Odontogenic Myxoma: A Rare Case of Aggressive Tumor with an Interesting Treatment Strategy

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ABSTRACT

Odontogenic myxoma is a relatively rare, benign odontogenic tumor of the oral cavity which is notorious for its inherent locally aggressive behaviour. There is currently no consensus on surgical management guidelines for odontogenic myxoma due to its rare incidence and a plethora of management techniques have been used. We report a rare case of odontogenic myxoma in mandible and also discuss a novel approach wherein we did enucleation of the tumor followed by application of carnoy’s solution as an adjunct which not only avoided radical resection of mandible and its associated co-morbidities but also prevented its recurrence which is the main reason for treatment failure. No recurrence of tumor has been seen over a period of three years.

KEYWORDS: Aggressive Tumor, Carnoys Solution, Odontogenic Myxoma, Odontogenic Tumors

INTRODUCTION

Odontogenic Myxoma of the jaw was first described by Thoma and Goldman (1947). In the International Histological Classification of odontogenic tumors. Odontogenic Myxoma (OM) is defined as a benign odontogenic tumor of mesenchymal origin that is locally invasive and consists of rounded and angular cells that lie in abundant mucoid stroma. It is a tumor surrounded by Dogmas and Controversies.

Bryant (1802) introduced the term Myxosarcoma, which he described as a mucous transformation of round cell sarcoma. Myxomas were also described as Collenomas by Johannes Miller (1838). In his 1858 article titled Cellular Pathologie, Rudolph Virchow introduced the term Myxoma to describe soft tissue tumor resembling the structure of umbilical cord. In 1948, Stout reported a series of 49 patients with myxoma and established criteria to be satisfied for diagnosis— a true mesenchymal neoplasm consisting exclusively of undifferentiated stellate cells in a loose mucoid stroma that did not metastasize.

CASE REPORT

A 26 year old female was referred to the department of oral and maxillofacial surgery by an orthodontist for the presence of a swelling over the left side of mandible since two months (fig. 1). The patient was undergoing orthodontic treatment for the past six months. Initially, the swelling was small in size and showed a gradual increase to attain the present size. Clinical examination revealed a firm, non-tender swelling expanding the buccal and lingual cortices of the mandible, extending from left first premolar region to third molar region, and it obliterated the buccal vestibule. The skin over the swelling was normal, and there was no history of paresthesia (fig.2). The panoramic radiograph showed a large, well-defined, multilocular radiolucent lesion with sclerotic margin and “soap bubble” appearance extending from the lower left second premolar to 5mm distal to the third molar (fig.3). The mandibular occlusal radiograph showed radiolucent lesion with expansions of buccal and lingual cortices(fig.4). Fine needle aspiration was performed to rule out odontogenic cysts, and results were negative. Considering the lesion to be benign odontogenic tumor, an incisional biopsy was made and a histopathological examination of the tissue sample revealed rounded, stellate, and spindle-shaped mesenchymal cells arranged in a loose, myxoid stroma with few collagen fibrils. These results were suggestive
CASE REPORT

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Odontogenic myxoma is regarded as a locally invasive tumour which does not metastasize and exhibits slow expansion, sometimes resulting in perforation of the cortical plates of the affected bone (Abiose et al., 1987). Odontogenic myxomas are rare tumours and account for 3.3-15.7% of all odontogenic tumours in adults and for 8.5-11.6% amongst children. They occur in all age groups with a peak incidence in the third decade. The posterior region of the mandible are most frequently involved as is

DISCUSSION
seen in our case also. In many cases, these lesions are
diagnosed accidentally by a routine dental check-up, and
patients are mostly in their second or third decade of life, which is similar to our case. Odontogenic myxomas are
thought to arise from the primitive mesenchymal
structures of developing teeth which include dental papilla, follicle or periodontal ligament cells. Barros et al. argue that the tumour’s embryologic origin from the
tooth can be supported by the high frequency of this
intraosseous tumour in the jaw with an extreme rarity in
other bones of the skeleton.

Treatment Modalities And Prognosis: The tumour is
not radiosensitive and consequently, has to be managed surgically. However, there has been some debate as to the
best surgical approach. Surgical treatment of odontogenic
myxoma varies from simple enucleation and curettage to
segmental resection and hemimandibulectomy. Recurrence rates are reportedly high, around 25%, when a
more conservative approach is taken. Twenty of the 44
cases (45.5%) were managed by conservative surgical
techniques, the remainder underwent radical surgery.
Tumors recurred in three of those who were managed
using conservative surgical approach (15.0%). There were
no reported recurrences in any patient who underwent
radical surgery.

Reasons for recurrence: The lesions are not
encapsulated thus allowing substantial infiltration into the
adjacent medullary bone. There may be nests, pockets or
loculations of the myxoid tumor which may hide behind
bony trabeculations making it a stubborn infiltrative
lesion. So the main reason or recurrence is thought to be
incomplete removal rather than the intrinsic biological
behaviour of the tumor.

Treatment of these lesions, has a number of dilemmas
about the choice and the degree of radicalism in surgical
procedure that needs to be used, with the aim of
decreasing the potential for recurrence, and minimizing the
post-operative morbidity. In other words, the current
controversies are leading to the crucial question: When
and whether aggressive therapy is necessary in the
treatments of this tumor. Conservative treatments have
various advantages over segmental or block resection,
and hemimandibulectomy with reconstructive surgery.
Conservative treatments are less invasive, can be
achieved by means of an intraoral surgical approach,
preserve function and aesthetics, have a shorter hospitalization time, and are more cost-effective.

According to Boffano et al. conservative treatment by
enucleation and curettage is recommended when
odontogenic myxoma is of less than 3 cm, whereas a
segmental resection with immediate reconstruction is
preferred in patients with larger tumors. Recently,
Zanetti et al. advocated that conservative treatment
should involve enucleation of the lesion with a wide
curettage of normal tissue or , or even peripheral
osteotomy, as this has the advantage of preserving vital
structures and also maintaining oral functional
harmony.

As in our case the tumor size was less than 3cm in its
widest dimension on the radiograph, we used a
conservative method of management which included
enucleation of the tumor and using carnoys solution as
an adjunctive.

The use of Carnoy’s solution as an adjunct in the surgical
management of Odontogenic Keratocyst and its correct
application is of non questionable importance. This
technique of using carnoys as an adjunct lowers the
recurrence rate (compared with enucleation alone) and
morbidity (compared with resection) for aggressive and
recurring tumors. Carnoy’s solution was first used as a
medicament in surgery by Cutler and Zollinger in 1933.
Carnoy’s solution is prepared by mixing 3 ml of
chloroform, 6 ml of absolute ethanol, 1 ml of glacial
acetic acid and 1 g of ferric chloride. This should be
enough to do cauterization of the remaining cells. Its
average depth of bone penetration depends upon the
length of application (1.54 mm after 5 min).

The effects of Carnoy’s solution on the inferior alveolar
nerve were first reported by Frerich. The authors did not
observe axonal damage during the first three minutes of
direct application. In our case also there were no signs of
inferior alveolar nerve paresthesia/anesthesia. So, in
addition to enucleation or curettage the application of
Carnoy’s solution would be a better option for
odontogenic myxoma. We would like to advocate that
the application of Carnoy’s solution is to preserve and
save the unaffected bone so as to maintain the normal
countour and architecture.

A follow-up period is clearly also necessary. It has been
recommended that patients should be followed for at least
the first two years after surgery during which the tumor
has highest propensity for recurrence7. Our case was
followed up for a period of three years with regular
radiographs. No evidence of recurrence is seen clinically
or radiographically. Moreover, we see a radiographic
evidence of bone deposition in the defect (figure 7,8).

CONCLUSION

We would like to conclude that Carnoy’s solution could be
considered as a definitive and conservative
management procedure in the treatment of these benign
but aggressive lesions and would like to encourage
maxillofacial surgeons to use this novel conservative
method and document their follow-up data so as to
formulate an evidence based treatment strategy. The
successful surgical management of this case and its
favourable prognosis should help the surgeons in taking
treatment decisions for odontogenic myxoma, to
minimize the risk of recurrence while adopting a less
radical surgical approach whenever possible.

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Source of Support: Nil
Conflict of Interest: Nil