

Unicystic Ameloblastoma of the Mandible - Use of Modified Carnoys Solution after Enucleation

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Abstract

Unicystic ameloblastoma has become established as a distinct clinicopathological entity on the general basis of its unicystic radiographic appearance, histologic findings, association with an unerupted tooth, and occurrence in the mandible of younger patients. Enucleation with curettage of the surrounding bones appears adequate for unicystic lesions. This case report Evaluate the effectiveness of a specific conservative surgical treatment regime involving the use of Carnoy’s solution after enucleation of unicystic ameloblastoma.

Keywords: unicystic ameloblastoma, enucleation, Carnoy’s solution.

Introduction

Ameloblastoma is a relatively uncommon lesion accounting for approximately 1% of all oral tumours.¹ The disease occurs in all age groups but the peak incidence is in the 3rd and 4th decades but in this case we are presenting an age of 18 years old female. The tumor in young people is considered as rare and it accounts for approximately 10–15% of all reported cases of ameloblastoma.^{20, 21} Clinically, ameloblastoma presents as a gradually increasing painless swelling of the jaw.^{2,3,4} The mandible is the most common site of occurrence in all races.^{2,3,5,6} Ameloblastoma are rare, slow-growing tumors of odontogenic origin. Eighty percent of these lesions occur in the mandible.⁸ The aim of this case report is to

analyse ameloblastoma in a patient under 18 years of age seen with emphasis on the clinical presentation, management and postoperative follow-up of the disease. The diagnosis was made on clinical and radiological grounds and confirmed by histopathological examination. Ackermann et al.⁶ in 1988 reclassified unicystic ameloblastoma into three types with prognostic and therapeutic implications. Type 1 consists of unilocular cystic lesions lined by epithelium exhibiting features of ameloblastoma. Type 2 showed epithelial nodules arising from the cystic lining and projecting into the cyst lumen. These nodules comprised epithelium with a plexiform or follicular pattern resembling that seen in intraosseous ameloblastoma. In both of these types, the cyst lining shows features of ameloblastoma but often in focal areas, and there is no evidence of infiltration of the fibrous tissue wall by ameloblastoma. Type 3 is characterized by the presence of invasive islands of ameloblastomatous epithelium in the connective tissue wall of the cyst, and these islands may or may not be connected to the cyst lining. Various treatment modalities for unicystic ameloblastoma have been used, such as segmental or marginal resection as normally used for conventional ameloblastoma; however, more conservative treatments have frequently been reported. There is no adequate evidence to prove which treatment modality is the most effective and the reasons for the practical variability and controversy are many. Carnoy's solution (chloroform 3 ml, absolute alcohol 6 ml, glacial acetic acid 1 ml, ferric chloride 1 g) was described in 1933 as a sclerosing agent for the treatment of cysts and fistulae,¹⁶ and remains in use today as a fixative.^{17,18} Carnoy's solution has been thoroughly studied in relation to keratocysts¹⁹ and was shown in an animal model to penetrate

cancellous bone to a depth of 1.5 mm²⁵. In our case we used modified Carnoy's solution by eliminating 3ml of chloroform in the solution.

Case Report

A 16-year-old female was admitted in our unit with the chief complain of facial deformity a history of a painless swelling which had arisen a few months before in the right region of the face. Clinical examination revealed a gross well-circumscribed swelling of the face with buccal and lingual expansion of the cortical bone, which radiographically appeared as a large, unilocular radiolucency, located in right lower jaw suggestive of unicystic ameloblastoma. Biopsy was done under local anaesthesia and biopsy report confirmed diagnosis of unicystic ameloblastoma. The patient was treated with conservative surgery under general anaesthesia, total removal of the epithelial lining of tumour after adequate exposure, enucleation of the lesion and application of modified Carnoy's solution to the bony cavity and the healing process proceeded normally without any signs of recurrence in 2 years and very good bone deposition is seen in clinical and radiological follow-up. While performing enucleation of the lesion, teeth directly related to the periphery of the tumour were extracted before proceeding with the enucleation. Inferior alveolar nerve was exposed during the enucleation procedure and the cystic tumour was carefully stripped from the nerve which was preserved. The bony cavity was then examined for any remaining tumour tissue which, if found, was removed. Modified Carnoy's solution was applied to the bony cavity for 3 min using ribbon gauze soaked with solution. When the mandibular nerve was visible in the bony cavity, contact with solution was avoided as far as possible. This was followed by copious irrigation with normal saline. Histopathological examination of the excised

tumour lesion revealed an unicystic ameloblastoma of the right mandible. Postoperatively from 5th day bismuth iodoform para then inserted into the bony defect and the wound kept open over the gauze pack. The BIPP gauze was replaced periodically every 5th day until secondary healing was complete. Clinical and radiological follow-up was carried out till the secondary healing was complete.

Discussion

Ameloblastoma are currently classified into three types: a) solid or multicystic, the most frequent form and radiologically characterized by multilocular aspect, (b) unicystic, radiologically characterized by unilocular aspect and (c) extra osseous or peripheral type. Our case had the unicystic ameloblastoma of right mandible in angle region. Treatment of mandibular ameloblastoma continues to be controversial. The clinical presentation and radiological features of unicystic ameloblastoma in this case report are generally in line with other series in the literature.^{6,11,12,13} Discussion continues regarding the biologic behavior of the histologic variants of the unicystic ameloblastoma.⁶ One approach to treatment of unicystic ameloblastoma is often labeled “conservative” and generally consists of curettage or enucleation. Gardner and Pecakl⁹ defined enucleation as the “removal of a lesion by shelling it out intact.” The improbability of shelling out an intra-bony lesion without violating its integrity makes this term confusing and inaccurate. Once an ameloblastoma has recurred outside the confines of the bone success rates decrease and more extensive morbidity results. Supraperiosteal resection of bone is necessary when extensive thinning or perforation of the cortical plates is noted. Radiologically, a unicystic lesion encompassing a tooth may simulate a dentigerous cyst, thereby rendering a clinical diagnosis of ameloblastoma

difficult. However, a careful examination of the radiographs is often most informative as with unicystic ameloblastoma. The use of bismuth iodoform gauze or BIPP impregnated gauze wrap for protection/ amputation of roots of related standing teeth when compared with a dentigerous cyst. Many authorities believe that the diagnosis of unicystic ameloblastoma is based on a combination of radiographic and microscopic appearances, and that the lesion should not be definitively diagnosed preoperatively, but rather in a retrospective diagnosis.¹⁰ Patients with the unicystic lesions which are considered less aggressive, therefore we managed in this study by enucleation and trimming of the surrounding bone with an acrylic bur. The trimming of the bone was done as we believe it will eliminate residual tumour.^{6,7} In our case there was no evidence of recurrence, the lesional area was filled with normal bone within two year. It is generally believed that the presence of tumor cells in the fibrous capsule of unicystic ameloblastoma, like in type 3 lesions, predisposes to recurrence after enucleation. It is also assumed that the behavior of unicystic ameloblastoma with mural invasion is similar to that of its intraosseous counterpart. However, no study has clarified whether mural invasion can extend to the full-thickness of the fibrous capsule and beyond it into adjacent cancellous bone. The use of Carnoy’s solution for this specific purpose in relation to unicystic ameloblastoma was initially suggested by Stoelinga & Bronkhorst¹⁴ in 1987, and recently proposed again as a possible means to diminish the recurrence risk after conservative treatment.¹⁵

Conclusion

In our case, a 3 year follow-up without clinical recurrences confirmed and reported good prognosis of the completely enucleated and curettage done unicystic type of ameloblastoma. Uninvolved periosteum should be preserved because of its osteogenic potential which will

help in bone deposition. From the findings of the current case report, it can be presumed that Carnoy's solution is probably able to fix residual ameloblastoma tissue after enucleation of unicystic ameloblastoma. However, this suggestion needs to be confirmed by larger studies targeted specifically at unicystic ameloblastoma. We hope this case may contribute to further meta-analysis, increase perception of the lesion, and develop a rational treatment in unicystic ameloblastoma in young patients.

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Legends Figure



Fig.1: The panoramic radiograph of a 16-year-old girl showing a unilocular lesion with well-defined borders in the right mandibular angle region with the displacement of right third molar seen.



Fig. 2: Immediate postoperative panoramic radiograph showing enucleated tumor and removal of displaced tooth and teeth involving tumor.



Fig.3: One year postoperative radiograph showing the lesion area filled with normal bone.



Fig. 4: Two year postoperative radiograph showing the lesion area with no evidence of recurrence.