

MANAGEMENT OF UNICYSTIC AMELOBLASTOMA - A REVIEW

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Abstract: Ameloblastoma is an odontogenic tumor that represents 1% of all tumors found the oral cavity, with an incidence of 0.5 per million inhabitants per year. It is a benign tumor, which usually occurs between the third to fifth decades, with the same male and female predilection, and the location is 80% - 20% in the mandible and maxilla respectively. Diagnosis is usually done through orthopantomography (OPG) incidentally or because patients consult for symptoms. Findings are not confirmatory, and the lesion should be confirmed with a histological examination usually FNAC/biopsy. Various treatment modalities such as enucleation, marsupialization, segmental or marginal resection are employed; however, more conservative treatments were reported frequently in younger patients.

Keywords: Ameloblastoma; marsupialization; enucleation; radial surgeries

INTRODUCTION

Unicystic ameloblastoma are those cystic lesions that shows clinical and radiographic characteristics of an odontogenic cyst but on histologic examination show a typical ameloblastomatous epithelium lining part of the cyst cavity, with or without luminal and/or mural tumour proliferation. The ratio of maxillary to mandibular unicystic ameloblastoma is 1:13 in ratio [1].

Ameloblastoma is an odontogenic tumor that represents 1% of all tumors found the oral cavity, with an incidence of 0.5 per million inhabitants per year. It is a benign tumor, which usually occurs between the third to fifth decades, with the same male and female predilection, and the location is 80% - 20% in the mandible and maxilla respectively [2,3]. The origin can be the embryonic remains of odontogenic cysts, the dental sheet, the enamel organ or the stratified squamous epithelium of the oral cavity. The pathogenesis is still unidentified. Most common etiologies are inflammation, long-standing trauma, malnourished, vitamin deficiency, as well as HPV have been described as activates the process [4].

It is a slow growth tumor that rarely gives metastasis. It can spread and cause destruction of the cortical bone. and invades the surrounding soft tissue, producing pain, facial asymmetry, speech impairment and agglutination, malocclusion, resorption of roots, pathological migration and paresthesia if the inferior alveolar nerve (mandibular nerve) is affected [5,6].

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Unicystic ameloblastoma was first described in 1977 since then has been considered as a special type of ameloblastoma. Occurrence is usually in young or early adolescents, characteristic unilocular radiographic appearance, macroscopic cystic appearance. On the other hand, unicystic ameloblastoma is less aggressive, lower recurrence rate, and responds to conservative management [8].

Based on histologic features, unicystic ameloblastoma can be classified into luminal, intraluminal and mural subtypes with prognostic and therapeutic significance [7].

Various treatment modalities such as enucleation, marsupialization, segmental or marginal resection are employed; however, more conservative treatments were reported frequently in younger patients [9].

The elective treatment of ameloblastoma is surgery, but the application of conservative or radical techniques depending on the clinical type has always been controversial, especially in the solid / multicystic and unicystic. When talking about conservative surgery, we refer to enucleation or marsupialization, combined or not with support techniques such as curettage, Carnoy Solution or liquid nitrogen. In the case of radical surgery, the term refers to mandibulectomy or segmental resection of the lesion [10]. The associated factors to be considered when choosing the most appropriate surgical treatment are the recurrence rate, mortality and morbidity, functional recovery and aesthetic of the patient, as well as the quality of life after the treatment.

AIM

The main objectives of this review was to assess the various surgical treatment for the management of unicystic ameloblastoma. To discuss the literature published on studies of treatment modalities employed for unicystic ameloblastoma.

MATERIALS AND METHODS

- A computerized literature search was conducted using Pubmed and scopus for published articles on unicystic ameloblastoma.
- The search yielded around 100 articles, of which 15-20 were chosen for review.

- The full texts of all these articles were thoroughly examined by the authors.
- Inclusion criteria included: Case reports, retrospective case series, review studies of unicystic ameloblastoma., Studies involving treatment modalities of unicystic ameloblastoma.
- Exclusion criteria: • Solid, multicystic, peripheral ameloblastomas., Incomplete data studies.

CONSERVATIVE APPROCHES FOR THE MANAGEMENT OF UNICYSTIC AMELOBLASTOMA

Treatment modality of unicystic ameloblastoma is divided into the following types - enucleation alone has the highest recurrence rate among all the surgeries that is about 30.5% [7,11]. Marsupialization and with the other modalities results in an about 18% recurrence rate. [12] A more conservative approach is enucleation with application of Carnoy's solution and the extraction of closely related teeth has a recurrence rate of 16%. [13] The success of the application of Carnoy's solution after enucleation was thought to be due to both its penetration and fixation action. The usual practice is to apply the solution with cotton applicators or ribbon gauze for 3-5 min, rinse the bony cavity. The recurrence rate could even lower than reported, if the closely related teeth with tumor are extracted. In order to preserve or save the tooth, cystics remnants are left around the tooth apex or roots which may lead to the recurrence of the tumor [14].

There is a general conflicts in various literatures that ameloblastoma has to be treated aggressively to avoid recurrences, but there is a dilemma on the applicability of an initial radical, extensive surgery

De Paulo et al. [15], marsupialization followed later by enucleation was the treatment of choice for an extensive unicystic ameloblastoma in mandible involving body, ramus and condyle. Often, unicystic ameloblastomas involving the ramus of the mandible do not require resection and respond well to careful enucleation and chemical cauterization [9]. Samman and Lau [9], reviewed that large unicystic ameloblastomas are usually approached extraorally with decortication followed by enucleation and application of Carnoy's solution. The wound is then either closed primarily or packed with ribbon gauze to facilitate healing. Khare and Kumar [16] modified the enucleation procedure for unicystic ameloblastoma lesions involving ramus region, by employing a pedicled lateral ramal osteoperiosteal flap. This facilitates healing and resists infection.

Sasaki et al. performed enucleation according to a "dredging method," as reported by Kawamura et al. in 1991 [17], for a large unicystic ameloblastoma lesion in mandible. In their method, after the deflation (marsupialization) and enucleation or only enucleation, enucleation is repeated five to six times within 2-3 months until no tumour cell nest is identified in the pathological findings of scar tissues removed by two consecutive dredging. This method gives a low recurrence rate and complication rate with no dysfunction and deformity.

RADIAL APPROCHES FOR THE MANAGEMENT OF UNICYSTIC AMELOBLASTOMA

Wide resection of the jaw is usually the recommended treatment for the variants of ameloblastoma and priority should be given to the recurrence rate as well. However, radical surgery often means that the patients might has some serious complications such as facial deformity, masticatory dysfunction, immobility and abnormal jaw movement. Considering the features of ameloblastoma they are usually locally invasive but slow-growing and extremely rare metastasizing benign tumor, the priority of the treatment method should be discussed from the points of morbidity and quality of life of the patients, noting that the recurrence rate is not always the primary factor.

Two treatment modalities are mentioned in literature: a conservative way of treatment and radical procedures. Non-radical surgical procedures like enucleation and curettage, combined with liquid nitrogen spray cryosurgery, or just drilling of the perilesional bone are mentioned to be useful in unicystic ameloblastomas, especially in children and young patients. Other authors reported high rates of recurrence of ameloblastoma after conservative treatment protocols and therefore recommend radical surgical treatment. [18] Authors suggests a "rational radical conservative" resection of the mandible with preservation of the lower border of the mandible to maintain the continuity of the lower jaw and the facial contours.

In the previous reports, conservative treatments for ameloblastoma appeared to have failed to control local recurrences. Sehdev et al. [19] reported recurrence after the conservative approach (curettage) in more than 90% of 92 ameloblastomas. Shatkin and Hoffmeister [20] reported that 86% of 20 mandibular ameloblastomas recurred after curettage compared with a 14% recurrence rate after en bloc resection. Other authors have reported a series of 84 ameloblastomas in which they found a 52% rate of recurrence in patients treated conservatively and a 25% rate of recurrence in patients with primary tumor treated by the radical approach. However, extensive tumors require a more radical approach. The amount of resection is variable and depends on the site and extension of the tumor. Patients included in our study all presented with locally advanced tumors already infiltrating the surrounding soft tissue.

DISCUSSION

The optimal surgery of ameloblastoma should minimize recurrences, restore function and aesthetic and present a minimal morbidity within the donor area. Surgical planning must be performed supported the patient comorbidities, the dimensions and site of the tumor, the techniques available for reconstruction and thus the surgeon's experience. once we mention conservative technique, we ask enucleation, curettage or marsupialization, which may be related to cryotherapy with nitrogen or tissue fixers a touch just like the Carnoy's solution. it is a coffee morbidity and excellent aesthetic and functional results. The downside is that the high rate of recurrences, which is between 60-80%6, especially if only simple enucleation is completed.

Radical surgery implies marginal or segmental mandibulectomy with the necessity of 1-1.5 centimeters margins, since ameloblastoma cells are often found 8 mm aside from the radiological and clinical margin of the tumor (8,10). Restoring the functionality and aesthetics of the earth in these cases are often a challenge. However, the low recurrence rate, around 0-10% 1, makes this technique an honest option to avoid further interventions.

Unicystic ameloblastoma is best treated in children and adolescents conservatively with decompression, enucleation and

peripheral ostectomy and periodic long-term follow up maintained. A more aggressive surgical approach could even be considered when the condition recurs quite twice or according to the patient's wishes [21]. so on avoid the high recurrence rates, especially in type 3 unicystic ameloblastoma, a biopsy is usually recommended to rule out possible mural involvement.

Postsurgical defects within the maxillary region predispose the patient to hypernasal speech, fluid leakage into the cavity, impaired masticatory function, and in some patients, various degrees of cosmetic deformity. Mandibular resection also can prove devastating to mastication, deglutition, phonation, and oral competence. Moreover, the mandible frames the lower third of the face and represents a big component of the human appearance. Satisfactory reconstruction of complex jaw defects, especially during a single-step procedure, is therefore a surgical challenge. For benign tumors, the bone grafts became a reliable source during the previous few years in osseous reconstruction. The fibula, scapula and iliac crest are the commonly chosen donor sites to reconstruct mandibular or maxillary defects. For reconstruction of defects within the mandible we preferred iliac crest bone grafts as an honest quality of bone is provided in sufficient amount.

CONCLUSION

According to this review, radical surgery appears to be the foremost recommended option in multicystic / solid and advanced unicystic tumors, in conjunction with long-term follow-up for the likelihood of recurrence beyond 10 years. This treatment minimizes recurrences and reduces the need for brand fresh interventions. Currently, morbidity derived from reconstruction are often reduced by techniques supported by digital models, which are a useful gizmo to revive the aesthetics and functionality of the world, especially if they're complemented by osteointegrated dental implants. Conservative surgery combined with a support technique and long-term follow-up is reserved for the unicystic and multicystic / solid types if small extension, although despite being less invasive, the recurrence rate is extremely high.

AUTHOR CONTRIBUTIONS

First author (Jitesh.S) performed the analysis, interpretation and wrote the manuscript. Second author (Dr.Madhulaxmi) contributed to conception, analysis, interpretation and critically revised the manuscript. The two authors have discussed the results and contributed to the final manuscript.

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