



Odontogenic Keratocyst and its Reduction by Decompressive Valve

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Abstract

Odontogenic keratocysts are lesions that derive from the epithelial remains of the dental lamina, they have slow growth, they are aggressive as they are expansive and highly recurrent, they may or may not be associated with syndromes, they have a higher incidence in the 2nd decade of life and may have another peak. between 55-65 years; There is a certain predilection for the male gender, the differential diagnosis is broad both clinically and radiographically. It can be managed with conservative treatment (enucleation, curettage, cryotherapy, chelating agents) or aggressive management (bloc or marginal resection). The objective of the present study is to introduce silicone valve decompression as part of the treatment of odontogenic keratocysts, since there are not enough studies in this regard in Mexico. We present a case of a patient with an Odontogenic Keratocyst, treated by the Maxillofacial Surgery service of the "La Raza" Medical Center, who underwent decompression with a silicone valve. The long-term result is presented by radiographic control after three years without reporting complications or recurrence.

Introduction

Keratocysts were first described in 1956 by Phillipsen, they are pathological entities, of benign type, which have represented some controversy given their characteristics since they develop from the epithelial remains of the dental lamina; They have slow growth and are considered aggressive as they are very expansive, they have a high recurrence, they may or may not be associated with syndromes, their highest incidence is in the 2nd decade of life and they have a predilection for the male gender, there are various types of management, which has generated controversy in its treatment [1-4]. Pindborg and Hansen in 1963 were the first authors to describe the characteristics of these injuries [5]; Over the years, attempts have been made to understand their nature in order to classify them, and even reclassify them, just as the World Health Organization (WHO) did in 1971, which was classified as a developmental odontogenic cyst. the jaw, later in 1992 it was reclassified and renamed as Keratocystic odontogenic tumor, the same name that was maintained in the 2005 classification due to its recurrence of 20 to 62% in the first 5 years [6-8] and for its aggressiveness in behaving like a tumor; finally in 2017, in the classification issued by the WHO, it is grouped in the section of odontogenic and non-odontogenic cysts of development, naming it as "odontogenic keratocyst" [6,7].

The treatment proposed by various authors, whether conservative or radical, gives us the opportunity to choose the most appropriate according to the case and the size of the lesion. Among the procedures are: The marsupialization described in 1991 by Brondum & Jensen, who placed a permeable tubular device to keep the inside of the cyst communicated to the oral cavity and through this periodical instillations are performed (usually with chlorhexidine and physiological solution) to decrease the pathological cavity [8-10]. Enucleation, either prior to marsupialization or as the first management option, consists of eradicating the lesion, with or without adjuvants divided into three types: chemical (Carnoy's solution [chloroform, ethanol, acetic acid]), physical (nitrogen liquid) and mechanical (peripheral osteotomy), the purpose of using these adjuvants is to eliminate remnants of the lesion or satellite lesions [8,11-13] For his part, Waldron proposes decompression management to reduce the size and expansion of the Keratocyst and since it has reduced the size, perform enucleation depending on the case [13]. Studies such as that of Morais de Melo, mention the use of a "silastic" probe as a decompression valve that is sutured to periodontal tissue, keeping it in position for four months with irrigation three times a day, six months after enucleation and curettage without recurrence. in postsurgical controls [14]. On the other hand, in 2019 Jungwirth and Ziccardi proposed for the management of Keratocysts, the use of a fixed metal valve with osteosynthesis material, performing enucleation and curettage, with saline-based washings by the patient and subsequent application of Carnoy in the cystic cavities, carrying out radiographic and tomographic control, obtaining as a result bone and dental canal preservation as well as bone regeneration without recurrence data [15]. Recently (in the first quarter of 2020) a study by Keyser and collaborators talks about the use of voice prostheses as a valve for decompression in keratocysts, mentioning it as an alternative treatment, obtaining advantages such as better cleaning of the same, reducing the need replacement unlike other valves since they do not require suturing in most cases [16].

Objective

To introduce a decompression valve (made of silicone), as part of the treatment of patients diagnosed with Odontogenic

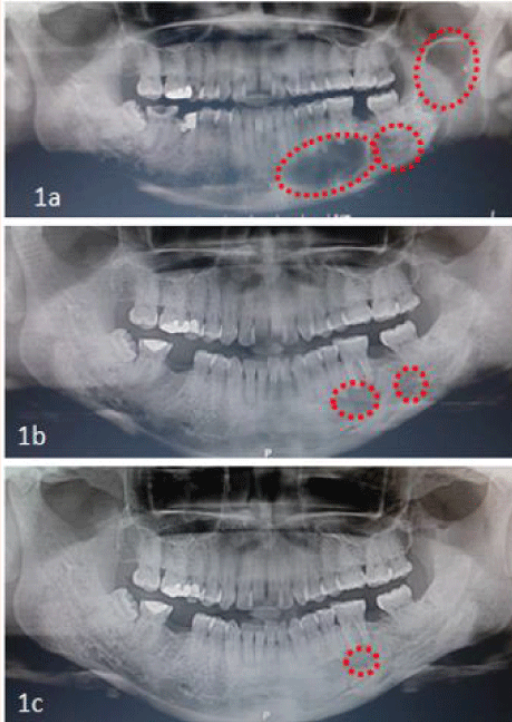


Figure 1: a) An orthopantomography indicated with red dotting is observed: three radiopaque areas corresponding to odontogenic keratocysts on the left branch and mandibular body, b) Control orthopantomography, seven months after the placement of a silicone decompressive valve, with reduction of mandibular keratocysts and c) The reduction of keratocyst at seven months of control is observed in red and the removal of a silicone decompressive valve is decided.

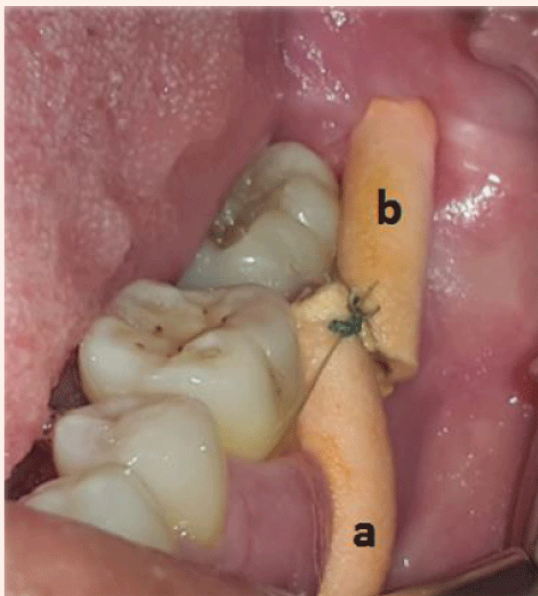


Figure 2: a) Clinical photograph of two silicone decompression valves, structured to the inserted gingiva and the mucosa directed to the mandibular body and b) directed at the left mandibular ramus.

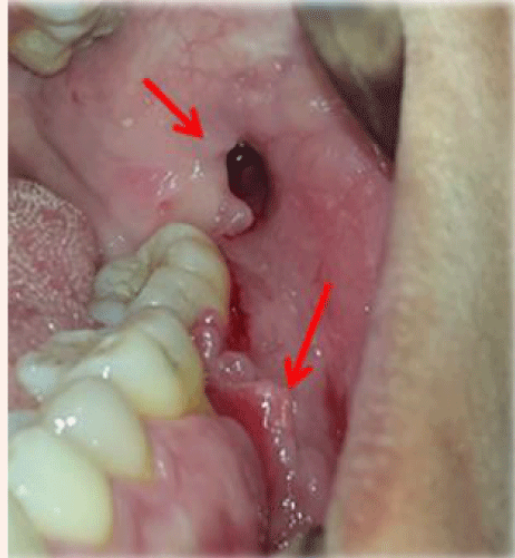


Figure 3: The surgical beds are observed (red arrows), upon removal of the silicone Decompressive valve, prior to replacing them.

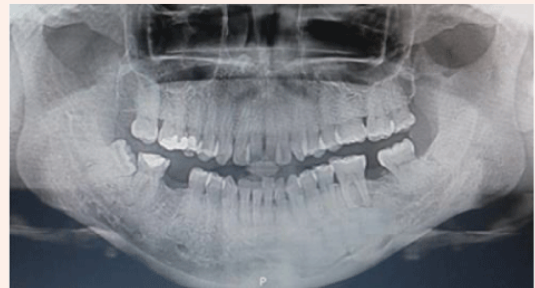


Figure 4: The branch and mandibular body are observed without data of Odontogenic keratocysts, without recurrence data. Neo-bone formation is seen.

Keratocysts, treated in the Maxillofacial Surgery service of the “La Raza” Medical Center, seeking to reduce the surgical risk and involvement of structures that involves the management of large injuries, as well as presenting the results obtained.

Clinical Case

A representative clinical case is presented, attended in the Maxillofacial Surgery service of the “La Raza” Medical Center, IMSS. This is a male patient of the fifth decade of life, without comorbidities, who attended the Maxillofacial Surgery service for presenting a slight increase in vestibular volume in the left lower molar region, asymptomatic, without changes in the color of the mucosa, crackling on palpation in the area of the body and left mandibular branch, there is no dental mobility; Endodontic tests were performed, which were negative, an orthopantomography was requested (Figure 1a) where the presence of three radiopaque areas is found in the region of the body and left mandibular branch, an incisional biopsy is taken under local anesthesia (with 2% lidocaine with epinephrine 1: 100,000), Sending the sample encapsulated in 10% formaldehyde, the histopathological result of which showed an odontogenic keratocyst and inflammatory tissue as a diagnosis, it was decided to decompress the odontogenic keratocysts with “silicone decompressive valves”, the procedure is programmed under local anesthesia with sterile fields and asepsis and antisepsis protocol, two valves are placed: one directed towards the mandibular branch and the other towards the mandibular body (Figure 2) they are sutured to the adjacent inserted gingiva without complications, the patient is instructed to perform instillations



three times a day with 0.12% chlorhexidine together with toothbrushing; control appointments are given a week, at 15 days, a month; in the control appointment at three months, a decrease in the lesion is observed, valve replacement is performed, showing the surgical site in the (Figure 3), and it is continued with radiographic control, later in the review at 7 months (Figure 1b) it is shown radiographically that the radiopaque area of the left mandibular branch is no longer observed and that the two lesions of the mandibular body have decreased, one year after valve placement and replacement we observed only one of the three lesions with minimal dimensions (Figure 1c) reason why the silicone valve is decided to be removed, upon its removal the cavity is treated with washing and the closed surgical site is managed without complications, it is kept under observation and radiographic control without showing recurrence, finally the control radiograph is presented three years after the patient was diagnosed with Odontogenic Keratocysts and have been treated with silicone valve decompression (Figure 4) the orthopantomography is observed without data of lesions and with new bone formation, currently the patient remains asymptomatic and without data of recurrence.

Discussion

This article demonstrates the efficacy of silicone decompression valves in patients diagnosed with Odontogenic Keratocyst (s), and similar results were obtained to those proposed by Brondum & Jensen [8-10] since like them in the case presented, the size of the lesions decreased and they also remitted without recurrence after three years of control. The decompression valves used in the study were tubular and similar in material to those used by Morais de Melo [14] in his study; However, the present study differs from that of other authors (such as those previously mentioned) since being conservative in its entirety (that is, no major surgical management was required under balanced general anesthesia), the result obtained was favorable in the long term since There was no recurrence of the injury so far. With this case that is presented together with that of other patients with the same management, they will allow the future to continue and initiate a protocol for the control and management of patients with odontogenic keratocysts in the Maxillofacial Surgery service, considering that the proposed valve will be suitable in patients Cooperators who have a strict adherence to management since it greatly influences the patient's hygiene measures to be successful in this treatment. Unlike what is referred to in Morgan's article [17] and Zhiao's study [18], Regarding the use of Carnoy's solution, in the cases treated by the Maxillofacial Surgery service of the "La Raza" Medical Center, this solution is no longer used to reduce risks according to what is suggested by the Standards for the correct preparation and control of Standardized Procedures, since it is made up of glacial acetic acid (very irritating to the mucosa), absolute ethanol, chloroform and glacial phenic acid, and as mentioned in these standards, chloroform when exposed to air and light oxidizes forming chlorine and chloride highly toxic carbonyl (phosgene), therefore absolute care and precaution is essential when preparing, transporting and handling it, as well as its application.

Conclusion

Odontogenic Keratocysts are recurrent lesions that have aggressive behavior, they are considered cystic lesions, it is important to consider that they have two peaks in age in which they appear in the 2nd decade and later in the 5th decade of life, with a predilection for male gender, they have a high recurrence rate, the management is controversial, however it should be chosen according to the case and size of the lesion, this article demonstrates the effectiveness of the silicone decompression valve for reducing the size of the lesions and also its remission without recurrence, has the advantages of being a conservative, economic management, easy to install, does not require an operating room, important structures are preserved (inferior alveolar nerve, adjacent mucosa, teeth), easy handling. However, it has some disadvantages, for example, that the patient must exaggerate hygiene, since the sutures or the device itself (decompressive valve) can retain dental bacterial plaque (DBP) if the patient does not have adequate oral hygiene, if he manipulates the device can dislodge it from the cavity, the management is long-term depending on the evolution of the patient, it requires constant radiographic control. When making a risk-benefit comparison, we found that there are a greater number of qualities in favor of the use of decompression valves despite the period of treatment with them.

Conflict of Interest

Neither the authors nor any member has a financial or interest relationship (currently or in the last 12 months) with any entity producing, marketing, reselling or distributing health care products or services consumed by, or used in, the patients.

References

1. Passi D, Singhal D, Singh M, Mishra V, Panwar Y, et al. (2017) Odontogenic keratocyst (okc) or keratocystic odontogenic tumor (kcot) - journey of okc from cyst to tumor to cyst again: comprehensive review with recent updates on WHO classification. *International Journal of Current Research* 9: 54080-54086.
2. Philipsen HP (2005) Keratocystic odontogenic tumor. In: Barnes L, Eveson JW, Reichart PA, Sidransky D (Eds.) *World Health Organization Classification of Tumours: Pathology and Genetics Head and Neck Tumours*. Lyon, France, pp 306-307.
3. Ribeiro JO, Meireles BA, Ferreira AC, De Gouveia MM, Zindel DM, et al. (2017) Reclassification and treatment of odontogenic keratocysts: A cohort study. *Braz. Oral Res* 31: e98.
4. Hasheminia D, Naemi V, Naghdi N (2014) Conservative Treatment Protocol of Keratocystic Odontogenic Tumor: Report of a Case with Nevoid Basal Cell Carcinoma Syndrome and Literature Review. *J Maxillofac. Oral Surg*, p 1-7.
5. Pindborg JJ, Philipsen HP, Henriksen J (1962) Studies on odontogenic cyst epithelium. In: Sognnaes RF (Ed.) *Fundamentals of Keratinization*. Washington, DC: American Association of the Advancement of Science, pp 151-160.
6. Pereira PV (2017) Clasificación de los tumores odontogénicos: evolución y cambios. *Salud Militar* 36(2): 41-46.
7. Cakur B, Miloglu O, Yolcu U, Göregen M, Gürsan N (2008) Keratocystic odontogenic tumor invading the right maxillary sinus: a case report. *J Oral Sci* 50(3): 345-349.
8. Arenas de FG, Navarro CC, Ochandiano CS, López LA, Kulyapina A, et al. (2014) Manejo terapéutico del queratoquist: Revisión y presentación de un caso clínico. *Revista Mexicana de Cirugía Bucal y Maxilofacial* 10(3): 101-107.
9. Maurette PE, Jorge MJ, de Moraes M (2006) Conservative treatment protocol of odontogenic keratocyst: A preliminary study. *J Oral Maxillofac Surg* 64(3): 379-383.
10. Stoelinga PJ (2005) The treatment of odontogenic keratocysts by excision of the overlying, attached mucosa, enucleation, and treatment of the bony defect with Carnoy solution. *J Oral Maxillofac Surg* 63(11): 1662-1666.
11. Ozkan A, Rasit Bayar G, Ayberk Altug H, Sencimen M, Senel B (2012) Management of Keratocystic odontogenic tumour UIT marsupialisation, enucleation and Carnoy solution application: A case report. *Oral Health Dent Manag* 11(2): 69-73.
12. Frerich B, Cornelius CP, Wietholter H (1994) Clinical time of exposure of the rabbit inferior alveolar nerve to Carnoy's solution. *J Oral Maxillofac Surg* 52(6): 599-606.
13. Tolstunov L, Treasure T (2008) Surgical treatment algorithm for odontogenic keratocyst: combined treatment of odontogenic keratocyst and mandibular defect with marsupialization, enucleation, iliac crest bone graft, and dental implants. *J Oral Maxillofac Surg* 66(5): 1025-1036.
14. Morais de Melo W, Pereira-Santos D, Koogi SC, Hochuli-Vieira E (2012) Decompression for Management of Keratocystic Odontogenic Tumor in the Mandible. *The Journal of Craniofacial Surgery* 23(6): 639-640.
15. Jungwirth M, Ziccardi V (2019) Decompression of Mandibular Odontogenic Keratocyst Using a Custom Drain: A Technical Note. *Research Article. Dental Oral Biology and Craniofacial Research* 2(3): 2-4.
16. Keyser B, Lubek JE, Caccamese (2020) Self-Retained Voice Prosthesis in the Decompression of the Odontogenic Keratocyst: A Technical Note. *Journal of Oral and Maxillofacial Surgery*.
17. Morgan TA, Burton CC, Qian F (2005) A retrospective review of treatment of the odontogenic keratocyst. *J Oral Maxillofac Surg* 63(5): 635-639.
18. Zhao YF, Wei JX, Wang SP (2002) Treatment of odontogenic keratocysts: a follow-up of 255 Chinese patients. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 94(2): 151-156.