**ABSTRACT**

**Objectives**
Review the clinical presentation, radiologic features, management, and outcomes of jaw tumors diagnosed in children treated in a tertiary care academic center.

**Methods**
Retrospective review of children aged 16 and under who presented to the University of Maryland Medical Center between 1992 and 2012 and were diagnosed with a jaw tumor. Charts were reviewed for symptoms, physical exam, radiological findings, pathology, intervention, and outcomes.

**Results**
The charts of 76 patients evaluated for a jaw mass were reviewed, and 20 were diagnosed with a jaw tumor. The two most common pathologies were ameloblastoma (n=5) and ossifying fibroma (n=5). Two tumors were malignant, one rhabdomyosarcoma and one teratoma. Five patients presented asymptptomatically with lesions found on surveillance panorex, thirteen presented with evidence of a mass or swelling, one presented with epistaxis and one with facial weakness and pain. All tumors excluding one lymphangioma and one rhabdomyosarcoma were managed surgically. Eight patients underwent more than one procedure, including secondary reconstruction, prior to a satisfactory outcome.

**Conclusion**
Pediatric jaw tumors are rare lesions most commonly presenting with a swelling or mass. Patients may also be asymptomatic with a lesion identified on imaging. The majority of jaw tumors are benign and require surgical intervention for excision of disease. Multiple procedures, including reconstruction, may be required for certain lesions prior to cure.

**References**

**INTRODUCTION**

Tumors of the pediatric maxillo-facial skeleton are a rare clinical entity. It is important that the clinician understand the associated presentation, radiologic features, management, and outcomes. We present our institution’s 20-year experience with the diagnosis and treatment of 20 pediatric patients with jaw tumors.

**METHODS AND MATERIALS**

A retrospective review of children aged 16 and under who presented to the University of Maryland Medical Center between 1992 and 2012 and were diagnosed with a jaw tumor. Charts were reviewed for symptoms, physical exam, radiological findings, pathology, intervention, and outcomes.

**RESULTS**

The charts of 76 patients aged 16 and under who were evaluated for a jaw mass in the Department of Otorhinolaryngology and School of Dentistry clinics from 1992 to 2012 were reviewed. Of these patients, 20 were diagnosed with a jaw tumor. The two most common pathologies were ameloblastoma (n=5) and ossifying fibroma (n=5). A total of 11 different pathologies were identified. Two malignant tumors, one rhabdomyosarcoma and one teratoma, were identified. Eleven tumors were in the mandible and nine were in the maxilla. Presentation included lesions found on surveillance panorex (n=5), jaw mass (n=13), epistaxis (n=1) and facial weakness and pain (n=1).

All patients excluding one infant with a suspected lymphangioma and one patient with rhabdomyosarcoma were treated surgically for their disease. Incisional biopsy was performed for diagnosis prior to definitive treatment in the majority of cases. Four patients were initially managed with enucleation as their sole procedure: three suspected of having an odontoma, and one with a focci of ameloblastoma found within a dentigerous cyst. Eight patients underwent more than one procedure after initial biopsy, including secondary reconstruction, prior to a satisfactory outcome. Ameloblastomas located in the mandible were treated with segmental resection with reconstruction using fibula flap in one case and reconstruction bar placement in the rest. Bone grafting was subsequently performed for all patients with a reconstruction bar. Scar revision was required in one case. The maxillary ameloblastoma was managed by enucleation and did not require reconstruction. The ossifying fibromas were treated with enucleation. Two recurred, one requiring repeat enucleation and another requiring hemi-maxillectomy. Fibromas and odontomas were all definitively treated with enucleation. The osteosarcoma was treated with segmental resection leading to resolution. The rhabdomyosarcoma was treated with chemotherapy and radiation. Additional trips to the operating room were required for post-biopsy hemorrhage and for repeat biopsy one year later. The teratoma was treated with wide local excision with calvarial bone graft and a titanium mesh for reconstruction of the right orbital floor. He recurred twice first requiring endoscopic excision and chemotherapy followed by revision maxillectomy and proton beam radiation therapy.

**DISCUSSION**

Jaw tumors in children are relatively uncommon. The exact incidence is hard to estimate due to the different definitions used by authors to define the pediatric age group. Tumors in these locations have a broad differential diagnosis including both benign and malignant lesions which may originate from bone or soft tissue and may be odontogenic or non-odontogenic. The incidence of non-odontogenic tumors is twice that of odontogenic ones. The most common diagnoses in our series were ameloblastoma and ossifying fibroma. Both of these diagnoses were among the most common tumors in similar studies. Odontomas have also been found to be a common diagnosis though we only saw one case. Of our 20 subjects with jaw tumors, 90% were benign (n=18) and 10% were malignant (n=2). Reported rates of malignancy in similar series were 2.5, 2.9 and 7%. The majority of patients presented with an asymptomatic lesion found on panorex or a jaw mass. There was no clear correlation between presence of symptoms and pathologic diagnosis. The large number of tumors identified incidentally highlights the importance of routine dental surveillance and thorough physical exam in asymptomatic patients. The two malignant tumors presented with epistaxis and with jaw pain and facial weakness. Epistaxis and facial weakness should be considered ominous signs. After identification of a jaw mass, workup in most cases began with an incisional biopsy prior to attempting a definitive procedure in the majority of cases. Since management varies for different pathologic diagnoses, performing a biopsy prior to a definitive procedure is useful.

Ameloblastomas are locally aggressive tumors with a recurrence rate of as high as 75-90% for solid tumors treated with enucleation. Therefore wide resection with partial mandibulectomy or maxillectomy is often required to decrease the likelihood of recurrence. Despite high recurrence rates, no patients in our study recurred after resection of ameloblastoma.

Ossifying fibromas are benign, locally aggressive tumors. They may be treated with enucleation and curettage or wide local excision, but may recur with enucleation. In our population, one subject recurred after enucleation requiring repeat enucleation. Another patient recurred after initial wide local excision requiring a hemimaxillectomy.

**CONCLUSIONS**

Pediatric jaw tumors are rare lesions most commonly presenting with a swelling or mass. One-third of patients are asymptomatic with a lesion identified on imaging. A majority of jaw tumors are benign but require surgical intervention for excision of disease. Multiple procedures, including reconstruction, may be required for certain lesions prior to cure.