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Case Report

Considerations in performing odontectomy under general anesthesia: case series

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ABSTRACT

Background: *An odontectomy constitutes a common surgical procedure performed by oral and maxillofacial surgeons on a daily basis. The anesthesia procedure required during this form of operation may involve the administering of a general anesthesia which, while a safe procedure when performed by an anesthesiologist, still involves an element of risk and should only be undertaken with appropriate safeguards. Various measures, not only anxiety control-based, are suggested in this article.* ***Purpose:*** *The purpose of this study was to report considerations factors, other than anxiety, as indications in performing odontectomy conducted under a general anesthesia at Universitas Airlangga Hospital, Surabaya, Indonesia.* ***Cases:*** *Four cases of patients who had undergone an odontectomy under a general anesthetic are reported here.* ***Case management:*** *The four cases of management involved odontectomies conducted under a general anesthetic for a variety of reasons with contrasting outcomes. The treatment of the four patients was based on an anatomical approach and previously ineffective pain control due to greater trauma. One of the patients also suffered from schizophrenia that produced comorbidity requiring holistic observation. This individual required intricate surgery whose performance was challenging under a local anesthetic. None of our other patients suffered from serious complications related either to surgery or the administering of a general anesthetic.* ***Conclusion:*** *In conclusion, important factors relating to an odontectomy performed under a general anesthetic on four patients in Universitas Airlangga Hospital, Surabaya included: anxiety, anatomical approach, adequate pain control, comorbidity of systemic medical conditions and the potential need for surgical procedures difficult to perform under a local anesthetic.*

Keywords: *consideration; general anesthesia; odontectomy; oral and maxillofacial surgeon*

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INTRODUCTION

An impacted tooth is one that fails to erupt into the dental arch within the anticipated time period.[1] A study of 392 patients in the Dental and Oral Hospital, Universitas Padjadjaran, Bandung, Indonesia indicated that 76.8% of these individuals had third molar impactions.[2] As a general rule, unless removal is contraindicated, all impacted teeth should be extracted by means of a process known as an odontectomy. The performance of an odontectomy is common in oral and maxillofacial surgery (OMFS) during which pain control is usually achieved through the administering of a local anesthetic or, less frequently, a general anesthetic (GA). The first application of the latter for the purposes of removing impacted teeth in December 1884 is widely credited to Horace Wells.[3]

Various considerations have been highlighted regarding the use of a GA during the performance of an odontectomy. A GA is generally required in cases of major surgery when a local anesthetic produces an inadequate level of sedation, when patient cooperation or compliance is unnecessary, when muscle relaxation in apprehensive patients is required for stabilization or when the patient is allergic to local anesthetics.[4] Several other reviews of the application of a GA in dentistry highlight issues such as the lack of patient cooperation due to anxiety, mental disability or medical conditions (for example, extreme gag reflexes or an inability

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to keep the mouth open) which render surgical intervention while he/she is conscious difficult.[5,6]

The administering of a GA under the supervision of an anesthesiologist constitutes a relatively safe procedure, but still carries a certain degree of risk and should not be undertaken merely as a first-line means of anxiety control. Such risk is associated with dental-soft tissue trauma and potentially fatal cardiopulmonary dysfunction. A GA should be strictly limited to those patients and clinical situations in which the administering of a local anaesthetic (with or without sedation) is not an option.[5] As surgeons, OMFS doctors are required to analyze multiple factors in order to decide on the use, or otherwise, of a GA. This article describes odontectomic procedures performed on patients with symptoms other than anxiety under a GA at Universitas Airlangga Hospital, Surabaya, Indonesia. These case reports may be useful for dentists as a means of educating patients prior to surgery.

CASES

The four cases reported here relate to patients undergoing an odontectomy under a GA at the in-patient section of the Oral and Maxillofacial Surgery Department, Universitas Airlangga Hospital. Case 1: a 45-year old male, with no history of previous illness or infection, complained of a partly erupted lower left third molar he wished to have extracted due to the discomfort caused by impacted food near the tooth. Clinical examination confirmed the partial eruption of teeth 38 and 48, while orthopantomographic evaluation (Figure 1) revealed bilateral horizontal impaction of the distomolar diagnosed as a potential odontoma adjacent to the impacted third molar on the left and right side of the lower jaw. The positions were deep and overlapped with the mandible canals. The left impacted teeth showed enlargement of the dental follicle which was provisionally diagnosed as a dentigerous cyst.

Case 2: a 53 year-old male referred by a prosthodontist for multiple extractions prior to dental prosthesis treatment. This patient also suffered from schizophrenia, for which he was taking clozapine medication, in addition to allergies to antibiotics, plastics and metal. Clinical evaluation indicated partial eruption of 48 and multiple chronic apical periodontitis of 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 26, 36, 38, 45, 46 gangrene radix. The orthopantomographic view is shown in Figure 2.

Case 3: a 25-year old female complained of a dull non-specific pain radiating from the right side of the lower jaw and extending to the neck and also swelling in the pericoronal of 38. The subject wanted to have four of her third molars removed. No previous medical illness was recorded. Clinical examination showed impaction of 48 and partial impaction of 18, 28, 38. The results of an orthopantomography indicated that the apical of 48 overlapped with the mandible canal and the distance to the inferior border of the mandible was too short. The patient had already been informed that the deep position of 48

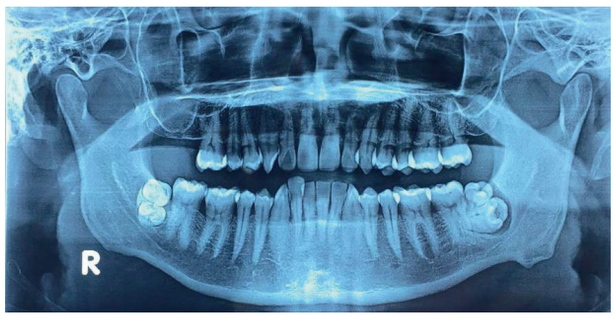

Figure 1. Orthopantomograph view of first patient show deep tooth impaction and odontoma.

Figure 2. Orthopantomograph of a second patient showing multiple gangrenous radix.

Figure 3. Orthopantomograph of third patient showing deep impaction of 48.

Figure 4. Orthopantomograph view of fourth patient showing the unusual position of supernumerary teeth in the lower left jaw.

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increased the risk of a fracture and she agreed to undergo the appropriate surgical procedure.

Case 4: a 28-year old male complained of frequent tenderness and tooth decay in his upper and lower molars and expressed the desire to have all of his wisdom teeth extracted. An orthopantomograph (Figure 4) revealed unusual invertion of the distomolars (kissing molars) located in the ascending ramus of the mandible in the left lower jaw. A mesiodens was also visible between the upper incisors. However, the patient refused to have it extracted due to its being asymptomatic.

CASE MANAGEMENTS

The therapy applied to the four cases constituted an odontectomy under a GA. Each patient remained in hospital for three days: one day for pre-op, one day for surgery and one day for post-surgical observation prior to discharge. Further follow-up dreing which the stitches were removed occurred one week after surgery. None of the patients above suffered any serious complications resulting from either their operation or the general anesthetic administered. They showed minimal edema, no wound dehiscence, infection, nausea or systemic complications resulting from the administering of a GA.

DISCUSSION

GA induces a loss of consciousness by blocking brain function which, consequently, renders a specific operative area insensitive to pain. It is usually desirable to keep the patient in a state of consciousness during dental treatment by means of a local anesthetic.[7] However, in particular cases, such as an odontectomy, there are various reasons for administering a GA which needs to take account of the balance between risk versus benefit.[5]

The cases presented here had various motives for their decision to undergo an odontectomy performed under GA. The first and fourth patients did so because of the need for adequate pain control during the relatively protracted duration of the procedure and its traumatic impact. The administering of a GA also helped to support the surgeon. The condition of the second patient, who suffered from specific allergies and schizophrenia, was managed through consultation with a psychiatrist and internist. He underwent examination and psychoeducation to prepare him for dental treatment. The administering of a GA was decided upon because the surgeon could remove not only the impacted 48 but also the overall focal infections during a single surgical procedure. The patient would, consequently, remain in his comfort zone without the need for long-term clinical observation. Evaluation and observation of his medical condition and medication used to treat his schizophrenia before, during, and after surgery could also be performed holistically together with an anesthesiologist. An odontectomy under a GA was performed on the third patient to not only adequately control pain, but also to prepare mandibular plating should it be required in order to stabilize the back-up of any potential fracture. Thus, a GA helps to facilitate surgery that would prove too extensive and/or challenging on a conscious patient.[5] During surgery, the intact condition of the mandible was reviewed and the need for further stabilization by means of a plate evaluated immediately on removal of the 48.

The final decisions in this regard were not taken by the surgeon alone since the patients had to be kept fully informed and their consent obtained regarding the administering of a GA. Therefore, an odontectomy conducted under a GA involves a clinical decision on the part of the surgeon meeting with the support of the patient. Pre-operative assessment of the patient, during which he/she is made aware of the potential risks of the proposed procedure and provides informed consent, is a prerequisite.[7] Further additional considerations have been cited as influencing the decision to treat patients either under sedation or a GA, including their overall state of health, their own preferences as well as those of their carers or family, the specific surgical procedures involved and operator or facility-related factors.[6]

Instances of odontectomies performed under a GA at Universitas Airlangga Hospital are conducted solely due to patient anxiety. This is because, in most cases, the administering of a GA allows the dentist to complete the treatment promptly rather than delay care because of the anxiety experienced by a patient rendering him/her uncooperative with the surgical procedure. It is possible for orthodontists to offer significantly improved dental care since OMFS will become increasingly straightforward. The administering of a GA results in total relaxation, while patient recall of the procedure is minimized, facilitating successful treatment of even the most dental-phobic of individuals. Nevertheless, both pharmacological and non-pharmacological behavior guidance techniques can be applied to alleviate anxiety.[8] Ultimately, the capability of health care professionals and the surgical facilities available will decide the best option regarding anesthetic procedures.

One study reported that comprehensive dental treatment was simpler, the general condition of the patient population more stable and the risk of postoperative complications lower when compared to the results of general surgery. In 2017, Chen et.al investigated post-operative complications associated with comprehensive dental treatment under GA at the Taipei Veterans General Hospital in August 2011-2012 found that the three most common were: lip swelling (69.2%), nausea (59.6%) and oral ulceration (46.1%). However, most of the above complications gradually self-eliminated post-operatively under appropriate medical care.[8]

A major factor that has to be considered with an odontectomy under GA is that of its disadvantages which comprise a higher cost than procedures conducted under a

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local anesthetic and the need for laboratory tests and chest x rays. Pain control during procedure is more effective under a GA. However, precisely because the patient feels no pain, the surgeon may apply excessive force to extract the tooth and/or drill so deeply into the bone or tooth that alveolar nerve injury ensues. The relationship of the mandibular third molar roots to the inferior alveolar nerve must be considered when surgical removal is contemplated. Surgical planning and proper informed consent depend on detailed knowledge of the positional relationships in this area.[9,10] To avoid such damage, a split technique constitutes the best odontectomy approach to avoid unnecessary trauma and reduce complications.[11,12] In conclusion, in addition to anxiety, the considerations underpinning the decision to conduct an odontectomy under a GA on patients at Univeritas Airlangga Hospital, Surabaya included: an anatomical approach, adequate pain control, systemic medical illness as a comorbid and the requirements of surgical procedures that are difficult to perform under a local anesthetic.

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