Ameloblastoma is the second most common type of odontogenic lesion and is considered the most clinically significant odontogenic tumor. It is a benign, slow-growing epithelial neoplasm. It can be aggressive and life threatening if left untreated. They are usually asymptomatic until they grow large enough to penetrate surrounding tissue. If found in the maxilla, there is danger of expansion into the cranial cavity, possibly becoming fatal. Clinically, they are painless swellings usually found near the angle of the mandible. Mobility and root resorption will also be present. Radiographically, they have a “soap bubble” appearance. They are multilocular or unilocular lesions with well-circumscribed borders. There are 3 types including multicystic, unicystic and peripheral. It is important that the dental hygienist perform thorough extra and intra oral examinations to detect these lesions early. Differential diagnosis is important to rule out similar odontogenic lesions. In addition to Panoramic radiographs, CTs and MRIs are helpful to aid in diagnosis. Histologic biopsies are necessary to diagnose these lesions. The preferred method of treatment is surgical excision with a high rate of recurrence after removal. Due to this high rate of recurrence, it is imperative for the dental hygienist to inform the patient about the importance of attending follow up appointments for necessary treatment.
Introduction

Ameloblastoma is the second most common type of odontogenic lesion.\textsuperscript{1} It is considered the most clinically significant odontogenic tumor. It accounts for about 1-3\% of all jaw tumors and cysts and 11\% of all odontogenic tumors. Ameloblastoma was first described in 1827 by Cusack and later called an adamantinoma by French physician Louis-Charles Malassez in 1885. It was later renamed ameloblastoma by Ivey and Churchill in 1930.\textsuperscript{1} It can occur anywhere in the mandible or maxilla but is most often found in the posterior body and angle of the mandible. Although this tumor is benign, it can cause a great deal of pain and edema as it rapidly grows into the mandible. If left untreated, it can cause severe facial disfigurement, functional impairment and death. The preferred method of treatment is surgical excision with a high rate of recurrence.\textsuperscript{1}

Etiology and Pathology

Ameloblastomas are odontogenic epithelial neoplasms. Exact etiology of ameloblastoma is unknown.\textsuperscript{1} They can arise from the enamel organ, remnants of the dental lamina, epithelium of dentigerous cysts, or basal cells of oral mucosa epithelium. They are benign slow growing, painless swellings that behave like invasive tumors. They are often locally aggressive, causing death if left untreated. There are usually no symptoms until it grows large enough to penetrate the surrounding soft tissue. This is when the patient may first notice the tumor. In most cases, ameloblastomas are an intraosseous neoformation in the mandible near the molars or ascending ramus. The five subtypes are multicystic, unicystic, extraosseous/peripheral, desmoplastic and mixed (with areas of desmoplastic and solid pattern). Multicystic is the most common. This multicystic subtype can be follicular, plexiform, acanthomatous and granular. Unicystic includes mural, luminal and intraluminal ameloblastoma, which arise in dentigerous cysts.
In less than 1% of cases, ameloblastomas can become malignant. The most common sites for this transformation are lung, cervical lymph nodes, and are rarely found in the brain.\textsuperscript{1,2}

**Epidemiology**

Ameloblastomas account for about 1% of all jaw tumors and cysts. Eighty percent of ameloblastomas occur in the mandible near impacted third molars. They tend to appear between 30–40 years of age. There is equal gender and race distribution. The unicystic variety is least common and tends to appear before the age of 30.\textsuperscript{2} This type is usually asymptomatic and found in the posterior mandible.\textsuperscript{3} The multicystic type is most common and appear in young adults, with a median of 35 years.\textsuperscript{4} The peripheral type is rare, consisting of only 2-10% of all ameloblastomas.\textsuperscript{5}

**Clinical Presentation**

Ameloblastoma is usually a painless swelling found in the posterior region near the angle of the mandible. Figure 1 shows before and after treatment of ameloblastoma on the maxilla. The first symptom noticed may be facial asymmetry. These lesions are usually asymptomatic until discovered on radiographs. Radiographically, it can be a well-demarcated, unilocular lesion, but most often it is multiloculated with a “soap bubble” appearance. Figure 2 shows the ameloblastomas in panoramic radiographs. Figure 3 part (a) includes an extraoral photograph showing expansion into the soft tissue of the jaw. Part (b) shows appearance of a multilocular lesion in a radiograph and part (c) shows a resection of the mandible. Part (d) shows post-operative surgery in a panoramic radiograph.\textsuperscript{2}
Figure 2
(a) Panoramic radiograph showing a multicystic ameloblastoma in the left mandibular angle associated with the 2nd and 3rd impacted molar (arrows). (b) Recurrent multicystic ameloblastoma located in the mandibular ridge (arrows). (c) Radiographic control after marginal mandibulectomy and reconstruction with cancellous bone graft obtained from proximal tibia, placement of two dental implants and restoration with implant-supported prostheses.

Figure 3
(a) Ameloblastoma causing expansion (b) multilocular lesion on right body of mandible (c) resection of mandible involving 2 cm of normal bone (d) postoperative radiograph
**Diagnosis**

Due to the wide variation in clinicopathologic appearance associated with epithelial odontogenic tumors, it is important to avoid confusion in order to prevent misdiagnosis. Panoramic radiographs, CT and MRI are helpful to aid in diagnosis. Histologic biopsies are necessary to diagnose this lesion. Radiographically, the multicystic ameloblastomas appear multilocular and radiolucent, giving them a ‘soap bubble’ appearance. Unicystic ameloblastomas are scalloped or lobed edged, well-defined radiolucent images. This type is usually associated in cases with impacted teeth. These are seen around the tooth crown, similar to dentigerous cysts. This is why it’s important to rule out similar disorders while listing a differential diagnosis.²,⁷

**Treatment**

Before determining the proper method of treatment, the surgeon must take into consideration the location, size and subtype and age of the patient. After these assessments have been made, there are several treatments available. Local techniques include curettage, enucleation or marsupialization. Enucleation can be with or without curettage and involves removing the tumor while avoiding the spilling of neoplasm fluid. Radical treatments can be marginal or en-bloc segmental resection with safety margins and reconstruction of bone defect. Marginal mandibulectomy is an ‘en bloc’ resection of the tumor. This means a portion of the mandible is removed while removing the whole intact tumor. In this procedure, 1 cm of the adjacent bone and periosteum is removed as it may be invaded by the tumor. Segmental mental resection is where a complete section of the mandible is removed.¹,²,⁶
Multicystic ameloblastomas are the most aggressive and have a high recurrence rate following local excision. Because unicystic ameloblastomas have a lower rate of recurrence and enucleation, curettage is usually all that is needed to manage this type. Since ameloblastomas tend to recur following local treatment, it may be complemented with cryotherapy or diathermy. Cryotherapy is a technique that uses an extremely cold instrument or liquid such as liquid nitrogen to freeze and destroy abnormal skin cells. Diathermy is a procedure that heats and destroys abnormal cells. It uses high-frequency electromagnetic radiation, electric current or ultrasonic waves.¹ ² ⁸ ⁹

The preferred treatment is surgical excision, but the extent and type of surgery varies. In order to prevent tumor recurrence, the main objective is to perform a complete resection. Many studies have focused on how to achieve this without removing too much tissue. If the patient is young and still growing, conservative local treatment is acceptable to minimize the psychological impact of an aggressive resection and future functional or growth problems. This method is also preferred in elderly patients in order to avoid major surgical complications. In addition, it is also used in unicystic luminal ameloblastomas as long as the tumor has not spread beyond the basement membrane of the cyst. In cases of large or aggressive ameloblastomas (multicystic) with cortical bone infiltration or soft tissue extension, the recommended treatment is extensive surgery. Long-term follow up is recommended for at least 10 years due to high rate of recurrence.² ⁸ ⁹ ¹²

**Implications for Dental Hygiene Care**

The ameloblastoma is a localized nonencapsulated lesion but can be dangerous when present in maxilla. It can be life threatening if it expands into the cranial cavity and vital structures such as the eyes and sinuses. If ameloblastomas are not diagnosed early, they can become difficult to manage as they spread from bone into soft tissue.¹¹
It’s important for the dental hygienist to perform routine extra and intra-oral examinations in order to detect nodules on mandible or maxilla, swellings of the jaw or facial asymmetry. The dental hygienist must document and record the location, size, shape and duration of any suspicious lesion. Radiographs, especially panoramic radiographs are important tools as well. The dental hygienist should look for root resorption of teeth as well as the tell-tale sign of soap bubble appearance of the multilocular lesion. Upon intraoral examination, tooth mobility should also be recorded. The patient should be referred to specialists to have necessary biopsy and imaging tests as soon as possible. Due to the high rate of recurrence after removal, the importance of follow-up appointments needs to be stressed to the patient.11

Conclusion

Although ameloblastomas are usually benign tumors, they can still lead to death if left untreated. The dental hygienist plays an important role in preventing unnecessary death by performing routine extra and intra-oral exams. Documentation, thorough evaluations and interpretations of radiographs are necessary to detect these lesions. For best possible prognosis, the patient should be referred to specialists in a timely manner. Differential diagnosis is also necessary to rule out other possible disorders and provide the best treatment possible. Surgical excision is the treatment of choice. Due to the high rate of recurrence, the dental hygienist needs to stress the importance of follow up appointments to the patient.11
References


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