

EXTRACTIONS OF THIRD MOLARS - FACTORS RELATED TO SURGICAL DIFFICULTY AND TRANS-AND POSTOPERATIVE COMPLICATIONS

EXTRAÇÕES DE TERCEIROS MOLARES – FATORES RELACIONADOS À DIFICULDADE CIRÚRGICA E COMPLICAÇÕES TRANS E PÓS-OPERATÓRIAS

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Resumo

Objetivo: Este estudo avaliou fatores relacionados a complicações em exodontias de terceiros molares. **Métodos:** Para tanto, revisou-se prontuários de pacientes submetidos ao procedimento na Clínica de Cirurgia da UNIFAL-MG entre 2007 e 2017. Os dentes foram classificados quanto à angulação (Classificação de Miller Winter), profundidade de impação e espaço para erupção (Pell e Gregory). Além disso, coletou-se dados referentes à idade, gênero, condição sistêmica, fumo, pericoronarite, antibioticoterapia pré e pós-operatória e complicações cirúrgicas. Os dados foram submetidos à estatística descritiva (Excel 2013). **Resultados:** Foram revisados prontuários de 582 pacientes submetidos a 1215 exodontias, com média de idade de 25,14 anos ($\pm 8,73$) e 68,90% da amostra sendo feminina. Quanto aos molares superiores, a maioria apresentou-se vertical (85,12%), Classe I (59,13%) e posição A (53,86%). Os inferiores apresentaram maior frequência em posicionamento vertical (46,92%), profundidade de impação A (59,50%), e espaço insuficiente para erupção (49,85%). Foram relatadas complicações (16,29%), sendo a mais comum alveolite (44,94%). Além disso, notou-se maior frequência de complicações no sexo feminino (70,70%), sendo que as dos tipos inflamatórias e infecciosas ocorreram em pacientes sem uso de antibioticoterapia (60%) e em extração de terceiros molares inferiores (74,74%). Foi observada maior frequência de complicações em dentes verticais (56,56%), classe I (44,94%) e posição A (59,09%). **Conclusões:** Na ausência de antibioticoterapia profilática e em pacientes do sexo feminino observou-se maior taxa de complicações.

PALAVRAS-CHAVE: Exodontia. Terceiro Molar. Dente Impactado. Dente incluso. Cirurgia Oral.

Abstract

Objective: This study assessed factors related to complications in third molar extractions. **Methods:** We reviewed the medical records of patients undergoing extraction of third molars at the Surgery Clinic of UNIFAL-MG from 2007 to 2017. The teeth were classified for angulation (Miller Winter's Classification), impaction depth, and eruption space (Pell and Gregory). Data regarding age, gender, systemic condition, smoking, pericoronitis, antibiotic therapy, and surgical complications were collected. The data were submitted to descriptive statistics (Excel 2013). **Results:** Medical records of 582 patients undergoing 1215 tooth extractions were reviewed, with a mean age of 25.14 years (± 8.73), and 68.90% of the samples were female. Most upper molars were vertical (85.12%), Class I (59.13%), and position A (53.86%). The lower molars had a higher frequency of vertical positioning (46.92%), impaction depth A (59.50%), and insufficient eruption space (49.85%). Complications were reported (16.29%), the most common being alveolitis (45.45%). There was a higher frequency of complications in females (70.70%), with inflammatory and infectious complications occurring in patients with no antibiotic therapy (60%) and extraction of lower third molars (74.74%). A higher frequency of complications was observed in vertical (56.56%), Class I (44.94%), and position A (59.09%) teeth. **Conclusions:** A higher frequency of complications was observed for patients with no prophylactic antibiotic therapy and female patients.

Keywords: Tooth extraction. Third molar. Impacted tooth. Unerupted tooth. Oral Surgery.

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Introduction

The extraction of third molars is one of the most common procedures in Oral and Maxillofacial Surgery, and several studies have measured the

difficulty of this surgical procedure, seeking to establish the main risk factors for complications. Paresthesia, alveolitis, trismus, hemorrhage, and

pain stand out among the possible complications.^{1,11,20,22}

The preoperative planning of third molar extractions is of great importance for the success of the procedure. The anatomical position of the third molar is a fundamental variable to predict surgical difficulty and the risk of complications.¹⁷ Pell & Gregory's classification (1933)¹⁶ is still a widely used method for estimating surgical complexity and takes into account the space for third molar eruption and impaction depth, while Miller Winter's classification (1926)²⁵ classifies the third molar according to its slope relative to the second molar and it can be used as a complement to Pell & Gregory's classification (1933).^{20,16}

In addition to the aforementioned classifications, there are studies that describe other factors related to the degree of surgical difficulty, such as allergies, demographic data, systemic condition, use of contraceptives, use of antibiotics, smoking, and the surgeon's experience, and the higher rate of complications has been associated with systemically compromised and older patients.¹⁷

Thus, the preoperative assessment of surgical complexity is fundamental because, when planning, it will be possible to identify more difficult procedures or with a higher risk of complications due to the positioning of the teeth or due to factors related to the patient. Therefore, appropriate changes in the treatment plan may be made in order to prevent or reduce complications.^{17,16,25}

The aim of the present study was to identify and describe surgical complications, as well as local (tooth related) and general (patient related) factors that may interfere with the complexity of the procedure and, consequently, the incidence of complications in surgical extractions of third molars in patients from the Surgery Clinic of UNIFAL-MG.

Methods

This study was based on a retrospective analysis, which reviewed the medical records of patients submitted to third molar extractions at the Surgery Clinic of the College of Dentistry of the Federal University of Alfenas (UNIFAL/MG) from 2007 to 2017. Data were collected on the patient's gender, age, systemic condition, medications used, allergies, smoking, history of pericoronitis and

reported surgical complications. In addition, the radiographic classification of the extracted teeth was also performed as proposed by Pell & Gregory (1933)¹⁶ and Winter (1926).²⁵ The present classification was based on panoramic radiographs available in the patient records or in the digital system of UNIFAL-MG (Integrated Systems of Dental Clinics UNIFAL-MG).

Inclusion criteria

- Patients of both genders, regardless of age, race or systemic condition, submitted to the extraction of at least one third molar in the Surgery Clinic of the College of Dentistry of UNIFAL-MG from 2007 to 2017;
- Patients with duly completed medical records;
- Patients with panoramic radiography in their medical records or in the digital system of UNIFAL-MG.

Exclusion criteria

- Incomplete medical records;
- Absence of panoramic radiographs in the medical records or in the digital system of UNIFAL-MG.

Radiographic Classification of Third Molars

The radiographic classification (Pell & Gregory and Winter)^{16,25} was performed by two assessors. Inter- and intraobserver calibration was performed using the Kappa (k) index. Calibration was considered acceptable when the obtained Kappa index was equal to or higher than 0.80, which is equivalent to a near perfect agreement according to Landis and Koch (1977)¹⁰. The interobserver reproducibility was considered almost perfect, and the index obtained was 0.86, 0.97 and 0.88 for impaction depth, space for eruption and angulation, respectively. Regarding intraobserver reproducibility, the assessor 1 considered it perfect for impaction depth and angulation, with an almost perfect space for eruption and kappa index of 0.84. On the other hand, the assessor 2 presented perfect agreement (k=1.0) for all classifications performed (impaction depth, space for eruption and angulation).

Pell and Gregory's Classification

Regarding the space for eruption, the teeth were classified as Class I (sufficient space), Class

II (insufficient space) and Class III (without space). For this, the distance between the distal region of the second molar and the ascending ramus of the mandible or tuberosity of the maxilla was taken into account.

Regarding impaction depth, the teeth were classified as: A (when the most cervical portion of the third molar is at or above the occlusal region of the second molar); B (when the most cervical portion of the third molar is located somewhere between the cervical and occlusal region of the second molar); C (when the most cervical portion of the third molar is below the cervical region of the second molar).

Winter's classification

The third molars were classified according to their angulation in relation to the long axis of the second molar as vertical, horizontal, mesially angulated, distally angulated, vestibularly angulated and lingually angulated.

Data analysis

The data were organized and tabulated in a spreadsheet and subsequently submitted to descriptive statistics (Microsoft Excel 2013).

Results

The medical records of 582 patients submitted to 1215 third molar extractions were reviewed, comprising 401 female patients (68.90%) and 181 male patients (31.10%) with a mean age of 25.14 years (± 8.73 years). Most of the third molars extracted were lower, corresponding to 684 teeth (56.3%), and the upper ones totaled 531 teeth (43.7%).

Regarding Winter's classification (1926),²⁵ of the 531 third molars extracted, 452 teeth (85.12%) were vertical, 41 were distally angulated (7.72%), 24 were mesially angulated (4.51%), 9 were horizontal (1.69%), 4 were vestibularly angulated (0.75%) and only 1 was lingually angulated (0.18%). In the Pell and Gregory's classification (1933),¹⁶ regarding space for eruption, 314 upper third molars were classified as Class I (59.13%), 113 as Class II (21.28%) and 104 as Class III (19.58%). Regarding the impaction depth of the upper third molars, 286 teeth were classified as A (53.86%), 80 as B (15.06%) and 165 as C (31.07%).

According to Winter's classification (1926),²⁵ of the 684 lower third molars, 321 were vertical (46.92%), 191 (27.92%) were mesially angulated, 131 were horizontal (19.15%), 21 were vestibularly angulated (3.07%), 18 were distally angulated (2.63%), and only two were lingually angulated (0.29%). With regard to Pell and Gregory's classification (1933),¹⁶ 297 lower third molars were classified as Class I (43.42%), 341 as Class II (49.85%) and 46 as Class III (6.72%). Regarding the impaction depth of the lower third molars, 407 were classified as A (59.50%), 220 as B (32.16%) and 57 as C (8.33%).

Regarding the history of infection, of the 1215 third molars extracted, 760 were asymptomatic (62.56%) and 455 had a history of pericoronitis (37.44%).

In the anamnesis review, it was verified that all the patients were classified as ASA I or II. This was because 409 patients were healthy (70.27%) while 173 had some mild and/or controlled systemic alterations (29.63%). Of these 173 patients, 55 reported gastritis or ulcer (31.79%), and bronchitis or asthma were reported by 48 patients (27.74%). Forty-five patients reported anemia (26.01%), 43 had heart diseases (24.85%), 26 were smokers (15.03%) and 15 had psychiatric disorders (8.67%). Hypothyroidism was reported by 14 patients (8.09%), 12 patients reported hepatitis (6.94%), 7 patients reported epilepsy or seizure (4.05%), 7 patients were diabetic (4.05%) and 6 patients had rheumatic diseases (4.63%). In addition, 4 patients had coagulation disorders (2.32%), 2 patients reported cancer (1.16%), 2 patients had a history of stroke (1.26%) and 2 had dyslipidemia (1.16%).

In addition, 44 patients (25%) reported a history of allergies. The patients were allergic to the following: dipyrone (15 - 34.09%), penicillin (11 - 25%), acetylsalicylic acid (ASA) (6 - 13.63%), nonsteroidal anti-inflammatory drugs (NSAIDs) (5 - 11.36%), PVPI (4 - 9.09%), sulfonamide (4 - 9.09%), paracetamol (1 - 2.27%) and chlorhexidine (1 - 2.27%).

As for the complications, in 198 surgeries (16.29%) there was some report. In the other 1017 surgeries, no observation regarding complications was found (83.71%).

Among the 198 cases with complications, the most common one was alveolitis (90 cases = 45.45%). The remaining cases were: hemorrhage (50 cases - 25.75%), root fracture (15 cases -

7.57%), trismus (15 cases - 7.57%), wound dehiscence (10 cases - 5.05%), paresthesia (6 cases - 3.03%), hematoma (5 cases - 2.52%), allergic reaction (4 cases - 2.02%), tuber fracture (4 cases - 2.02%), lip abrasion (2 cases - 1.01%), hyperalgesia (two cases - 1.01%), oral sinus perforation (2 cases - 1.01%) and hypotension (1 case - 0.50%) (FIGURE 1).

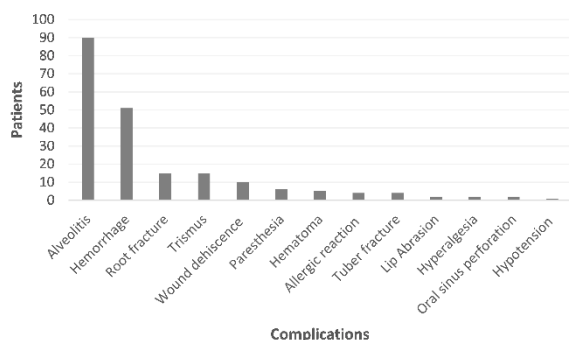


Figure 1 - Distribution of patients according to the type of complication.

The majority of complications (140 cases) occurred in the female gender (70.70%), and of the 68 women who had infectious complications (abscess and alveolitis), 30 used oral contraceptive (44.11%).

Still in relation to infectious complications, in only 43 cases (47.77%) the tooth presented preoperative pericoronitis. In the other 47 cases (52.22%), the teeth were asymptomatic. In addition, most cases of inflammatory and infectious complications (54 cases (60%)) occurred in patients with no use of antibiotic therapy, and only 36 cases (40%) were reported with the use of antibiotics.

Smoking was not associated with a greater number of complications, with 185 cases (93.43%) of complications occurring in non-smokers and only 13 cases (6.56%) in smokers.

Of the patients who presented any type of complication, 135 cases (68.18%) occurred in younger patients (under 25 years old). In patients older than 25 years of age, only 63 complications (31.81%) were recorded.

In addition, the majority of complications (74.74%) occurred in the lower third molars (148 cases), and in the upper third molars, only 50 cases (25.25%) were recorded.

As for Winter's classification⁽⁷⁾ of the third molars with complications, 112 were vertical

(56.56%), 36 were mesially angulated (18.18%), 36 were horizontal (18.18%), 7 were distally angulated (3.53%), 6 were vestibularly angulated (3.03%) and only 1 was lingually angulated (0.50%).

As for the space for eruption of third molars, most of the complications (89 cases) occurred in Class I teeth (44.94%), followed by 80 cases in Class II teeth (40.40%) and 29 cases in Class III teeth (14.64%).

Regarding the impaction depth of the third molars with complications, 117, 50 and 31 cases occurred in teeth in the position A (59.09%), B (25.25%) and C (15.65%), respectively.

Discussion

Extraction of third molars is becoming an increasingly routine procedure under local anesthesia. According to Hattab et al. (1995),⁹ this is because in the modern civilization individuals have a decrease in the bone structure of the maxilla and mandible, with a consequent decrease in the space available for the accommodation of the third molars. This situation occurs due to the reduction of stimuli related to bone development of the jaws, such as masticatory efforts, which are currently less required due to the habit of eating cooked, soft and pasty foods. In addition, the lack of space for eruption of third molars is also associated with heredity, pathological changes, systemic or syndromic changes, and trauma. In this context, it is a fact that the prevalence of impacted third molars is high (68.8%),¹⁸ and the assessment of preoperative surgical complexity is important to minimize the risk of surgical complications. Thus, several studies, such as the present one, have measured the difficulty of this surgical procedure, seeking to establish the main risk factors for complications.^{1,11,20}

In the current study, the sample predominantly comprised women, accounting for 68.90%, with an average age of 25.14 years (± 8.73 years)-Results. This finding aligns with those of Salmen et al. (2016)²⁰, who reported a mean age of 22.62 years and a higher proportion of women (60.74%) compared to men. The predominance of women in this research can be explained by social and cultural factors, as men are generally less likely to utilize health services, a phenomenon noted by Courtenay (2000)⁶. Regarding the mean age observed, Silvestri Jr. & Singh (2003)²¹ attribute a

higher percentage of young patients undergoing third molar extractions to the fact that about 60% of the population in their twenties have at least one impacted third molar, and those who erupt are often located in an inadequate position, which makes it difficult to oral hygiene. In addition, in this age group, tooth extraction is usually easier and has a lower risk of complications, because the bone has a lower density, the roots are not completely formed and, therefore, there is less proximity to important anatomical accidents. On the other hand, it is important to point out that early extractions are also associated with a higher risk of complications due to the greater impaction of the tooth which increases the need for osteotomies, in addition to having a greater risk of displacement of such teeth into spaces and anatomical cavities. Therefore, the extraction of third molars by the age of 20 seems to be an appropriate time when the tooth has about 2/3 of the root formed.²⁴

Concerning the location, the current study found that a majority of the third molars removed were mandibular third molars (56.3%). This result is consistent with Salmen et al. (2016)²⁰, who reported that 52.7% of removed third molars were the lower ones, and Primo et al. (2017)¹⁷, who observed a similar trend with 50.2% of extractions involving lower third molars. The frequent removal of lower third molars may be partly attributed to the painful conditions they often cause, such as pericoronitis, which is more commonly associated with lower third molars than maxillary teeth²³.

For the assessment of the surgical complexity of third molar extraction, in the present study, as in other studies^{12,17,20} the Winter's (1926)²⁵ and Pell & Gregory's classification (1933)¹⁶ were used. As for the upper third molars, most of them were vertical (85.12%) in Winter's classification (1926).²⁵ This result agrees with that found by Morales-Trejo et al. (2012),¹² who also found the vertical position more frequently (48.0%). In contrast, Primo et al. (2017)¹⁷ found the predominance of the distal position (53.23%). In the Pell & Gregory's classification (1933),¹⁶ as for space for eruption, 314 upper third molars were classified as Class I (59.13%) in the present study. In agreement with this result, in the study by Salmen et al. (2016),²⁰ 49.55% of the upper third molars had sufficient space for eruption, as well as in the study by Morales-Trejo et al. (2012),¹² in which 55.66% of

third molars were classified as Class I. On the other hand, regarding impaction depth, impaction A prevailed (53.86%). These results contrast with those found by Primo et al. (2017),¹⁷ where depth C was the most frequent one (48.25%), and those found by Salmen et al. (2016),²⁰ with 58.88% of third molars with deep impaction.

Regarding the lower third molars, according to Winter's classification (1926),²⁵ the majority was vertical (46.92%). These results differ from those by Morales-Trejo et al. (2012),¹² who found the mesially angulated position in most cases (36.1%). Primo et al. (2017)¹⁷ also found results similar to those found by this author, with 52.96% of the teeth in the same position. With regard to the Pell and Gregory's classification (1933),¹⁶ the majority was classified as Class II (49.85%), which is in agreement with the results found by Salmen et al. (2016),²⁰ who also found the eruption space in Class II as the most frequent one. In contrast, Morales-Trejo et al. (2012)¹² found the eruption space in Class I (55.66%) as the main classification. Regarding the impaction depth of the lower third molars, 407 were classified as A (59.50%). Primo et al. (2017),¹⁷ however, they found depth B as the most frequent one, with 46.54% of the cases. On the other hand, Salmen et al. (2016)²⁰ found results similar to those of the present study, with a depth A frequency of 48.15%.

It is important to emphasize that, in order to correctly plan the extraction of impacted teeth, in addition to the assessment of surgical complexity, a complete and detailed anamnesis is always necessary since the patient's systemic condition may predispose to complications and lead to changes in surgical planning. Diseases such as diabetes, hypertension, heart diseases, and the like, are responsible for a certain decrease in tissue resistance to bacterial infection and reduction of tissue repair capacity after surgeries, which may compromise postoperative results.¹⁷ In this context, it is worth mentioning that, in the present study, all patients operated were classified as ASA I (70.27%) or II (29.63%).

Regarding the history of infection, the minority of the extracted teeth had a history of pericoronitis (37.44%). It is important to note that, acute infectious pericoronitis is a very common clinical condition in young adults with partially erupted (mainly lower) third molars. Pericoronitis

develops due to trauma and the accumulation of organic matter (food debris and microorganisms) in the space between the crown and the surrounding soft tissue and requires local treatment associated or not with antibiotic therapy, prior to tooth extraction, in order to decrease the risk of postoperative infection.²³

Regarding the complications observed in the present study, there were some reports in 198 surgeries (16.29%). These results contrast with those published by Chiapasco et al. (1993),⁵ who found an incidence of only 4.3% for lower third molars and 1.2% for upper molars. The difference between these results can be attributed to the discrepancy among the samples studied regarding the presence of patients' systemic diseases, pre-operative history of pericoronitis, age, and the experience of the dentist. Regarding the experience of the dentist, Capuzzi et al. (1994)⁴ state that patients treated by surgeons with considerable or average experience reported less pain on the first and third postoperative day compared to patients treated by surgeons with little experience. However, Azenha et al. (2014)² state that the inexperience of the operators was not considered a determining factor for modifying the rates of accidents and complications in third molar surgeries when compared to previous works developed by experienced professionals.²²

Thus, as shown in study of Salmen et al. (2016),²⁰ the most reported complication in the present study was alveolitis, in 90 cases/198 complications (45.45%). When considering the total of 1215 tooth extractions, this percentage becomes relatively low (7.4% of cases of alveolitis/1215 tooth extractions). This result is in agreement with those found by Mariano, de Melo, and Mariano (2006),¹¹ with a 10.7% prevalence of alveolitis in both genders. Alveolitis has been extensively discussed in the literature, due to its high incidence. Noroozi & Philbert (2009)¹³ have suggested that increased local fibrinolytic activity is the main etiologic factor in the development of alveolitis, since it may result in the premature loss of the intra-alveolar blood clot after the extraction. According to Mariano et al. (2006),¹¹ surgical trauma is related to the type of dental retention, degree of mouth opening, bone density, and age. In this context, the frequency of alveolitis can be directly related to surgical trauma, that is, the longer the transoperative time, the

greater the chance of postoperative infection. In addition, factors such as hormonal changes in female patients, use of contraceptives, and the like, seem to be associated with a higher rate of alveolitis,⁸ so much that the majority of infectious complications in the present study were reported in women (75.55%). Similarly, Eshghpour et al. (2013)⁷ found a higher incidence of alveolitis in female patients who consumed oral contraceptives. These data support the results found in the present study since most of the patients who had infectious complications were women, approximately half of whom were using contraceptives. Mariano et al. (2006)¹¹ also found a higher frequency of alveolitis in female patients (13.55%) when compared to male patients (5.31%) and found that the use of oral contraceptives seems to have a direct relation with the frequency of alveolitis since 20.89% of the tooth extractions made in women were also complicated by the infection. However, Parhasarathi et al. (2011)¹⁴ did not observe any difference when contraceptives were used and considered that this can be attributed to the lower amount of estrogen present in current oral contraceptives.

Still in relation to infectious complications, the tooth presented preoperative pericoronitis in only 43 cases (47.77%). Salmen et al. (2016)²⁰ also found a minority of complications in patients who presented preoperative pericoronitis (only 23.81% of the cases) when compared to patients who did not present this condition. This demonstrates that the preoperative pericoronitis of the present sample cannot be considered a decisive factor for the development of postoperative infectious complications. Despite this, there are studies that demonstrate the association between the history of pericoronitis and the incidence of alveolitis,¹¹ so much so that the history of pericoronitis has often justified prophylactic antibiotic therapy.²³

In addition, the majority of cases of inflammatory and infectious complications observed in the present study occurred in patients with no use of preoperative and/or postoperative antibiotic therapy (60%). Despite this, Pasupathy & Alexander (2011)¹⁵ emphasize that surgical antibiotic prophylaxis is a complement and not a substitute for good surgical technique, and, in routine oral surgeries, such as removal of third molars, routine use of prophylactic antibiotics itself is questionable. This is because the study of these

authors did not show any advantage in the routine use of prophylactic antibiotics because no statistically significant difference was found among the groups regarding the incidence of infection. In contrast, the meta-analysis by Ren & Malmstrom (2007)¹⁹ showed that systemic antibiotics were effective in reducing the frequency of wound infection after the extraction of impacted lower third molars. On average, patients who received systemic antibiotics were 1.8 times less likely to develop wound infection after third molar extraction. In the study by Mariano et al. (2006),¹¹ it was also observed that the use of antibiotics for prophylaxis of surgical wound really has its therapeutic value in patients who have some systemic pathology that debilitates the organism, influencing the process of repair and/or healing of surgical wounds and increasing the risk of metastatic infections.

Another factor related to surgical complications, whether they are cicatricial, infectious or hemostatic, is the habit of smoking.²¹ However, in the present sample, smoking was not related to a greater number of complications, so that 93.43% occurred in non-smoking patients. Similarly, in the population studied by Salmen et al. (2016),²⁰ smoking was also not related to a greater number of complications, since only 6.06% of the complexities occurred in smokers. However, it is known that tobacco affects the postoperative wound healing after dental extractions, as it acts as a peripheral vasoconstrictor, increasing platelet adhesiveness, as well as the risk of microvascular occlusion and tissue ischemia. In addition, smoking can suppress the immune response, affecting the function of neutrophils, which are the main line of defense against the infection.⁷ However, it is important to consider that the result of this present study can be explained, in part, by the characteristic of the sample of the present study, composed of young patients and mostly non-smokers. This is because, nowadays, the harmful effects of smoking on health are widespread, and therefore, fewer and fewer people are adhering to this habit. Mariano et al. (2006)¹¹ observed that the relationship between smoking and the development of alveolitis only seems to exist when considering cases of disturbance of the alveolar repair process after traumatic tooth extractions in female smokers (5 cases in 25 tooth extractions) compared to non-smokers (24 cases in 189 tooth extractions).

Still referring to the complications, the majority occurred in younger patients (68.18%), under 25 years old. However, according to Alvira-González et al. (2017),¹ the older the patient, the longer the operative time, due to the increase in bone density, which increases the probability of contamination of the surgical field, tissue manipulation and consequently the inflammatory response and the risk of complications. This disagreement between the results of the two studies can be justified by the high number of young patients who underwent third molar extraction in the present sample.

Regarding the location of the third molars, the majority of complications (74.74%) occurred in the lower third molars (148 cases). These data are understandable since the mandible has greater bone density, which requires a greater need for osteotomy and, therefore, generates greater surgical trauma. In addition, the lower third molars almost always have an intimate relationship with the mandibular canal, which can result in hemorrhagic complications and nervous lesions.²⁴

Regarding the Winter's and Pell & Gregory's classifications^{16,25} of the third molars with complications, 56.56%, 44.94%, and 59.09% were vertical, Class I and position A, respectively. However, Mariano et al. (2006)¹¹ also found that tissue manipulation was greater in the exodontic procedures of retained teeth in the distally angulated and inverted position, with high incidences of infectious complications (alveolitis) in extractions of teeth with distal retentions (16.67%). Although the surgical difficulty is directly related to the number of complications, in the present study a greater number of complications was found in situations considered of minor surgical difficulty. This situation can be explained by the characteristic of the sample, which was composed mostly of vertical (63.62%), Class I (50.28%) and position A teeth (57.03%).

Conclusion

A higher frequency of complications was observed for patients with no prophylactic antibiotic therapy and female patients.

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