IMPACTED MANDIBULAR THIRD MOLARS : DEPTH OF IMPACTION AND SURGICAL METHODS OF EXTRACTION AMONG NIGERIANS

A.E. OBIECHINA*, C OJI**, A.O. FASOLA***

INTRODUCTION

The problem of impacted mandibular third molar teeth is probably as old as dentistry. It can lead to serious disturbances in the harmony of the masticatory apparatus and general health (1). George Winter was reputed to have devoted most of his time to the study of the various positions and the easiest way to remove impacted mandibular third teeth (2). Some of his findings are still significant today.

The impacted mandibular third molar can be removed with the chisel and mallet or the drill and bur. In consideration of extraction difficulties, it has been recommended that extractions be done before the age of 25 years (1, 2, 3). Among other factors, the depth of the impacted teeth within the mandible is regarded as a predicator of the degree of difficulty during extractions. It therefore has been advocated that impacted third molars with a depth of more than 4 mm should be extracted under general anaesthesia (4).

There are few reports on impacted mandibular third molars in Nigeria, but none of these was directed at the relationship between the depth of impaction, the type of anaesthesia, the surgical method and the outcome of treatment. Therefore, the aim of this study is to analyse the depth of impaction of mandibular third molars, the type of anaesthesia, the surgical method used and the outcome.

PATIENTS AND METHODS

This study was conducted at the Dental Centre of the University College Hospital, Ibadan, Oyo State, and selected Dental clinics in Anambra State of Nigeria. Periapical radiographs and when necessary, lateral oblique radiographs of the mandible of patients with impacted mandibular third molars were taken. The depth of impaction was measured in millimeters with a pair of callipers and ruler. For the measurement, a perpendicular from the alveolar margin to the amelo-cemental junction of the impacted teeth was measured with the callipers and read from the ruler. The choice of anaesthesia was made between the surgeon and the patient. For all extractions done under local anaesthesia, the bur technique with preservation of the lingual plate was used, while the bur or lingual bone split technique (5) were used for extractions under general anaesthesia. The surgeon determined the surgical method of extraction, based on the type of anaesthesia and the patient's comfort. Only extracted impacted mandibular third molars were included in this study. Patients were recalled for review a week after extraction, and the need for subsequent review was determined by the outcome at the first visit.

RESULT

There were 517 patients consisting of 297 males and 220 females. Seven hundred and seventeen impacted mandibular third molar teeth were extracted. Details of the age of patients and the types of impaction are presented on Table 1. Four hundred and ninety-six (69,1 %) extractions were from patients aged 25 years and below, while 221 (30,8 %) were extracted from older patients. The depth of impaction and the types of anaesthesia are presented on Table 2.

Twenty-eight (3,9 %) extractions were done under general anaesthesia, while 689 (96,1 %) were extracted under local anaesthesia. The lingual bone split was used in 18 (2,5 %) extraction performed under general anaesthesia, while the bur was used for 699 (97,5 %) extraction. The reasons for having extractions done under general anaesthesia were, deep and aberrant impaction 8 (1,1 %), and the patient's preference for general anaesthesia 20 (2,8 %) which included patients with bilateral impaction who chose to have both impacted molars extracted at the same operation 11 (1,5 %).

* Dental Centre, University College Hospital, P.M.B. 5116, Ibadan, Nigeria.
** Dental Centre, University Teaching Hospital, Enugu.
*** Dental Centre, University College Hospital, P.M.B. 5116, Ibadan.

Acute alveolar osteitis occurred in 18 (2,5 %) patients. Of this number, 16 (2,2 %) extractions were done under local anaesthesia using the bur technique, and 2 (0,3 %) were extracted under general anaesthesia using the lingual bone split technique. Patients who had acute alveolar osteitis were treated with Zinc oxide and Eugenol dressing at alternate days and healing was achieved within 15 days.

Altered lingual or labial sensation which suggests paraesthesia occurred in 28 (3,2 %) patients. Sixteen (2,2 %) of the patients had extractions under local anaesthesia using the bur technique while 7 (1,0 %) were extracted under general anaesthesia using the lingual bone split technique. Details of nerve complications are in Table 3. There was complete recovery of lingual or labial sensation within 10 days to 3 weeks.

DISCUSSION

The impacted mandibular third molar tooth is common among young adults. It has been estimated that 1 out of every 11 mandibular third molar teeth in Nigerians aged 19 to 25 years was impacted (6). In older adults, 1 in every 46 mandibular third molar teeth was reported to be impacted (7). This study agrees with the trend that impacted third molar teeth are common in young Nigerian adults (8).

Over 96 % of the extractions were done under local anaesthesia and this contrast with reports from the developed countries, which recorded over 68 % extractions under general anaesthesia, and less than a quarter under local anaesthesia (9). Our analysis of the depth of impaction revealed that 15,2 % of the impacted molars had a mean depth of 0,53 mm (Table 2). However, 3,2 % were extracted under general anaesthesia, and only 1,1 % of this number was considered too deep for extraction under local anaesthesia. This observation is an indication that the patient's preference, the number of teeth to be extracted, and the depth of impaction were the main predicators for the choice of anaesthesia. However, in their study, Edwards et al. included medical history and patient's anxiety (10). Unlike previous reports, (4, 11, 12) we found that most third molar impactions with a depth of 5 mm or more could be extracted under local anaesthesia, provided the patient was willing to undergo the procedure after adequate explanation.

It is generally accepted third molar extractions under local anaesthesia using the bur, is less traumatic and convenient than the lingual bone split technique using the chisel and mallet. Although, some authors (4, 13, 14) claim that the lingual bone split method is quick and clean, patients often detest the use of chisel and hammer for extractions under local anaesthesia. Furthermore, some studies have associated the lingual bone split method with a higher incidence of nerve complications (15, 16). Our study showed that 7 out of 18 extractions performed using the lingual bone split had nerve complications, whereas only 16 out of 699 extractions had such complications with the bur technique, suggesting that nerve complications was less with the bur technique, as cited by some investigators (17, 18).

Although the nerve complications were transient, it suggests that lingual bone split method may be prone to nerve complications. The fact that the lingual bone split was performed under general anaesthesia which allows for generous retraction of the lingual soft tissues may explain the high incidence of lingual paraesthesia with this method. A similar observation has been reported (16). However, it is noteworthy that paraesthesia of the lingual nerve was more, with the lingual bone split under general anaesthesia, while paraesthesia of the inferior dental nerve was more when the bur was used under local anaesthesia (Table 3). We observed no association between the depth of impaction and nerve complication.

Acute alveolar osteitis occurred more frequently in extractions using the bur technique than in the lingual bone split method. The frequent occurrence of acute alveolar osteitis may not be unrelated to the effect of the heat generated during bone removal with the bur. The ischaemic effect of adrenaline in local anaesthetics has also been cited as a possible factor among the causes of acute alveolar ostietis.

CONCLUSION

Most third molar extractions were removed under local anaesthesia. The patient's preference, the number of teeth to be extracted, and the depth of impaction were the main predicators in the choice of anaesthesia. Majority of third molars with a depth of 5 mm or more could be extracted under local anaesthesia. Paraesthesia of the inferior dental nerve and alveolar osteitis were more frequent when extractions were done using the bur technique under local anaesthesia, while paraesthesia of the lingual nerve was more when extractions were performed using the lingual bone split technique under general anaesthesia.

Table 1 : Age distribution and types of impaction

Age (years)	16 - 20	20-25	26-30	31-35	36-40	41 >	Total (%)
Mesioangular	98	107	65	21	15	13	319 (44,5)
Vertical	54	106	26	9	2	1	198 (27,6)
Horizontal	32	41	23	8	8	2	114 (15,9)
Disto-angular	21	35	15	6	5	1	83 (11,6)
Aberrant	1	1	0	0	0	1	3 (0,4)
Total	206	290	129	44	30	18	717 (100)
%	28,7	40,4	18	6,1	4,2	2,5	

Table 2 : Distribution of type of anaesthesia and depth of impaction

	Type of anaesthesia		Depth of impaction	
No of extractions	Local anaesthesia	General anaesthesia	Range (mm)	Mean (mm)
109 (15,2 %)	86 (12,0 %)	23 (3,2%)	0,5-0,8	0,53
282 (39,3 %)	277 (38,6%)	5 (0,7%)	0,2-0,4	0,27
326 (45,5 %)	326 (45,5%)	0	0-0,1	0,002
717 (100%)	689 (96,1%)	28 (3,9%)		

Table 3 : Distribution of extraction, anaesthetic technique and paraesthesia

Extration technique	Type of anaesthesia	Inferior dental nerve	Lingual nerve	Total
Bur	Local anaesthesia	13 (1,8%)	3 (0,4 %)	16 (2,2%)
Lingual bone split	General anaesthesia	1 (0,2%)	6 (0,8%)	7 (1,0%)
Total		14 (2,0%)	9 (1,2%)	23 (3,2%)

ABSTRACT

This study was conducted in three centres. 717 impacted mandibular third molars were extracted from 517 patients. 69,1 % of the extractions were in patients aged 25 years and below. A total of 96,1 % extractions were done under local anaesthesia while 3,9 % were under general anaesthesia. The lingual bone split technique was used in 2,5 % extractions while the bur was used in 97,5 % extraction.

The patient's preference, the number of teeth to be extracted, and the depth of impaction were the main predicators in the choice of anaesthesia. Majority of third molars with a depth of 5 mm or more were extracted under local anaesthesia. Paraesthesia of the inferior dental nerve and alveolar osteitis were more frequent when extractions were done using the bur technique under local anaesthesia, while paraesthesia of the lingual nerve was more when extractions were performed using the lingual bone split technique under general anaesthesia.

Key words : impacted third molar, depth, anaesthesia, extraction.

RESUME

L'étude a eu lieu en trois centres. 717 molaires inférieures enclavées ont été arrachées de 517 malades. 69,1 % des extractions étaient faites pour les malades de 25 ans et en dessous.
Un total de 96,1 % extractions ont été faites sous anesthésie locale alors que 3,9 % ont été faites sous anesthésie générale. La technique de la division des os véhiculaires a été utilisée pour 2,5 % extractions alors que le système de crampon a été utilisé pour 699 extractions.
Le choix d'anesthésie était basé sur la préférence du malade, le nombre de dents à arracher et la profondeur de l'enclave. La plupart des molaires inférieures ayant une profondeur de 5 mm ou plus peuvent être arrachées à travers l'anesthésie locale. Lorsque les extractions sont faites à partir du système de crampon sous l'anesthésie locale, la paresthésie du nerf dental inférieur et les alvéolites dentaires sont plus fréquentes alors que la paresthésie du nerf lingual était plus fréquent quand les extractions sont faites en utilisant la technique de l'alvéolectomie linguale sous anesthésie générale.

Mots clés : molaire inférieure enclavée, profondeur, anesthésie, extraction.

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