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Indications for the removal of impacted mandible third molars at Ibadan - Any compliance with established guidelines?

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Summary

The removal of impacted lower third molars has been a subject of controversy among dental practitioners since the turn of the twentieth century. A yet unresolved aspect of the controversy is the definition of appropriate indications for surgical extraction. Clinical guidelines have long been established but the effectiveness of adoption of the guidelines is still to be proved in our environment. A retrospective observational study of the indications for extractions in oral surgery clinic of the University College Hospital (UCH), Ibadan was conducted with the aim of identifying the common indications and to verify the level of compliance with established guidelines. There were 294 extractions out of which the indications for 268 cases were recorded. We found that pericoronitis constituted the most frequent indication [90(33.6%) recurrent, 36(13.4%) acute cases] while apical periodontitis 70, (26.1%) was next most frequent. Prophylactic extractions were performed in 34(12.7%) cases. Other indications such as pulpitis 19, (7.1%), dental caries 13,(4.9%), dentoalveolar abscess (4, 1.5%), orthodontic reason (1, 0.3%) and tooth fracture (1, 0.37%) were also recorded. Compliance rate with NIH criteria and NICE guidelines were 87.3% and 73.9% respectively. We recommend that prophylactic extractions be discouraged while guidelines should be adequately emphasized for effective clinical practice.

Keywords: *Third molar surgery, indications, compliance, guidelines*

Résumé

Les critères cliniques ont été établis depuis longtemps mais l'adoption effective de ces pratiques demeure à être démontré parmi les dentistes dans notre environnement. Cette étude observationnelle

rétrospective des indications en clinique de la chirurgie orale du Centre universitaire Hospitalier (UCH), Ibadan était conduite ayant pour d'identifier les indications communes et de vérifier le taux d'adhérence suivi des conduits établies. Ils avaient 294 extractions parmi lesquels les indications pour 268 cas étaient enregistrées. Nous trouvons que la pericoronite est l'indication la plus fréquente [90(33.6%) apparaissant, 36(13.4%) cas acute] cependant la periodontite apicale (70, 26.1%) était la seconde indication plus fréquente. Les extractions prophylactiques étaient faite chez 34(12.7%) cas. Autres indications comme la pulpite (19, 7.1%), la carie dentaire (13,4.9%), l'abcès dentoalveolaire (4, 1.5%), l'orthodontie de rason (1, 0.3%) et la fracture de la dent (1, 0.37%) étaient enregistrés. Le taux d'adhérence avec les critères du NIH et NICE étaient de 87.3% et 73.9% respectivement. Nous recommandons que les extractions prophylactiques soient découragées et les critères soient renforcés adéquatement pour des pratiques cliniques effectives.

Introduction

The surgical removal of impacted third molars is the most frequently performed oral surgical procedures apart from routine dental extractions [1]. In the early days of dentistry when treatment modalities were largely unsophisticated, surgical extraction procedure was limited to conditions in which there were strict indications and to patients who could withstand the rigors of the procedures [2]. The advent of modern anaesthetic techniques, analgesics and antibiotics coupled with the development of rotary cutting equipments has brought about an immense forward shift in clinical dental practice such that surgical extractions can now be performed in a safe, relatively painless procedure.

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Following this advancement in surgical practice, it had been noted that a large proportion of non-diseased impacted teeth were being removed prophylactically [1]. This was regarded as an abuse by some authors and much debate had ensued among dental practitioners on the subject [3,4]. In order to reach a consensus, there have been various attempts at providing guidelines for the treatment. The creation of guidelines to aid decision-making in third molars surgery was first addressed in a National Institute of Health (NIH) Conference in the USA in 1979 where a list of recommendations was produced [5]. These NIH criteria were further emphasized in an editorial of the British Medical Journal in 1994 entitled "Surgical removal of third molars – prophylactic surgery should be abandoned" [6]. More recently, the National Institute for Clinical Excellence (NICE) published their guidelines for third molar surgery [7]. No specific guideline has been published by any institution within the West African Sub-region.

This study was intended to identify the indications for removing third molars in the University College Hospital, Ibadan in order to appraise the compliance with the NIH criteria and NICE guidelines.

Materials and methods

A retrospective study of the indications for removal of impacted mandibular third molars in the oral surgery clinic of UCH, Ibadan was carried out. The record files of all patients who had surgical removal of impacted mandibular third molars within the study period were retrieved. Data were collected on age, sex, type of impaction (using Winter's classification, 1923) and indication for removal. Computer analysis of data was conducted using SPSS version 11.0 software, statistical significance was set at $P < 0.05$.

Spearman's correlation test was conducted to assess the associations between indications for removal and gender, age and impaction types. Also, the various indications for removal were compared with the National Institute of Health (NIH) criteria and the National Institute for Clinical Excellence (NICE) guidelines to assess rate of compliance.

Results

Two hundred and ninety nine mandibular third molar extractions were performed on 294 patients including 5 (1.7%) patients who had bilateral extractions of their impacted third molars. There were 185 females and 114 males with a male to female ratio of 1:1.6. The

age range of the patient was 17-79 years with a mean age of $26.2 \pm SD 8.5$ years.

The type of impaction was not indicated in 46 cases. Of the 253 cases in which the types of impactions were documented, mesioangular impaction was the most prevalent accounting for 38.7% while transverse impaction was least encountered constituting 0.01%. One hundred and fifty seven teeth were removed from the right side while 138 teeth were from the left side of the jaw; the sides were not indicated in 4 cases.

The various indications for extractions are highlighted on figure 1. The commonest indication was recurrent pericoronitis (90 cases, 33.6%), followed by apical periodontitis (70, cases, 26%) while the least frequent indications were orthodontic reasons and tooth fracture accounting for one case (0.4%) each. Other indications for extraction were first episode of acute pericoronitis (36, 13.4%), asymptomatic prophylactic extractions (34, 12.7%), pulpitis (19, 7.1%), unrestorable caries (13, 4.9%) and dentoalveolar abscess (4, 1.5%). The indications were not found in 14 cases in which no documentation of indication or definitive diagnosis was found in the case files and 17 cases in which the record files could not be retrieved.

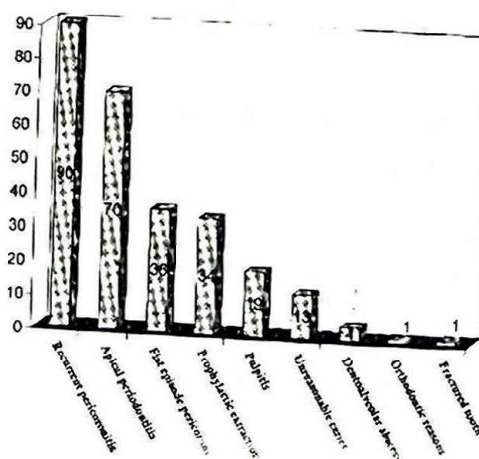


Fig. 1: Indications for extractions

The correlation between variables such as gender (P=0.115), age (P=0.438), types of impactions (P=0.082) and the clinical indications for extractions were not statistically significant (Table 1). Compliance rate was computed based on the 268 cases for which the indications for extractions were documented. In 234 cases, indications were in compliance with the NIH criteria while 198 cases were in compliance with the NICE guidelines giving compliance rates of 87.3% and 73.9 % respectively (Table 2).

Table 1: Correlation of sex, age, impaction types with Indications for extraction.

		indications
Sex	Correlation coefficient	.073
	Sig. (2-tailed)	.115
Age	Correlation coefficient	.033
	Sig. (2-tailed)	.438
Impaction types	Correlation coefficient	.209
	Sig. (2-tailed)	.082

Table 2: Indications for extractions compared with guidelines

Indications	No of cases (%)	Compliance	
		NIH	NICE
Recurrent pericoronitis	90(33.6%)	..	..
Apical periodontitis	70(26%)	..	..
Fist episode pericoronitis	36(13.4%)	..	x
Prophylactic extractions	34(12.7%)	x	x
Pulpitis	19(7.1%)	..	..
Unreasonable caries	13(4.9%)	..	..
Dentoalveolar abscess	4(1.5%)	..	..
Orthodontic reasons	1(0.4%)	..	..
Fractured tooth	1(0.4%)	..	..
	Compliance rate	87.3%	79.3%

..: Compliance; X: Non compliance; Compliance rate is the total percentage of compliant indications (").

Discussion

The debate on appropriate indications for operative removal of impacted third molars has largely been on issues of prophylactic versus therapeutic indications. The risk of severe pathoses in the future has been the major argument of proponents of prophylactic extractions although studies have shown that the likelihood of this is very low [8,9]. However, there is a pertinent desire to be able to predict cases that may become symptomatic. In

this respect some studies have associated older age groups with severe pathologies like cysts and neoplasms [1], and distoangular impactions with diseases more than other types of impactions [9]. Our finding did not support this hypothesis as we found no significant correlations between gender, age, impaction types and indication for surgery among our patients.

Most studies have identified pericoronitis as the most common indication for extraction while other clinical entities such as caries, pulpitis, chronic periodontitis distal to the second molar and mandibular angle fractures are the other indications reported in varying proportion [9,10,11]. The present study is in line with the usual observation where pericoronitis and dental caries or its sequelae constituted the most frequent clinical indications. This type of findings has consistently doused the tone of arguments for prophylactic surgery while providing rationale for conservative management. However, there is yet an opinion that opposes a wholesale condemnation of prophylactic extraction. This opinion provides justification for this practice based on specific general health condition of the patient such as those undergoing cancer therapies. The argument was based on the following observation [12]; (1) the increased risks and difficulties associated with post-cancer treatment extraction (2) the potential for third molar to produce pathoses in immunocompromised patients before, during or immediately after their anticancer treatment and (3) the fact that the treatment of third molars may interfere with the patient cancer treatment.

In view of the foregoing debate, it became imperative to reach a consensus on the management of third molars. This has been provided by ways of the published guidelines which are intended to assist clinicians and patients in decision making. Guidelines are helpful for standardization and regularization of practice and it could be useful in resolving medico-legal issues. There have been various guidelines, such as those established by National Institute of Health (NIH), National Institute for Clinical Excellence (NICE), Royal College of Surgeons of England , Scottish Intercollegiate Network (SIGN) and South African Society of Maxillofacial and Oral Surgeons [6,7,13,14]; most of these are similar in details. In 1996, Brickley and Shepherd [15] conducted a study in Cardiff, they reported that 34% of lower third molar extractions were removed despite not

compliance rate was recorded [11]; this reason may not be sufficient.

NIH Criteria:

1. Recurrent pericoronitis
2. Caries not amenable to restorative measure
3. Internal or external resorption
4. Associated dentigerous cyst
5. Periodontal disease to which the third molar is contributory

NICE Guidelines:

1. The routine practice of prophylactic removal of pathology-free impacted third molars should be discontinued in the NHS
2. The standard routine dental care by dental practitioners and/or paraprofessional staff, needs to be no different, in general, for pathology free impacted third molars (those requiring no additional investigation or procedures)
3. Surgical removal of impacted third molars should be limited to patients with evidence of pathology. Such pathology includes unrestorable caries, non treatable pulp or periapical pathology, cellulitis, abscess and osteomyelitis, internal/external resorption of the tooth or adjacent teeth, fracture of tooth, disease of follicle including cyst/tumour, tooth/teeth impeding surgery or reconstructive jaw surgery, and when a tooth is involved in or within the field of tumour resection.

4. Specific attention is drawn to plaque formation and pericoronitis. Plaque formation is a risk factor but it is not in itself an indication for surgery. The degree to which the severity or recurrence of pericoronitis should influence the decision for surgical removal of a third molar remains unclear. The evidence suggests that first episode of pericoronitis, unless particularly severe, should not be considered an indication for surgery. Second or subsequent episode should be considered the appropriate indication for surgery.

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satisfying the NIH criteria. Four years later when the NICE guidelines were published, Westcott and Irvine [5] found a 92% compliance rate in the same region; they concluded that practitioners were already adopting the existing guidelines in their practices.

In Nigeria where no specific guideline has been established, Oworade *et al* [16] in a study conducted in the year 2002, observed that only 28% of dentists across the country were aware of any existing guidelines on third molar extraction and most of them practice in training institutions. In the year 2003, Ladeinde *et al* [11] conducted a 2-year audit in Lagos University Teaching Hospital (LUTH) to assess the appropriateness of indications for third molars extraction using NIH criteria; he reported 98% compliance rate among dentists in the institution.

This is the first study in our institution where compliance with the NIH criteria and NICE guidelines were assessed. We observed 87.3% and 73.9% compliance respectively. The disparity was due to the particular emphasis on pericoronitis as stated in the NICE guidelines where first episode of pericoronitis was considered an insufficient indication for extraction. In this study we found 12% of the cases of extractions performed following first episode of pericoronitis. Although, NICE added a proviso that a very severe first episode may be an accepted indication, the extents of severity were not indicated in our patients' records. Therefore, we scored every first episode as non compliance with NICE guidelines. We realize that this might not truly be in all cases but it underscores the need for adequate documentation especially in the light of the knowledge of the need for appropriate indications. The number of prophylactic extractions recorded in this study is considerable; this is a contravention of both guidelines. In a tertiary hospital such as ours, evidence-based practice should be the norm. The current consensus on the extraction of impacted third molar is against prophylactic extractions [4], so a situation where a significant number of extractions do not conform to established guidelines should be discouraged. A possible reason for lower compliance rate in our institution is that many volunteer patients are recruited for postgraduate examinations and some of them had asymptomatic impacted third molars, but considering the fact that LUTH is equally a postgraduate examination centre and yet a 98%

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