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Forensic evaluation of Mamelons on the incisors

RK Gorea, Anirudha Agnihotry*, Bindu Aggarwal**

Abstract: Mamelons are the prominences best seen on the incisial edge of the newly emerged permanent incisor teeth. Usually these wear off with the increasing age. In this study it was tried to correlate the presence or absence of mamelons with the age. This is a random study done on the dental casts of the volunteers. Dental casts of the volunteers were made with dental stone after taking impression of their teeth on alginate paste in the dental plates. The present study was carried out to elicit the prevalence of the mamelons on the incisors and the effect of age on the wear and tear of mamelons. It was carried out to deduce, if the presence or absence of mamelons holds any relevance in forensic evaluation of the dentition of individual for determination of age. The special conditions which cause the persistence of the mamelons and the pattern of the presence of mamelons on the teeth were dealt with in the study. Though mamelons are best seen in the newly erupted incisors yet in some cases mamelons persist up to fifth decade of life in 5.26% of cases. Data is being presented on Mamelons; forensic evaluation of which has not been explored in literature.

Keywords: Mamelons, incisor; age determination; forensic evaluation

INTRODUCTION

Mamelons are small projections on the incisial edge of the permanent incisor teeth.¹ A newly erupted incisor shows protuberances on the incisial edge, separated by grooves which are known as mamelons. All anterior teeth show traces of four lobes- three labially and one lingually. Each labial lobe of the incisor terminates in a rounded eminence known as mamelon.² Mamelons are best seen in the newly erupted permanent central Maxillary Incisor teeth.³ Usually these disappear with the increasing age⁴, due to wear and tear⁵ and then there is a flat surface.^{6,7} These Mamelons are present both in maxillary incisors as well as mandibular incisors.⁸ Size of these Mamelons on the maxillary central incisors is different. The most mesial has a raised shoulder, middle one is the smallest and distal Mamelon has a low shoulder.⁹ The Mandibular central incisors have Mamelons but here the mesial and distal Mamelons are of equal prominence⁹.

Mamelons are absent on the primary dentition, so they can be used to differentiate the nature of dentition, i.e., whether the dentition is permanent or deciduous. These also persist and are accentuated in certain syndromes and diseases like KBG syndrome and

microcephalic osteo-dysplastic primordial dwarfism.¹⁰
¹¹ Mamelons are only enamel extensions, with no dentin underneath. This feature and their thinness make them translucent and more noticeable.¹²

MATERIALS AND METHODS

Present study has been carried out on 213 random cases to calculate the incidence of mamelons for forensic evaluation. The study compares the prevalence of the mamelons with relation to the age, sex and occlusal relationships of the subjects.

Consent of the volunteers participating in this study was taken. Impressions of all the consenting volunteers were recorded. Alginate impressions of volunteers for maxillary and mandibular teeth were recorded for 213 subjects and dental casts were poured in dental stone (gypsum compound). These casts were then screened for the presence of mamelons. It was observed if the Mamelons were present on both sides of the jaws or on one side; whether on centrals, laterals or both; and if related to any other condition e.g. bite pattern.

RESULTS

Following tables depict the distribution of mamelons in relation to the central and lateral incisor; the side of the teeth (uni/bilateral); the total number of cases that presented with the mamelons in the respective jaw; and the age distribution pattern

Cases with Mamelons on incisors were 57, out of total screened 213 cases (26.76%). 3 cases presented with Mamelons only on mandible, while the rest of the cases presented with Mamelons on both maxilla and mandible.

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Table 1
Distribution of mamelons on maxillary and mandibular teeth

Jaw	Total Cases	Central	Lateral	Bilateral	Unilateral
Maxilla	54	47	29	33	21
Mandible	10	8	2	8	2

Table 2
Persistence of Mamelons with age

Age Group	Number of cases with Mamelons	No of total cases	%age
0-10	5	8	62.5
11 - 20	32	90	35.55
21 - 30	13	61	21.31
31 - 40	6	29	20.68
41 - 50	1	19	5.26
>50	0	6	0

*Above table also had a case in the age group of 0-10 years where there was no permanent tooth.

Table3
Correlation of Mamelons with gender

	With mamelons	Total cases	%age
males	24	123	19.51
Females	33	90	36.66
Total	57	213	26.76

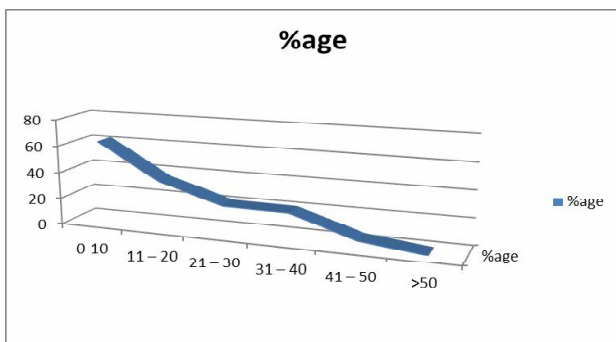


Fig. 1. Decreasing prevalence of Mamelons with increasing age

It was found that 21 cases had deep bite and 2 had open bite out of 57 while 34 casts were unsuitable to assess the bite form.

In 2 cases, it was found that the upper 2 central incisors were missing / not erupted yet.

Its persistence was seen more in females as compared to males

DISCUSSION

Mamelons are three small tubercles or scallops, each formed from one of the three facial developmental lobes on the incisal edges of newly erupted incisors¹³ which were specifically observed in the present study. Usually mamelons are not evident on adult dentition since they are worn off after the tooth comes into functional contact with the opposing tooth^{4,5} and the findings are consistent with these views as is apparent from the fig. 1. and no Mamelons were seen after the age of 50 years in any case. %age gradually decreased with increasing decade of life. This fact goes well that Mamelons are worn off with wear and tear⁵. Mamelons are better seen on the central incisors as compared to the lateral incisors. When maxillary and mandibular teeth have an anterior open- bite relationship, the mamelons persist in adults as there is no functional contact between the teeth.¹⁴ In the present study also 21 cases had deep bite and 2 had open bite.

CONCLUSION

1. Mamelons are helpful in differentiating between primary and permanent dentition.
2. These are of more significance in the first decade of life and its significance goes on decreasing with the increasing age.
3. It persists more in females than males with increasing age.
4. It is seen to persist more in the maxillary teeth.
5. It is seen to persist more in central incisors.
6. It is of more significance when the teeth do not contact on function, e.g. anterior open bite, deep bite. When mamelons remain on an adult, it is because these teeth do not contact the opposite tooth in function e.g. anterior open bite relationship or a deep bite having maxillary mamelons.

Suggestions for further study

This study should be carried out in cases where we know exactly the status of the bite. It is better to carry out this study on actual cases rather than casts. More number of cases should be done in each decade of life to give the conclusion more authenticity.

Conflict of interest

None declared

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