A conservative surgical approach of osteochondroma affecting the mandibular condyle.

Helen Rivera[1], *Ramiro Bastidas*[2] *y Ana María Acevedo*[1].

Central Histopathology Laboratory, Dental Research Institute, Central University of Venezuela, Faculty of Dentistry, Caracas, Venezuela.

Key words: osteochondroma, temporomandibular joint, condyle, case report.

Abstract. An osteochondroma of the condyle in a 49-year-old venezuelan female patients is reported. Clinical, radiological and histopathological features of the tumor are described. A wide local surgical excision permitted the patient to regain normal function.

Manejo quirúrgico conservador de osteocondroma del cóndilo: Reporte de caso.
Invest Clin 1988: 39(2): 117-124.

Palabras clave: osteocondroma, articulación temporomandibular, cóndilo.

Resumen. Se reporta el caso de una paciente venezolana, de sexo femenino, de 49 años de edad. Se describen las características clínicas, histopatológicas y de imagenología de este tipo de tumor. Además se describe el tipo de tratamiento quirúrgico, el cual fue conservador y mediante el cual se logró obtener, función normal en este paciente.

Recibido: 11-3-97. Aceptado: 21-3-98.

INTRODUCTION

Chondromas are benign tumors derived from mature cartilage. When they show signs of endochondral ossification, they are known as osteochondromas (OST) or osteocartilaginous exostosis (1, 2, 3). OST have been described as benign, slow-growing, cartilage-capped bony outgroths (4) that can appear in bone eminences and are the most

common benign neoplasms of long bones (5, 6, 7). They represent 45 percent of all benign bone tumors and 10-15 percent of all primary bone tumors. (1, 8, 9, 10, 11, 12, 13, 14). Most are solitary lesions but some are multiple, usually with autosomal dominant inheritance (3, 15). They are extremely rare in head and neck regions, especially those arising from mandibular condyle (14, 16, 17, 18, 19, 20, 21, 22). Their histology and differential diagnosis are always difficult. Their treatment is surgical (23). The etiology of OST is unclear. Some of them appear to be congenital lesions and other are related to trauma (5, 14, 16, 17, 24, 25). They are frequently found in patients under the age of 21 (11, 25) and may affect either sex, but there is a slight predilection for males. (15). The more striking signs and symptoms of condylar osteochondromas are facial asymmetry, limited mouth opening, swelling or a painless mass in the temporo mandibular joint (TMJ) region, crossbite in tire nonaffected side, occlusal problems, and restricted lateral movements (14, 15, 21, 22, 26, 27, 28, 29).

The purpose of this paper is to report an osteochondroma in an unfrequent location: the mandibular condyle, and its surgical approach.

CASE REPORT

A 49 year-old caucasian venezuelan female patient was first seen because of a year and a half history of restricted mandibular opening (22 mm) pain in the preauricular and auricular areas, restricted lateral movements toward the nonaffected side and tenderness to palpation of the masseter of one year of evolution. The patient had a previous history of trauma on the left side of the TMJ.

In order to relieve the symptoms due to musculature contracture and bruxism, the patient was initially treated with a centric relation appliance. Since the sintomatology persisted, imageneological exams were recommended. Radiographic examination, which included TMJ lateral transcranial, panoramic, computed tomography scan. (CTS) and nuclear magnetic resonance imaging (MRI), revealed a circumscribed radiopaque mass image below the head of the condyle (Figs. 1,2) suggestive of a cartilaginous tumor. The patient was referred to an oral maxillofacial surgeon who undertook the surgical procedure. Local anesthesia was used, and an extraoral approach with a preauricular incision was performed in order to reach the tumor mass. The tumor which was located in the condylar space, was surgically excised without condilectomy; the disc was resected, and material was sent to an oral maxillofacial pathologist for a definitive diagnosis. Histopathological examination of decalcified sections, revealed tissue composed of a large amount of mature cartilage and a band of vital bone (Fig. 3). The cartilage showed numerous chondrocytes of normal aspect inside their lacunae and marked distur-

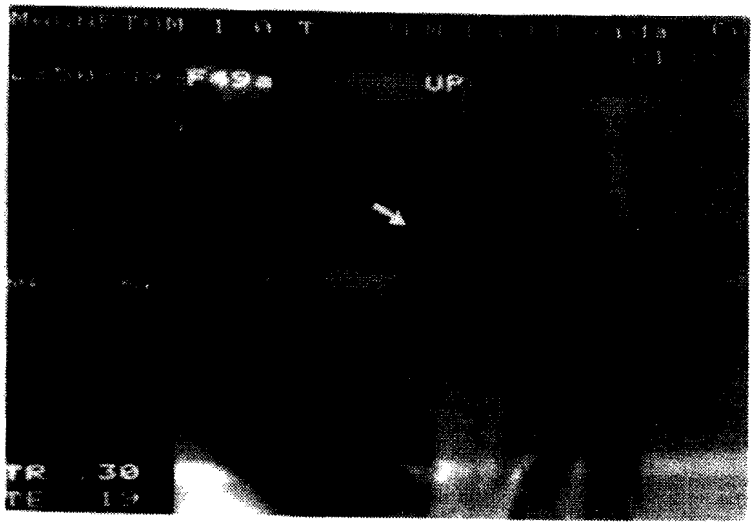

Fig. 1. CT in axial plane showing the lesion lateral to the condyle.

Fig. 2. MRI showing the mass anterior to the condyle in the sagital plane.

Fig. 3. Histopathological section of the osteochondroma. Original magnification X 40. Hematoxylin-eosin stain (H-E) evidencing a cartilagenous cap followed by areas of ossification.

bances of endochondral ossification. A histopathological diagnosis of osteochondroma was made. The postoperative course was uncomplicated, and periodic checkups showed improvement in the oral opening of the patient (31 mm).

DISCUSSION

Few studies of OST affiecting the TMJ region, either arising from the coronoid process or the madibular condyle, have been reported in the literature. In Venezuela, this is the first reported case of a osteochondroma on this unfrequent location, in which a conservative surgical removal of the mass without condilectomy was performed. Some authors (30, 31) have emphasized the importance of histopathological examination, since there are some reports based mainly on clinical or radiological findings (17). Many tumors affecting the TMJ (e.g., osteochondroma, chondromas, chondrosarcomas, giant cell tumors, fibrosarcomas, fibromyxomas, synovial chondromatosis, chondroblastomas, osteoma, osteoblastoma) may mimic pain and miofacial disfunction caused by the TMJ, and therefore should be ruled out (14, 15, 31, 32). In our case, a careful differential diagnosis had to be done in order to exclude several of her lesions, from TMJ disfunction to synovial chondromatosis, multiple hereditary osteochondromata or condylar hyperplasia (44). The definitive diagnosis of OST was made using clinical, radiological and histological criteria. Magnetic resonance imaging proved

to be a useful method in preoperative planning of cases in which excision of the lesion was necessary (33, 34). Computer Tomography Scan is less important in the evaluation of benign tumors than malignant bone tumors but is, however, useful in the differentiation between benign osteochondroma and peripheral chondrosarcoma by measurement of the peripheral cartilaginous cap. This criterion, on the other hand, does not appear to be reliable and useful at all times (35). In OST, cartilage caps smaller than 5 mm and isodense to muscle are missed or inadequately delineated in CT. The criteria for malignant transformation of osteochondromas are better visualized by MRI than CT or plain films (36).

The etiology of OST is uncertain. Some tumors arise as primary spontaneous tumors of bone or in previously irradiated bone; (24) however, there seems to be a marked relationship between traumatic episodes and the apperarance of the tumor. Our patient developed signs and symptoms a year and a half after a traumatic episode on the left TMJ. (14, 16, 17, 24, 37, 45). Most cases of OST occur by the age of 21, which contrasts with our case who was a 49 years old patient (38) however, OST ocurring in the TMJ seem to develop between the second and third decade of life (15). The majority of the reported cases deal with an intraoral or extraoral surgical approach with condilectomy (14, 15, 16, 17, 20). In the case of our patient, an extraoral surgical approach via preauricula was performed in order to excise tire tumor mass, but the condyle was preserved resulting in an improvement of the mouth opening (31mm), in accordance with a case reported by Strickland y col. (25) and lizuka y col. (45).

Chondrogenic tumors may become potentially malignant; (30, 39, 40, 41) however, there has never been a malignant transformation report after the removal of a TMJ osteochondroma (15). Secondary chondrosarcoma or osteosarcomas are rare tumors that can develop in up to 2 percent of patients with single osteochondromas; (25, 40, 42, 43) although, multiple hereditary osteochondromata have a higher incidence (25 percent) of malignant change into chondrosarcomas. Based on this fact, a close follow-up of the patient, including a complete radiological examination, must be kept in mind. Also, an optimal surgical resection of the lesion with complete excision of an intact perichondrium is necessary in order to prevent a possible recurrence of the tumor (15, 33, 42).

REFERENCES

1. CHIAROS P.G., FRANKEL S.L., SIDLOW C.J.: Unusual osteochondromas of the foot and ankle. J Foot Surg 1987; 26(5):407-411.
2. TOTSUKA Y., FUKUDA H., IIZUKA T., SHINDOH M., AMEMIYA A.: Osteochondroma of the coronoid process of the mandible. Report of case

showing histological evidence of neoplasia. J Craniomaxillofac Surg 1990;18(1):27-32.
3. ALBRECHT S, CRUTCHFIELD J.S., SEGALL G.K.: On spinal osteochondromas. J Neurosurg 1992; 77(2):247-252.
4. PASTERNACK W.A., VARA M.L.: Rapid ossification in a unusual osteochondroma. J Foot Surg 1988; 27(4):334-338.
5. BATES D.L., OSBORNE W.M.: Post-traumatic osteochondroma of the calcaneus. J Am Podiatr Med Assoc 1990; 80(11):606-607.
6. HE X.H.: Analysis of 1355 cases of tumors and tumors-like lesions in the bone. Chung Hua Chung Liu Tsa Chih 1990; 12(1):66-68.
7. VALDESPINO-GOMEZ V.M., CINTRA-McGLOVE E.A., FIGUEROA-BELTRAN M.A.: Bone tumors. Their prevalence.Gac Med Mex 1990; 126(4):325-334.
8. DAHLIN D.C.: Bone tumors. 2nd ed. Springfield: Charles C. Thomas, 1967:28.
9. HUVOS A.G.: Patologia Osea. Osteocondromas. Mexico: Ed. Panamericana, 1981:137.
10. SPANZIANTE R, IRACE C., GAMBARDELLA A., CAPPABIANCA P., DIVITIIS E.: Solitary osteochondroma of the pedicle of L4 causing root compression.Case report. J Neurosurg Sci 1988; 34(4):141-145.
11. PONGKRIPETCH M., SIRIKULCHAYANONTA V. Analysis of bone tumors in Ramathibodi Hospital, Thailand during 1977-1986: study of 652 cases. J Med Assoc Thai 1986; 72(11):621-628.
12. ROSAI J.: Ackerman's Surgical Pathology. 7th ed. St. Louis: CV Mosby, 1989:1484.
13. BARBOSA C.S., ARAUJO A.B., MIRANDA D.: Incidence of Primary benign and malignant neoplasms and bone pseudotumoral lesions. An epidemiologic analysis of 585 cases diagnosed at the Faculdade de Medicina of the Universidade de Sao Paulo. AMB Rev Assoc Med Bras 1991; 37(4):187-192.
14. HENRY CH., GRANITE E.L., RAFETTO L.K.: Osteochondroma of the mandibular condyle: report of a case and review of the literature. J Oral Maxillofac Surg 1992; 50(10): 1102-1108.
15. GAINES R.E. Jr, LEE M.B., CROCKER D.J.: Osteochondroma of the mandibular condyle: case report and review of the literature. J Oral Maxillofac Surg 1992; 50(8): 899-903.
16. RAMON Y., LERNER H., LEVENTON G.: Osteochondroma of the mandibular condyle. J Oral Surg 1964;17(1):16-21.
17. MELARKEY D., ROFFINELLA J., KAPLAN H.: Osteocartilaginous exostosis Osteochondroma of the mandibular condyle. J Oral Surg 1966; 24:271-275.
18. ELLER D., BLACKEMORE J., STEIN M., BYERS S.: Transoral resection of a condylar osteo-

chondroma: report of a case. J Oral Surg 1977; 35:409-413.
19. MARKS R., CARLTON D., CARR R.: Osteochondroma of the mandibular condyle. J Oral Surg 1984:58(1):30-32.
20. HONG M.: Excision of condyle osteochondroma by vertical ramisection with inmediate TMJ reconstruction. Chung Hua Kou Chiang Hsueh Tsa Chih 1989; 24(1):8-10.
21. HERBOSA E.G., ROTSKOFF K.S.: Condylar osteochondroma manifesting as Class III skeletal dysplasia: diagnosis and surgical approach. Am J Orthod Dentofacial Orthop 1991; 100(5):472-479.
22. GOYAL M., SIDHU S.S.: A massive osteochondroma of the mandibular condyle. Br J Oral Maxillofac Surg 1992; 30(1):66-68.
23. REYCHLER H. Cartilaginous tumors of the jaw. Rev Stomatol Chir Maxillofac 1988; 89(6):321-329.
24. GREYSON-FLEG R.T., REICHMISTER J.P., MC CARTHY E.F., FREEDMAN M.T.: Post traumatic osteochondroma. Can Assoc Radiol J 1987; 38(3):95-198.
25. STRICKLAND R., HIRSCH S., GOLDBERG J.: Osteochondroma of the mandibular condyle. J Cranioman Prac 1985; 3(2): 190.
26. KEEN R., CALLAHAN G.: Osteochondroma of the mandibular condyle: report of a case. J Oral Surg 1977; 35:140-143.
27. SIMON G., KENDRICH R., WHITLOCK R.: Osteochondroma of the mandibular condyle. J Oral Surg 1977; 43:18-24.
28. CASTILLO M., HUDGINS P.A., HOFFINAN J.C. Jr.: Lockjaw secondary to skull base osteochondroma: CT findings. J Compt Assist Tomogr 1989; 13(2):338-339.
29. SILVA F.S., APPLETON J.M., MEGA G.: Mouth opening limitation from hyperthophy of the coronoid apophysis. Rev Post Estomatol Cir Maxilofac 1990; 31(2):109-113.
30. BERTONI F., PRESENT D., BACCHINI P., PICCI P., PIAGNATTI G., GHERILINZONI F., CAMPANACCI M.: Dedifferentiated peripheral chondrosarcoma. A report of seven cases. Cancer 1989; 63(10):2054-2059.
31. HALL E.: Organic Abnormalities of the TMJ. ENT J 1982; 61:84-89.
32. KANEDA T., TORIC S., YAMASHITA T., JNOUE N., SHIMIZU K.: Giant osteochondroma of the mandibular condyle. J Oral Maxillo-facial Surg 1982; 40:818-821.
33. LEE J.K., YAO L., WIRTH C.R.: MR imagimg of solitary osteochondromas: report of 8 cases. Am J Roentgenol 1987; 149(3): 557-560.
34. PRASAD A., RENJEN P.N., PRASAD M.L., BHATTY G.B., MADAN V.S., BUXI T.B., AGARWAL S.P.: Solitary spinal osteochondroma causing neu-

ral syndromes. Paraplegia. 1992; 30(9):678-680.
35. TORRICELLI P., REGGIANI G., MARTINELLI C., BORIANI S., FOLCHI-VICI F.: Value and limitations of computarized tomography in the study of bening tumors of the bone. Radiol Med Torino 1987; 74(5):388-395.
36. REUTHER G., MUTSCHLER W.: Tire value of CT and MRT in the diagnosis of cartilage-forming tumors. ROFO Fonschr Geb Rontgenstr Neklearmed 1989; 151(6):647-652.
37. CONTI P., CONTI R., LO RE F., BONO P., GALLINA P., PELLICANO G.: Vertebral osteochondroma and trauma: a possible etiopathogenic correlation. Arch Putti Chir Organi Mov 1989;37(2):325-334.
38. SPUT H.J., DORFMAN H.D., FRECHNCR R.E., ACKERMAN L.: Tumors of bone and cartilage. Atlas of Tumor Pathology. 2nd Ed. Washington DC: Armed Forces Inst Pathol 1971:391-396.
39. KHMELEV O.N., PETROVICHEV N.N., KARATA D.I.: A case of malignant transformation of osteochondroma of the tibia. Vestn Roentgenol Radiol 1987; 1:85-87.
40. ROBSON A.K., KISSIN M.W., ELTRINGHAM W.K.: Chondrosarcoma arising in an osteochondroma: an unusual case of an abdominal mass. Eur J Surg Oncol 1990;16(1):60-62.
41. NOJIMA T., YAMASHIRO K., FUJITA M., ISU K., UBAYAMA Y., YAMAWAKI S.: A case of osteosarcoma arising in a solitary osteochondromas. Acta Orthop Scand 1991; 62(3):290-292.
42. DU Y.K., SHINH H.N., WANG J.M., SHIH CH.: Dedifferentiated chondrosarcoma arising from osteochondromatosis. A case report. Chang Keng I Hsueh 1991;14(2):130-135.
43. FADDA M., ZIRATTU G., ESPA E.: Peripheral chondrosarcoma: ultrastructural investigation by transmission and scanning electron microscopy. Ital J Orthop Traumatol 1991;17(3):381-385.
44. QUINU P.D., ATANTON D.C., FOOTE J.W.: Synovial Chondromatosis with cranial extension. Oral Surg 1992; 73:398-402.
45. IIZUKA T., SCHROTH G., LAENG H., LADRACH K.: Osteochondroma of the mandibular condyle: Report of a case. J Oral Maxillofac Surg 1996. 54:495-501.