Temporomandibular Joint

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Case report

Osteochondroma of mandibular condyle: A case report

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Abstract

Introduction

Osteochondroma is a slowly growing benign tumour that is rarely seen in the maxillofacial region. Pathogenesis and aetiology of this tumour have not been well understood. When osteochondroma is seen at the mandibular condyle; it mainly causes mandibular asymmetry, crossbite, posterior openbite, tempromandibular joint problems with pain, and limitation of mandibular lateral motions. The treatment of osteochondroma is primarily surgical resection of the tumours with a preauricular or a submandibular approach either alone or in combination. This paper reports a case of osteochondroma of mandibular condyle.

Case report

The osteochondroma case presented here is of a 31 year-old male patient, complaining of a face asymmetry and malocclusion. Total excision of left mandibular condyle neoplasia was performed through an extended temporal-preauricular approach with the preservation of mandibular condyle. The osteochondroma was carefully excised from the condyle by an osteotomy. The tempromandibular disc with its meniscus was preserved.

Conclusion

The first treatment choice of the osteoma of the mandibular condyle is surgical resection of the tumour with a preauricular insicion with temporal extension. If there is minimal alteration in the morphology, the preservation of the tempromandibular disc with its meniscus will provide an excellent barrier in order to prevent the development of ankylosis.

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Introduction

Osteochondroma is a benign tumour of mature hyaline cartilage and bone that is rarely seen in the maxillofacial region[1]. It generally occurs at the end of the growth plates of long bones[2]. There have been cases reported with osteochondroma located at the posterior maxilla, maxillary sinus, mandibular symphysis, parasymphyseal area and zygomatic arch[3,4,5,6].

Only a few osteochondromas have been reported in the region of the mandibular condyle[7]. In 2010 Warburton et al. identified 67 cases of osteochondroma[8]. Since 2010, five more cases were reported which will bring the total of osteochondroma cases of mandibular condyle in the literature to 72.

Condylar osteochondroma of the mandible is usually unilateral and situated on the anteromedial surface and rarely in the lateral or superior portion of the condylar head[2]. Thus, mandibular asymmetry, crossbite, posterior openbite, tempromandibular joint problems with pain, and limitations of mandibular lateral motions are common clinical symptoms of osteochondroma of the mandibular condyle[1,4,6,8].

Osteochondroma grows slowly. Pathogenesis and aetiology of this tumour have not been well understood[1,9]. Treatment of osteochondroma is primarily surgical resection of the tumour with a preauricular or a submandibular approach either alone or in combination. No recurrence is reported in cases treated with condylectomy for osteochondroma, whereas three recurrences were observed with excision of the osteochondroma only[7,10].

The incidence of sarcomatous transformation of osteochondroma is 1% approximately[3,5].

Histologically, osteochondroma is composed of a zone of endochondral ossification and a cancellous bony component with regular lacunar and bone marrow spaces[3,4,9].

The osseous portion is covered by cartilaginous tissue with calcification. Differential diagnosis of osteochondroma of the mandibular condyle should include giant cell tumour, condylar hyperplasia, fibroosseous lesion, vascular malformation, osteoma, and chondroma. Benign tumours of the mandibular condyle are very uncommonly seen and there have been few cases in the literature that have been reported.

This article describes a case of a benign tumour of the mandible with osteochondroma of the mandibular condyle.

Case report

A 31 year-old male patient, who used to be a professional soccer player, applied to our oral and maxillofacial clinic complaining of a face deformity and malocclusion, with slow and gradual mandibular deviation to the right side since 2008.

He didn't mention an episode of acute trauma or fracture of the mandibular condyles. Examination of the patient revealed prominent protrusion of the mandible with a deviation of the chin to the right side of approximately 8 mm. There was a left posterior openbite and a right crossbite with Class III malocclusion. Maximum interincisal opening was 38 mm with mild left tempromandibular joint tenderness. During opening and closing of the mouth, there was no click or crepitation heard in the tempromandibular joints.

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Since 2008, the asymmetry gradually became worse and occlusal disorder became disturbing. The remaining medical and dental history was unremarkable. The CT scans of the maxillofacial area showed a large bonelike mass at the medial pole of the left condyle extending superiorly towards the cranial base with anterior displacement of the condyle (Figure 1).

In the sagittal view of the left tempromandibular area, the left condyle was positioned anteriorly but not exactly out of the glenoid fossa. Briefly, the list of problems and the treatment plan of the patient are shown in table 1.

After uneventful nasotracheal intubation and establishment of general anaesthesia, the patient was draped in a sterile fashion for surgery. Total excision of mandibular condyle neoplasia was performed through an extended temporal-preauricular approach. The preauricular incision was approximately 4 cm long and extended from the superior portion of helix to the inferior portion of the ear lobe. After the skin incision was done, the underlying subcutaneous tissue, temporal fascia and muscle were carefully dissected. In the temporal region the incision was up to the superficial layer of the temporalis fascia.

At the root of the zygomatic arch, the superficial layer of temporalis fascia was incised anterosuperiorly. The periosteum was then elevated to expose the zygomatic arch. In order to protect the main trunk of the facial nerve, the anterior border of tragal cartilage was used as a reference point. The osteochondroma was carefully excised from the condyle by an osteotomy done with a fissure bur and osteotomes. Following separation, the tumour was removed without damaging the adjacent anatomic structures (Figure 2).

The tempromandibular disc with its meniscus was intact with minimal alteration in morphology, thus both the disc and condyle were directed within the glenoid fossa. The meniscus provided an excellent barrier, preventing the development of ankylosis. The patient was easily brought into full occlusion with the help of a preoperatively prepared splint. The excised lesion was bony hard, white-gray with a smooth firm surface and measured as 2x1x0.6 cm. A suction drain was placed and all tissue layers were closed primarily.

Immediately after surgery a pressure dressing was applied to the left preauricular region and guiding elastics were used to stabilize the occlusion for 2 weeks. This helped the patient to guide the correct position of the mandible after surgery. Postoperative orthopantomography showed the mass to be completely excised with a good symmetry of the mandible and favourable condylar shape. After releasing of the fixation, physical therapy was initiated. Since the postoperative facial aesthetics and occlusion of the patient was reasonable, we did not perform bilateral sagittal split osteotomies.

The histopathologic examination of the neoplasm revealed a proliferative zone of the cartilage and reactive endochondral ossification (Figure 3).

Figure 1: CT scan shows a large bonelike mass at the medial pole of the left tempromandibular condyle.

Discussion

Chondromas, osteomas and osteochondromas are the most common tumours of the mandibular condyle. However, osteochondroma of the mandibular condyle is an extremely rare tumour of all tumours and a few cases were described. Patients with atumour of the mandibular condyle exhibit some common clinical symptoms such as; alterations in dental occlusion, deviation of the mandible and slow and asymptomatic growth of the lesions causing facial asymmetry[4,8,9].

The condylar function of the affected side can be partially or totally lost and limited mouth opening may be observed.

Osteochondroma of mandibular condyle usually seen during the fourth decade of life,[2,9] however, it has a wide age range of 11 to 69[9]. It arises from the

Figure 2: Excision of osteochondroma from the condyle.

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endochondral bone and can present as a solitary lesion (75%) or as multiple lesions (25%). Even though the risk of malignant transformation of osteochondroma is only 1% for solitary lesions, there has been no reported case of mandibular condyle osteochondroma that has been converted to malignancy[9].

Osteochondroma of mandibular condyle generally arises from the medial-anterior portion of the condyle[6] and extend superiorly as seen here in this case. The tumour is thought to develop from the tendinous attachments of the lateral pterygoid muscle[6]. Also trauma, neoplastic, developmental, reparative, and inflammation aetiologies can be either initiating or predisposing factors of osteochondroma of the mandibular condyle. Osteochondroma is a tumour that arises from the cortex of the bone and is capped with cartilage. In the case presented here, the lesion is a hamartomatous proliferation of a whole condylar unit. Histologically a thickened cartilage with endochondral ossification and cartilaginous islands helped us to confirm the diagnosis.

Surgical approach to the tempromandibular area is challenging. The preauricular approach is the most popular approach for the tempromandibular area[3,8], however, in this case we combined preauricular incision with temporal incision in order to get a better access to the joint. In large tumours with infratemporal extension, hemicoronal flap and zygomatic arch osteotomy might be done for a better access[3,10].

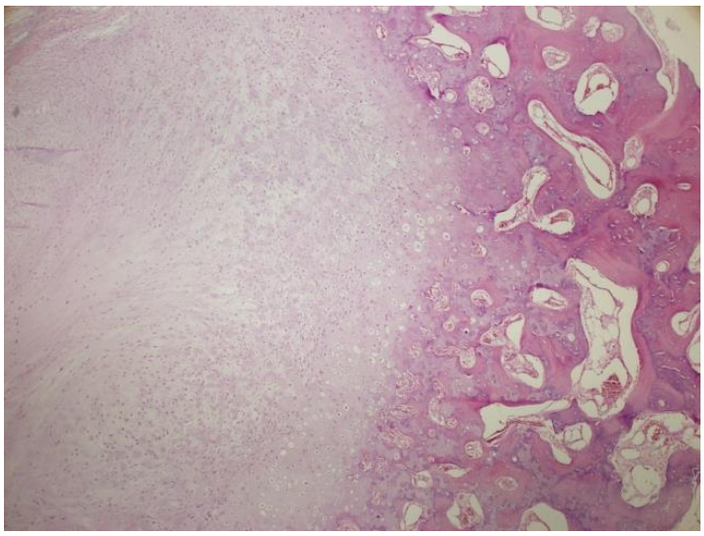

Figure 3: Osteochondroma; showing the outer perichondrium, cartilage cap, and underlying stalk with endochondral ossification (stained by H&E).

The surgical technique is controversial. It may be performed through either excision of the lesion[3,10] or condylectomy[3] followed by reconstruction for the preservation of mandible height. More recently a conservative approach to the condylar tumours and to preserve the condylar head have been more frequently reported, however the conservative approach can cause inadequate removal of the tumour. Although Aydin et al. advised to make condylectomy to provide extra space and better exposure of the tumour of the mandibular condyle[4], we did not need to make condylectomy for this case presented here.

Since review of literature does not support an increased risk of malignant transformation or recurrence of osteochondroma[4], preservation of condyle and the disc during surgery can be a better option. Even though orthognathic surgery was considered for the case, it was not performed; because after the tumour resection a perfect occlusion was established with reasonable face symmetry.

With regards to postoperative care, 1-3 weeks of intermaxillar fixation period was enough to establish a reasonable occlusion.

Table 1: List of the problems Treatment plan

• Neoplasia of the left condyle
• Excision of the mandibular condyle neoplasm with the protection of the condyle
• Lower face asymmetry
• Possible bilateral sagittal split osteotomies with intermaxillary fixation to establish a better occlusion
• Change of bite and pain during mastication
• Renewing the old dental prosthetic restorations
• Deviation of the chin to the right side

Conclusion

Osteoma of the mandibular condyle is extremely rare. Patients with this tumour present mandibular movement deviation and alterations in dental occlusion, with a slow and asymptomatic growth of the lesion. Surgical resection is the treatment choice for tempromandibular osteoma. The preauricular incision with temporal extension was our incision choice in order to get a better access to the joint.

In this case, we prefered to preserve the head of the condyle since a good occlusion and facial symmetry were established with tumour free condyle. Even though the recurrence of the

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tumour is rare, it is always better to follow up the patient for the recurrence risk.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

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