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Research Article

Evaluation of the Radiographic Positions, the Symptom of Pain, Pathology and Pattern of Impaction of Mandibular Third Molar Teeth in Lebanese

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Abstract

Objective: This study aimed to analyze the pattern, pathology and symptom of pain associated with impacted mandibular third molars in Lebanese.

Design: The records of 272 patients with a total of 367 impacted mandibular third molars between the ages of 16 and 82 years (mean age 32.7 years) were collected and studied. For each patient, the following variables were recorded: age, sex, radiographic position of the impaction, pathology and symptom of pain if occurred.

Results: Showed that 49.86% of the study subjects had a symptom of pain, while 50.14% were pain-free. 41.15% of the patients were associated with pathology. Radiographic positions of the mandibular third molars were recorded as horizontal (33.51%), vertical (17.38%), inclined (46.86%), aberrant (1.63%) and inverted (0.27%).

Conclusion: Based on the results of this study it was concluded that the most common pattern of impaction was inclined and about half of the subjects had pain associated with impacted third molar and pathology.

Keywords: *sImpaction; Mandible; Third Molars; Pattern; Radiographic*

Abbreviations

L: Left; R: Right; No: Number; n: Number of Subjects; Headings: Third Molar Surgery

Introduction

When a tooth, fails to reach the occlusal plane or develops into the proper functional position, one refers to this as impaction or retention [1-3].

The causes of impacted lower third molars include lack of space in the mandible to accommodate the erupting teeth. Besides, traumatic, hereditary, vitamin D and A deficiency and endocrine factors can be regarded as potential reasons for impaction [3-5].

Teeth that fail to achieve their functional position may be pathological and non-functional and should be considered for assessment and treatment (surgical extraction?). With impactions, can be connected symptoms like pain, and pathology as caries, pericoronitis, periodontal diseases, and cysts [6-9]. These problems and their prevention were the major reasons behind our concern to study the actual reality of impaction of wisdom teeth in the Lebanese population. At present, accurate data on impaction of mandibular third molars in Lebanon is not available.

Purpose of the Study

Thus, the main purpose of this study was to analyze the pattern, symptoms, pathology, and radiographic positions associated with impacted mandibular third molars in Lebanese to make an effectual treatment planning.

Materials and Methods

The records of Lebanese patients referred from 1994 - 2004 to the consulting clinic of Oral and Maxillofacial Surgery, Beirut, Lebanon, for assessment and treatment of impacted mandibular third molars, were collected and studied. Only healthy patients were included. The haemophiliacs, mentally disabled individuals and patients who had had renal or liver transplants were excluded.

Patients receiving radiotherapy and/or chemotherapy were also excluded.

For each patient, the following variables were recorded for this study: age, sex, the symptom of pain, pathology (periodontal diseases, caries, pericoronitis, and cysts) and radiographic positions (Horizontal, vertical, inclined, aberration, and inverted).

The radiographic position of impaction was determined using the following classification [10]:

1. Vertical position - Approximately parallel with the adjacent molars, cross angle 90 degrees to the occlusal plane.
2. Horizontal position - Approximately parallel with the occlusal plane, cross angle 0 degrees. (sagital mesioangular, sagittal distoangular, transverse buccoangular, or transverse linguo-angular)
3. Inclined position - Sloping at a large variety of angles to the occlusal plane. (mesioangular, distoangular, buccoangular, or linguo-angular)
4. Aberrant position - Straying from the usual or natural position.
5. Inverted position reversal of position (wholly turned).

Periapical radiographs, lateral radiographs of the mandible, orthopantomograms (OPG), and when necessary, Computerized Tomography scans (CT scan) were used.

Statistical analysis was descriptive, through the use of tables and summary statistics.

Results

A total of two hundred and seventy two patients were included in the study. The mean age of this group was 32.7 years (range 16 years to 82 years) with standard deviation (SD) 21.2 years.

One hundred and forty-two patients (52.21%) were females and one hundred and thirty (47.79%) males. Three hundred and sixty-seven impacted third molars were observed. The radiographic positions of the mandibular third molars were recorded as horizontal 123 (33.51%), vertical 65 (17.71%), inclined 172 (46.86%), aberrant 6 (1.63%), and inverted 1 (0.27%). Detailed distribution is presented in table 1-3.

Horizontal impaction	No. of impaction	%
Sagital Mesioangular	L = 58, R = 47 (105)	85.3
Sagital Distoangular	L = 2, R = 2 (4)	3.2
Transverse Buccoangular	L = 5, R = 7 (12)	9.7
Transverse linguo-angular	L = 2, R = 0 (2)	1.6
Total	123	100%

Table 1: *Distribution of impactions with horizontal radiographic position (n = 123).*
L: Left; R: Right; No: Number; n: Number of Subjects.

Inclined impaction	No. of impaction	%
Mesioangular	L = 59, R = 49 (108)	62.79
Distoangular	L = 34, R = 30 (64)	37.21
Buccoangular	L = 0, R = 0 (0)	0.0
Linguo-angular	L = 0, R = 0 (0)	0.0
Total	172	100%

Table 2: *Distribution of impactions with inclined radiographic position (n = 172).*

Type of impactions	No. of impaction	%
Vertical	L = 38, R = 27 (65)	90.27
Aberration	L = 3, R = 3 (6)	8.33
Inverted	L = 0, R = 1 (1)	1.38
Total	72	100%

Table 3: *Distribution of impactions with vertical, aberration, and inverted radiographic positions (n = 72).*

Of the 367 impacted mandibular third molar teeth, 183 impactions (49.86%) had the symptom of pain, while 50.14 % were asymptomatic (pain- free). The distribution of sex with pain and the non-pain symptom was: 55 females (20.22%) had pain, while 87 (31.98%) reported no pain and 90 males (33.08%) had pain whereas 40 (14.70%) were pain-free. The distribution of type of impactions with symptoms of pain is presented in table 4. One hundred and twelve subjects (41.15%) were associated with pathology. Out of these, 65 (23.89%) were pericoronitis, and 3 (1.1%) was a periodontal disease, 31 (11.39%) were caries, while 13 (4.77%) were associated with cysts (Table 5).

Types of impaction	No. of impaction (%)	Impaction with the symptom of pain (%)
Horizontal	123 (33.51)	70 (19.07)
Vertical	65 (17.71)	43 (11.71)
Inclined	172 (46.86)	65 (17.71)
Aberration	6 (1.63)	4 (1.08)
Inverted	1 (0.27)	1 (0.27)
Total	367	183 (49.86)

Table 4: Distribution of type of impactions with the symptom of pain (n = 367).

Pathology	No. of patients	%
Periodontal disease	3	1.10
Caries	31	11.39
Pericoronitis	65	23.89
Cysts	13	4.77
Total	112	41.15

Table 5: Distribution of pathology.

Discussion

The impacted third molar is an anomaly that is well documented in the literature. Although only a few studies have been published on wisdom teeth impaction in the Arab countries, none was done in Lebanon.

A total of 272 patients, 142 females and 130 males were included in this study. Looking at the female to male ratio; it was 1.1:1, which was compared favourably with other studies [8]. Our findings on the radiographic positions of impaction were higher than those obtained in a study done in an African country (Nigeria), except for inverted impaction which was more frequent than in our study [8,15].

Results from developing countries [11,12] compare favourably with our study. In a study done by Martin., *et al*. [6] radiographic positions were recorded as vertical (58.8%), inclined (27.3%) and horizontal (12.2%). However, in our results, the vertical position was much less, while the inclined and horizontal were much more.

Moreover, the results showed that pericoronitis and caries were the most common lesions associated with impacted mandibular third molars. Next was a cyst, followed by periodontal disease.

Obiechina., *et al*. [8,15] reported that pericoronitis and periodontal disease were the most common lesions with impacted mandibular third molars. Next was caries, followed by cysts.

These observations were similar to ours, except for caries and periodontal disease. We believed that these findings were of great importance in the treatment strategy of the impacted third molar.

Punwuitkorn., *et al*. [13], Obiechina., *et al*. [8], Martin., *et al*. [6] reported that where symptoms exist, the pain was common to impact and none impacted mandibular third molars.

Our finding did not differ. However, the pain was most frequent in horizontal impaction. Next was inclined, followed by vertical and aberration.

While 49.86% of the impacted third molars had symptoms, 50.14% were asymptomatic (pain-free). It was widely accepted that pain-free mandibular wisdom teeth may be extracted for prophylactic reasons [2,11]. However, Edwards., *et al*. reported that pain-free impacted molars should not be extracted unless associated with pathology (pericoronitis, caries, periodontal disease, and cysts) or further occurrence of pain [7].

Another interesting finding was that male patients (33.08%) appeared to complain about preoperative symptoms of pain more than the female (20.22%) at a ratio of 1.6:1. This is maybe since females exhibit a natural physiological endurance towards pain factors, but further studies should be performed to prove the reliability of this observation.

Because of the high prevalence of symptoms and pathology associated with impacted mandibular third molars observed among Lebanese, we think that this survey would be sufficient for considering these conditions as pre-operative complications and should be taken in consideration in the treatment plan. Many pressing questions about prophylactic extraction of impacted mandibular third molars contributed to pre-operative complications as symptoms and pathology as well as other issues to be explored. Further studies will be requested.

High prevalence of symptoms and pathology associated with impacted mandibular third molars were reported. The results of this survey suggest that these conditions as preoperative complications could help in establishing a proper and effective treatment plan.

Conclusion

Based on the results of this study it was concluded that the most common pattern of impaction was inclined, and about half of the subjects had pain associated with impacted third molar and pathology.

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