
Third molar eruption among rural Nigerians

S. A. Odusanya^a and I. O. Abayomi,^b Ile-Ife, Nigeria

OBAFEMI AWOLOWO UNIVERSITY

Times of eruption of third molars were studied in rural Nigerian adolescents—125 males and 133 females. Results of this study showed that the average age for the initial eruption of third molars was 15 years in male subjects and 13 years for female subjects. The incidence of eruption showed a steep rise after the age of 16 years for male subjects and 14 years for female subjects. By the age of 19 years, all third molars had erupted into the oral cavity. The eruption of lower third molars was generally ahead of the upper third molars for all age groups. The results of this study suggest that (1) the timing of third molar eruption is strongly influenced by the availability of mandibular trigone space, (2) the attrition and shrinkage of the dental arch, probably as the result of nonrefined highly fibrous diets, produce larger mandibular trigone spaces, and (3) the early eruption of third molars observed in the present study may be due to the nature of the diet used and the vigorous employment of the masticatory apparatus (from infancy) by the subjects examined.

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The dates and sequence of tooth eruption in various races have been a subject for several studies.¹⁻⁸ Despite racial variations in eruption sequence and dates, it is universally accepted that the third molars are the last teeth to erupt in all races. This late eruption accounts for the fact that the mandibular third molar is by far the most frequently impacted tooth.⁹ Several factors influencing the timing of third molar eruption have been identified. These include racial factors, nature of diet, extent of generalized tooth attrition, degree of use of the masticatory apparatus, and genetic inheritance.^{10, 11} Thus it has been postulated that third molars tend to erupt early if space for them is available and obstruction is minimal. For example, in male and female adolescent high school and college students with complete dentition, examined in Boston, the median age at which the maxillary third molar pierced the gingiva was 20.5 years. When at least one extraction had previously been performed, the median age of eruption became 19.2 years for both sexes.¹² In the mandible, a still greater effect of extraction was observed.

Times of eruption of third molar teeth have been determined for various racial groups.^{1-3, 5, 7, 8} However, there is no report on the timing of third molar eruption in Nigerians and, indeed, Africans as a

whole. The purpose of this study was to determine the ages at eruption of third molars among rural Nigerians.

MATERIAL AND METHOD

A total of 258 adolescents, 125 males and 133 females, between the ages of 11 and 20 years were selected randomly from a rural secondary school at Imesi Ile, a town in the southwestern part of Nigeria. The ages of the students were recorded, and they were carefully evaluated for third molar eruption, quadrant by quadrant. A third molar was considered erupted when any portion of the crown had penetrated the oral mucosa. None of the students examined had ever undergone tooth extraction.

RESULTS (Tables I and II)

The average age at initial eruption of third molars was 15 years in male subjects and 13 years for female subjects. No third molars erupted at ages 11 and 12 in any of the subjects examined. The incidence of third molar eruption in both sexes slowly increased up to the ages of 16 and 14 years, respectively, for male and female subjects. Thereafter, there was a steep rise for both sexes. The incidences of eruption became equal at the age of 19 years, by which time all third molars had erupted into the oral cavity. For each age group in this study, eruption of lower third molars was generally ahead of the emergence of upper third molars into the oral cavity. This was true for both sexes.

^aDepartment of Oral and Maxillofacial Surgery.

^bDepartment of Community Health and Nutrition.

Table I. Third molar eruption in 125 male adolescents

	Age (yr)									
	11	12	13	14	15	16	17	18	19	20
<i>Lower left third molar</i>										
No. examined	6	7	17	20	19	16	19	9	8	4
No. erupted	—	—	—	—	1	2	6	5	8	4
% erupted	0%	0%	0%	0%	5.3%	12.5%	31.6%	55.6%	100%	100%
<i>Lower right third molar</i>										
No. examined	6	7	17	20	19	16	19	9	8	4
No. erupted	—	—	—	—	1	2	6	6	8	4
% erupted	0%	0%	0%	0%	5.3%	12.5%	31.6%	66.7%	100%	100%
<i>Upper left third molar</i>										
No. examined	6	7	17	20	19	16	19	9	8	4
No. erupted	—	—	—	—	1	1	3	3	8	4
% erupted	0%	0%	0%	0%	5.3%	6.3%	15.8%	33.3%	100%	100%
<i>Upper right third molar</i>										
No. examined	6	7	17	20	19	16	19	9	8	4
No. erupted	—	—	—	—	1	1	3	2	8	4
% erupted	0%	0%	0%	0%	5.3%	6.3%	15.8%	22.2%	100%	100%
Total examined	24	28	68	80	76	64	76	36	32	16
Total erupted	—	—	—	—	4	6	18	16	32	16
Overall % erupted	0%	0%	0%	0%	5.3%	9.4%	23.7%	44.4%	100%	100%

DISCUSSION

Information on the timing and sequence of tooth eruption is of interest in studying the growth and development of the jaws and teeth. In most studies a tooth is considered erupted when any portion of the crown, however small, has penetrated the oral mucosa. This definition permits a decisive "yes-no" decision for each tooth considered in the examination.¹⁰

Since permanent molar teeth do not have deciduous predecessors, dental arches must undergo significant anteroposterior growth to accommodate each permanent molar. Thus there is a period of about 6 years between the appearance of each of the permanent molars.¹³ This allows sufficient time for the lengthening of the mandible and maxilla. Therefore it follows that delayed eruption or impaction of molar teeth should be the case when necessary room is not provided for each tooth as and when its eruption is due.¹²⁻¹⁴

Regardless of racial origin, the most important of the several factors that influence the growth of the adult human jaw are the roles of diet and masticatory function.¹⁰ Insufficient participation of diet and masticatory function tends to predispose to what has been described as "degeneration of the face due to faulty

foods."¹⁵ This degeneration of the face can occur even in a single generation, regardless of the racial origin or previous primitiveness of culture of the affected population.¹⁵ For example, Keith¹⁶ examined 25 male and 25 female English skulls from the pre-Norman period (equal numbers from cemeteries of the eighteenth and nineteenth centuries) and 25 skulls of English soldiers who died in World War I. He found decreased skeletal growth and failure of third molars to erupt to have increased in these skulls in recent centuries. This finding coincided with the progressive refinement of the English diet, eliminating most of its natural roughage.

A similar transitional change in dietary texture as found in the study of English skulls in the past centuries with the predictable consequences has been observed among Nigerians.¹⁷ Significant among these consequences were (1) tooth crowding and malocclusion,¹⁸ (2) increased prevalence of dental caries,¹⁹⁻²¹ and (3) higher incidence of tooth impactions.²²

In a previous study it was demonstrated that older Nigerians made more vigorous use of their masticatory apparatus than Nigerian youths who adapted to the softer and less fibrous Western-type diet.¹⁷ It had

Table II. Third molar eruption in 133 female adolescents

	Age (yr)									
	11	12	13	14	15	16	17	18	19	20
<i>Lower left third molar</i>										
No. examined	4	7	24	21	27	22	9	7	8	4
No. erupted	—	—	1	2	9	7	5	5	8	4
% erupted	0%	0%	4.2%	9.5%	33.3%	31.8%	55.6%	71.4%	100%	100%
<i>Lower right third molar</i>										
No. examined	4	7	24	21	27	22	9	7	8	4
No. erupted	—	—	1	2	8	7	5	5	8	4
% erupted	0%	0%	4.2%	9.5%	29.6%	31.8%	55.6%	71.4%	100%	100%
<i>Upper left third molar</i>										
No. examined	4	7	24	21	27	22	9	7	8	4
No. erupted	—	—	1	2	6	7	3	5	8	4
% erupted	0%	0%	4.2%	9.5%	22.2%	31.8%	33.3%	71.4%	100%	100%
<i>Upper right third molar</i>										
No. examined	4	7	24	21	27	22	9	7	8	4
No. erupted	—	—	1	1	8	7	3	5	8	4
% erupted	0%	0%	4.2%	4.8%	29.6%	31.8%	33.3%	71.4%	100%	100%
Total examined	16	28	96	84	108	88	36	28	32	16
Total erupted	—	—	4	7	31	28	16	20	32	16
Overall % erupted	0%	0%	4.2%	8.3%	28.7%	31.8%	44.4%	71.4%	100%	100%

also been found that third molar impaction was 4½ times more common among Nigerian youths (aged 16 to 25 years) than in older Nigerians (aged 35 years or more).²²

The present study focused on rural Nigerian youths who lived entirely on fibrous and nonrefined diets. The results have shown much earlier eruption dates for third molars than have been recorded for those Nigerian youths whose diet consisted of refined westernized foods, the essential difference between both groups being the fibrous texture of their diets. Rural populations whose natural diets are highly fibrous tend to undergo more tooth occlusal attrition and interproximal wear. Begg¹¹ estimated that about 14.7 mm of shrinkage occurred in the perimeter of the mandibular dental arch of the Australian aborigine before eruption of the third molars. As a result, third molars were situated approximately where the second molars occur in civilized subjects who had unworn and caries-free dentitions.¹²

CONCLUSION

This study suggests that the present generation of Nigerian rural youths will have a low incidence of third molar maladies. This prediction is supported by the fact that not a single case of third molar impac-

tion or lack of eruption was observed among 222 older rural Nigerians (aged 31 to 80 years) examined in a previous study.¹⁷

This study also suggests that nonrefined fibrous diets will provide certain beneficial aspects of oral health as related to third molars.

A conclusion may be drawn that impacted third molars may well be a developmental medical problem of modern civilization.

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Reprint requests to:

S. A. Odusanya
Department of Oral and Maxillofacial Surgery
Dental School
Obafemi Awolowo University
Ile-Ife, Nigeria