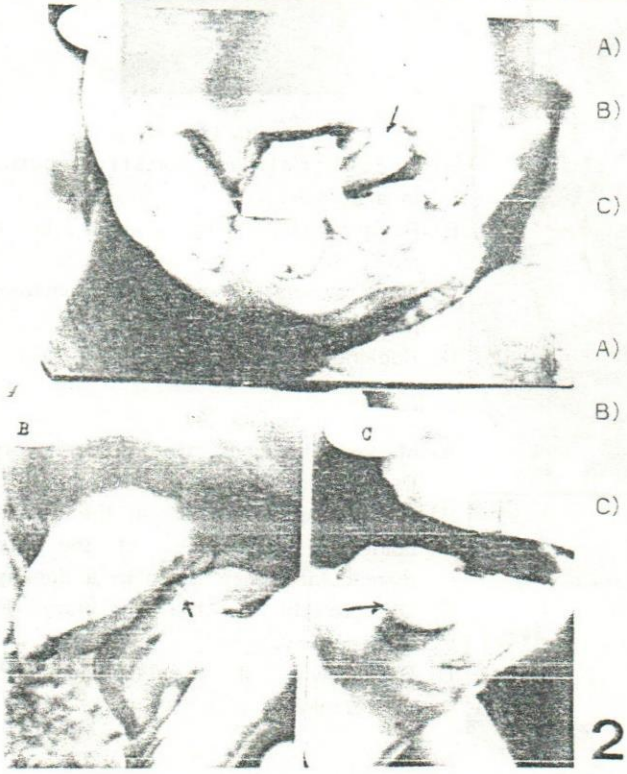

Fig. (2)

A) Oligodontia of the left lateral maxillary incisors.
B) Anodontia of the mandilular incisors. The arrow point to a sharp dental structure.
C) False polyodontia. The retained deciduous incisor displaced in a labial direction.

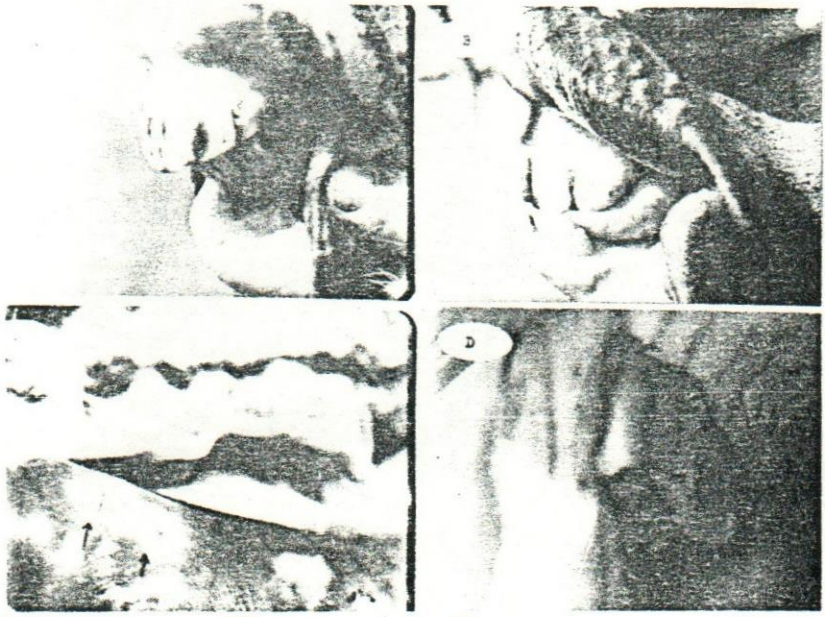

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Fig. (3)

A) Brackygnathism (Parrotmouth) in a donkey.
B) Prognathism (Pig mouth) in a mule.
C) Sharp enamel points. The arrows point to cheek ulceration.
D) Hocking of the second PM.

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Fig. (4)

A) Marked hocking of the maxillary P_2 in a donkey.
B) A well-defined hock at the rostral point of both sides of the first mandibular cheek tooth in a donkey.
C) Overgrowth of the maxillary P_2 in a donkey.
D) Overgrowth of the maxillary P_4 in a donkey.

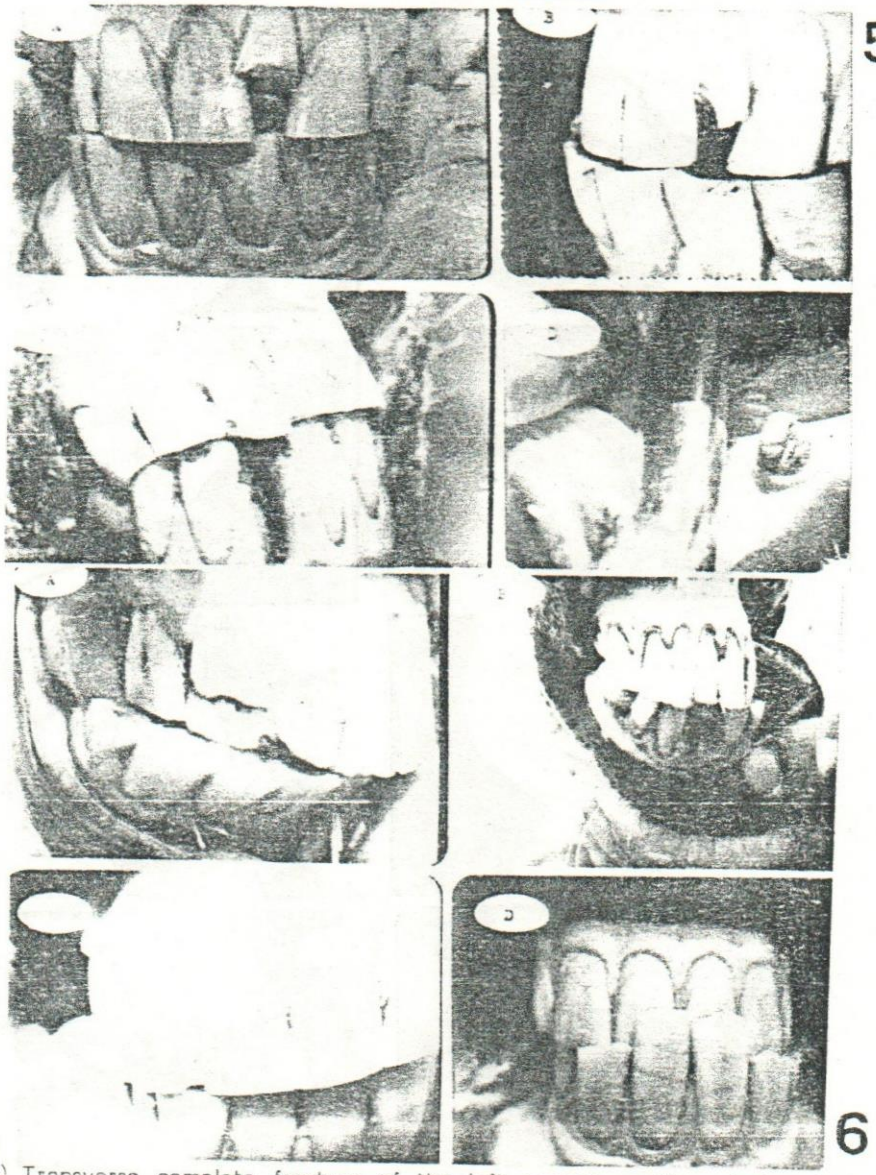

Fig. (5): A) Transverse complete fracture of the left central maxillary incisor in a mule.
B) An oblique complete fracture of the left central maxillary incisor in a donkey.
C) Longitudinal fracture of the right central mandibular incisor with exposur of the pulp cavity.
D) Longitudinal fracture through the canine tooth.

Fig. (6): A) Enamel cleavage at the lateral maxillary incisor in a mule.
B) Tooth evulsion of the central mandibular incisors exposing the pulp cavity.
C) Transverse enamel fissures in the maxillary incisor teeth. Note brachygnathism.
D) Transverse enamel fissures in the mandibular incisor set. Note prognathism.

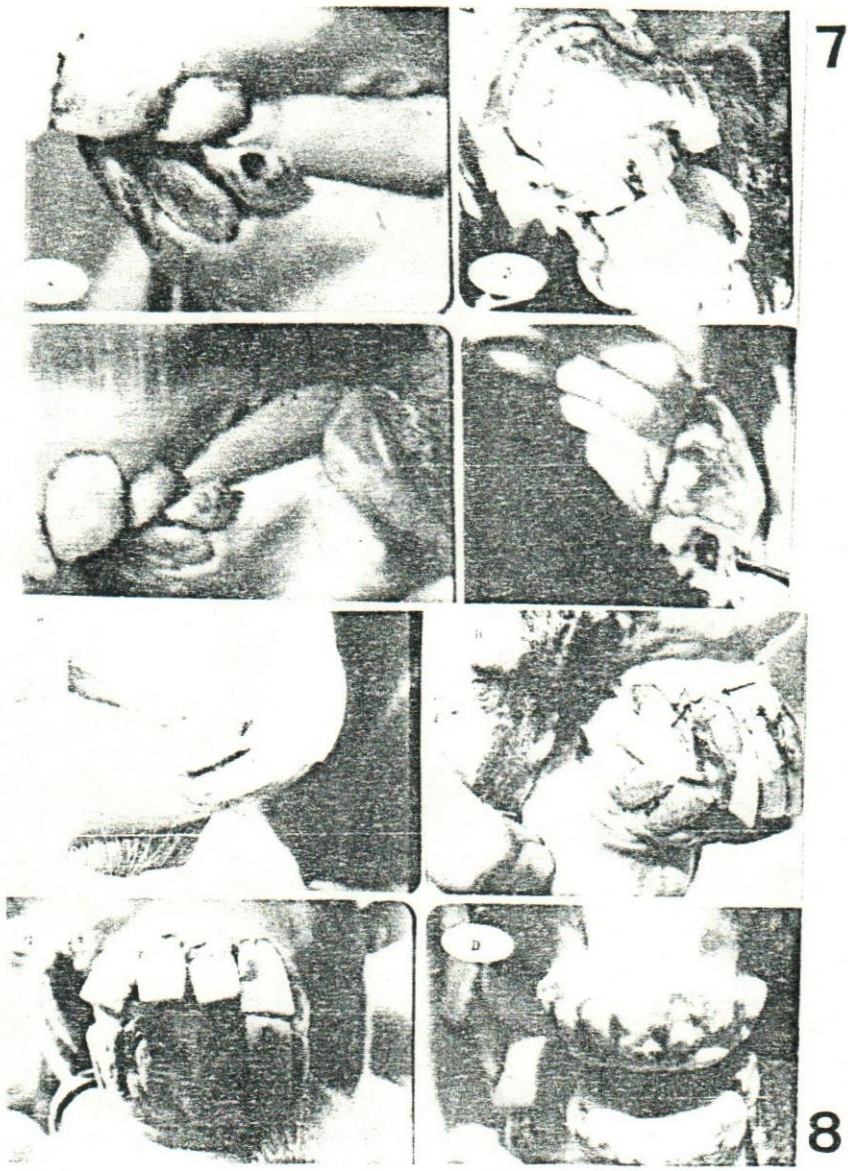

Fig. (7): A) Dental caries of the left mandibular corner incisor.
B) The caried spot after treatment by amalgam alloy filling.
C) Dental caries accompanied by fracture of the left maxillary central incisor.
D) Dental caries fo the left maxillary P_3 in a donkey.

Fig. (8): A) Dental tartar of right mandibular corner incisor.
B) Dental tartar encroached on the crown, and neck crept towards the root, of all incisors. The arrows point to gum separation and gingivitis.
C) The tartar encroached on the crown and towards the root. The separated gum exposed the alveolus causing alveolar periostitis and teeth loosening.
D) Periodontal disease with gross pocketing and the teeth were lost.