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Current Clinical Approaches in Complex Dental Exodonties



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ABSTRACT

Tooth extraction is currently a form of treatment indicated for several clinical situations, such as teeth affected by infectious processes resulting from poor hygiene, periodontal disease, interference with the patient's good occlusion, supernumerary elements and impacted teeth. This study aims to understand and score the approaches used by dental surgeons in the face of complex extractions and their effects on the patient. The present study consists of a literature review carried out by searching the LILACS, BVS and PUBMED databases, including articles in Portuguese and English. Descriptors were selected based on searches made in Health Science Descriptors (DeCS). Several factors determine the level of complexity of an extraction, and such factors will directly influence the approach to be used in surgery, such as the difficult access to the surgical field, the conditions of the crown, the number and length of the roots, the presence or not of endodontic treatment on the element in question, the degree of divergence and curve of the roots, the bone condition of the alveolar walls as well as other conditions such as hypercementosis or ankylosis. In the day-to-day office visit, the dentist, when performing extractions, will be exposed to several variables that will directly influence the effectiveness of the procedure and its final result.

INTRODUCTION

Tooth loss, related to tooth extraction procedures, is closely related to diseases such as caries and periodontal disease, as well as oral hygiene habits, factors that could be avoided or treated, end up evolving to tooth extraction¹. In addition to these factors, tooth extraction is indicated as a form of treatment and intervention when a certain dental element interferes with the patient's occlusion or when he has impacted teeth, which do not erupt in the dental arch in the expected time, for reasons such as lack of space, bone coverage, presence of soft tissue, cysts and tumors or genetic factors. Thus, a dental element may be indicated for extraction, when any of the clinical signs are observed, infections, pericoronitis or compression of the nerve trunks, causing paresthesia or pain². Still, with regard to impacted teeth, it is noteworthy that the most frequently affected by this feature are the third molars, which can also rarely be inverted in relation to their usual anatomical position, further complicating the surgical procedure of extraction³.

In this sense, it is worth highlighting the incidence of complications related to the practice of tooth extraction, which require greater attention and special care on the part of the dental surgeon in the preoperative and postoperative phase. The greatest risk of complications in these procedures are associated with extractions of impacted third molars that require techniques such as osteotomy and odonto section, which can cause infections, lower alveolar nerve damage, alveolar osteitis, hemorrhage and alveolalgia, among the less frequent complications are trismus, damage to tooth structure, adjacent soft tissues and iatrogenic fractures of the mandibular angle⁴.

Finally, it is necessary to emphasize the importance of the preoperative phase in the extraction technique, since in this stage, the positioning, the proximity of the tooth to the mandibular canal is analyzed by means of imaging exams, such as the panoramic radiography that it offers a two-dimensional image, and a cone beam computed tomography, used in more complex cases, when there is proximity to nerve components, allowing the visualization of three-dimensional images in various anatomical planes, offering more precision for the transcurgical procedure⁵. The objective of this work was to highlight the current techniques used in complex extractions, as well as to elucidate the main complications, which the dentist must predict and avoid before, during and after the surgical procedure.

METHODOLOGY

The present study consists of a literature review focused on works related to the approaches performed in procedures of complex extractions. Articles in Portuguese and English published between 2011 and 2019 were included. For the search for articles, the LILACS, BVS and PUBMED databases were used. The descriptors were selected based on searches made in the health science descriptors (DeCS), which are: extractions, oral surgery and complex surgeries.

RESULTS AND DISCUSSION

Several factors determine the level of complexity of an extraction, and such factors can directly influence the approach to be used during the surgical procedure, such as the difficult access to the surgical field, the conditions of the dental crown, the number and length of the roots, presence or no endodontic treatment in the dental element, degree of divergence and root curve, bone condition of the alveolar walls as well as other conditions such as hypercementosis or dental ankylosis⁶.

Koerner (2013)⁷ observed in his study the importance of clinical evaluation, where the patient's mouth opening and the positioning of dental elements must be analyzed. The mobility of the tooth to be extracted must also be evaluated, where dental elements with degree of mobility 2 or 3, make the extraction easier to be performed by the dentist. Nevertheless, a clinical and radiographic evaluation of the crown is necessary to verify and prepare for the possibility of fractures during the procedure.

A factor that makes extractions complex in lower third molars and the proximity of the root of the dental element to the mandibular canal, where the lower alveolar nerve path passes, when injured by surgical procedures, the presence of temporary or permanent paresthesia is commonly observed. According to Winstanley et al. (2018)⁸, during the assessment of the preoperative panoramic radiography, some aspects can be observed, which may indicate the complexity of the surgical procedure, such as the proximity of the lower alveolar nerve to the dental apex, darkening of the root apices, indicating presence of cystic or tumoral lesions, as well as the narrowing of the mandibular canal. Therefore, whenever there is the presence of one or more evidences in the panoramic radiography, computed tomography is advised to be performed, since the visualization of the region in several anatomical planes, allows a better visualization of the distance between these structures. It is also necessary to observe the

mental foramen, where the path of the mental nerve, located bilaterally below the mandibular first premolar, passes, extractions performed in this area can lead to nerve injury or compression, causing paresthesia in the patient. In all situations, panoramic radiography may not be enough to fully assess the anatomy of the surgery site, requiring other complementary imaging tests such as computed tomography⁹.

Another technique, which can be used in complicated extractions, such as the extraction of impacted teeth, for example, and piezosurgery associated with the use of autologous platelet-rich fibrin membrane (L-PRF), Fabris et al. (2017)¹⁰ observed in their study that when comparing the piezosurgery associated with L-PRF, with the conventional osteotomy, the piezosurgery associated with L-PRF obtained a faster tissue repair, since the L-PRF is an autologous biomaterial, which contains growth factors, contributing to the control of the inflammatory process and, consequently, to postoperative edema. In addition, the piezo motor allows a safe cut in the hard tissue, without damage to the soft tissues or nerve plexuses, favoring a better postoperative for the patient.

In extractions of maxillary molars, evaluation by the dental surgeon, communication of the root of the dental element with the maxillary sinus is of utmost importance, in order to avoid possible bucosinusal communication, as well as the insertion of the fractured root within the maxillary sinus¹¹. In the last case, the surgical approach to be performed to remove a foreign body in the maxillary sinus is the surgical access through the Caldwell-Luc technique¹². In addition, the condition of the bone adjacent to the dental element that will be subjected to extraction should also be evaluated, since, a very dense or hypermineralized adjacent bone structure causes the dental element to become more adhered to the bone structure, making the extraction more complicated, thus favoring the occurrence of root fractures or even the entire alveolar process, this situation is quite common in elderly patients, and is a factor that should be considered in preoperative planning¹³.

CONCLUSION

In routine clinical care, the dentist when performing extractions may be exposed to several variables that will directly influence the effectiveness of the surgical procedure related to complex extractions. It is extremely important to carry out a complete clinical examination of the oral cavity, as well as to request additional tests such as panoramic radiography or cone beam computed tomography, in order to have greater anatomical precision in the surgical

field, improving planning, viability clinical procedure and consequently providing a more pleasant postoperative and without sequelae to the patient.

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