Case Report

Endoscopic Resection of Clival Chordoma. A Case Report

Resección endoscópica de chordoma del clivus. Descripción de un caso

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SUMMARY

Introduction: Chordoma is a rare malignant tumor that arises from remnants cells of the primitive notochord, which are located at caudal and cephalic ends of the vertebral column. It represents 2 to 5% of all primary bone tumors. Description: We report the case of a patient with a clival chordoma, asymptomatic, diagnosed as an accidental finding in a paranasal sinus imaging study. Discussion: The imaging findings were suggestive of a potentially malignant lesion given the underlying bone lysis. Once the diagnosis is histological, biopsy of clival suspicious lesions should be promptly carried out. In this case report, the surgical approach and the postoperative follow-up are presented.

KEYWORDS

chordoma; clivus; endoscopic resection; malignant tumor

PALABRAS CLAVE

cordoma; clivus; recesión endoscópica; tumor maligno

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INTRODUCTION
Chordoma is a rare malignant tumor, accounting for about 4% of all malignant primary bone tumors [1]. It originates from remnant cells of primitive notochord, primarily involving the caudal and cephalic ends of the vertebral column [2]. The most frequent locations are the sacrococcygeal and clival regions, and presents as a soft tissue mass with slow growth and progressive invasion, leading to regional bone erosion [3]. It is usually diagnosed only when the tumor causes symptoms by compression or invasion of adjacent structures [3]. Local recurrence is not uncommon, and the recommended treatment is surgical resection followed by radiotherapy [4]. We report the case of a patient with a clival chordoma, diagnosed as an incidental finding in a paranasal sinuses imaging study. The surgical approach and the postoperative follow-up are presented.

DESCRIPTION
A male patient, 30 years old, without relevant past medical history, presented at the Otolaryngology department with symptoms of long-term nasal obstruction and frontal weight sensation. There was no history of rhinorrhea, epistaxis, nasal pruritus, headache or ocular changes. On nasal endoscopy, a deviated nasal septum causing nasal obstruction and enlarged inferior turbinates were apparent. As he complained of frontal weight sensation, rhinosinusitis was suspected, and so a Computed Tomography (CT) of paranasal sinuses was requested to investigate sinus pathology. CT scan showed a deviated nasal septum with a right bone spur, and a 10mm soft tissue mass in the right posterior wall of the sphenoid sinus with underlying bone erosion (Figure 1, A and B). To clarify the etiology of the lesion, a Magnetic Resonance Imaging (MRI) was requested, which confirmed a mass in the clivus, with no contrast enhancement, and without invasion of intracranial structures (Figure 1, C and D). The patient underwent surgical intervention for septal deviation and nasal obstruction septoplasty and inferior turbinoplasty and at the same surgical time, an endoscopic transsphenoidal biopsy of the clival lesion was performed. The histopathological result was compatible with chordoma. There was no evidence of regional or distant metastatic disease. After presentation and discussion of the case at a multidisciplinary team and reevaluation with MRI, the patient was proposed for surgical treatment endoscopic transnasal resection of the clival cordoma.

Surgical approach. After insertion of a 0º endoscope, the posterior third of the nasal septum and the sphenoid septum were resected for clivus exposure. Nasoseptal flap was not collected because of the possibility of flap inviability due to previous septoplasty. The sphenoid sinus was entered, and inflammatory mucosa and residual chordoma were removed. The bone erosion region was drilled until duramater exposure. A low volume liquor fistula occurred. Closure was carried out with a flap of contralateral medium turbinate, abdominal fat and Duraform®. (Figure 2, A to F).

Postoperative follow-up. There were no recurrences in the immediate postoperative period. The patient was discharged after 3 days of hospitalization, and was later evaluated in routine consultations, with only minor nasal crusts. The histopathology of the residual tumor removed was compatible with chordoma. The patient underwent postoperative radiotherapy (RT), having a total of 60 Gy in 30 fractions for 3 months. MRI performed 6 months after RT, 1 year after surgery, showed signs of surgical intervention with sphenoid sinus filled with the flaps used intraoperatively, with no evidence of residual lesion (Figure 3).

DISCUSSION
Chordoma is a malignant neoplasm that should be included in the differential diagnosis of clival lesions, especially when there is regional bone erosion [5]. It should be noted that about 40% of chordomas are in the clival and para-clival regions [6]. These tumors have a slow growth pattern, with propensity for local invasion. Generally, symptoms like headaches or cranial nerve palsies occur when the tumor reaches considerable dimensions, and so the diagnosis is made often in advanced stages [3]. Distant metastasis can occur in about 30% of chordomas, more frequently in non-clival chordomas. Most frequent sites include lung, bone, liver and lymph nodes [3].

Differential diagnoses include ecchordosis physaliphora and benign notochordal cell tumor (BNCT), both benign lesions derived from remnant cells of the primitive notochord and primarily involving the clival region [6,7]. BNCT may also undergo malignant transformation to classic chordoma. On MRI, these two benign tumors most often do not show contrast...
Enhancement, which usually occurs in chordomas [6]. However, contrast enhancement is not pathognomonic of chordoma, and the differential diagnosis with these two benign entities can’t be definitive only with image studies. As so, suspected clival lesions must be biopsied for a definitive diagnosis [6, 7].

Figure 1. A and B: CT scan of the paranasal sinuses (A axial, B coronal) - Nasal septum deviation; soft tissue mass with rounded contours in the posterolateral wall of the right sphenoid sinus, with areas of regional bone erosion. C and D: MRI of the paranasal sinuses, axial sections (C-T1 with contrast; D-T2) - Soft tissue mass in the posterior wall of the sphenoid sinus/clivus, emerging from the pre-pontic cistern; It does not show markedly contrast enhancement; There are no images suggesting meningoencephalic or vascular malformative lesions.

Figure 2. Surgical procedure - After insertion of a 0º endoscope, the posterior third of the nasal septum was resected (A), for sphenoid exposure (B). The sphenoid sinus was entered, and inflammatory mucosa and residual chordoma in the clivus region was removed (C). The bone erosion region was drilled (D) until duramater exposure (E). Closure was carried out with a flap of contra-lateral medium turbinate, abdominal fat and Duraform® (F).

The recommended treatment for clival chordomas is complete surgical resection and postoperative RT [4, 9]. In the present case, tumor location and dimensions allowed an exclusively endoscopic approach. Complete resection of clivus lesions may be difficult since their anatomical location is near noble structures of the vascular and central nervous system [4]. With respect to the surgical technique used in this anatomic region, in recent years there has been an increasing use of transnasal endoscopic approaches instead of external approaches, with similar results in...
tumor removal but lower morbidity for the patient [9]. In fact, some authors even point out that in this anatomical location, the use of the endoscope improves tumor visualization allowing a more detailed recession [4]. Contraindications for an exclusively endoscopic approach include tumor extension to the middle fossa or cavernous sinus [4,10].

Postoperative RT is recommended, which according to the literature is effective in the control of minor residual lesions after surgery [4]. In the present case, the conventional RT modality was used, due to the unavailability of other methods in our country's institutions. There has been debate on the most effective RT modality (conventional, proton beam, intensity-modulated), but recent studies didn’t not show significant differences in disease control with the different modalities [4,9]. Despite this, many authors advocate the use of proton beam radiotherapy for the ability to deliver a higher dose of radiation without increase damage in surrounding structures [1,4].

In the present case, the clivus lesion was an accidental finding, and although with no contrast enhancement on MRI (which usually occurs in the chordoma) the underlying bone erosion has alerted us to the possibility of a malignant lesion. In the suspicion of a malignant lesion, it is preponderant to perform a surgical biopsy for confirmation, since the definitive diagnosis of chordoma is histological [6]. These tumors usually present in advanced stages, causing symptoms by invasion of neighboring structures by tumor growth [3]. In this case, the accidental finding of the lesion at an early stage allowed a timely treatment with good results one year after its conclusion.

CONCLUSIONS
Chordoma is one of the most frequent malignant tumors in the clivus region [3]. Differential diagnoses include ecchordosis physaliphora and BNCT, both benign lesions, that not always can be differentiated from chordoma in image studies [6]. As so, biopsy of suspected lesions in the clival region should be promptly performed to begin the adequate treatment. In the present case, the finding of the lesion at an early stage, without symptoms, allowed a timely treatment with surgery and post-operative RT, with good response one year after the surgical treatment. A long follow-up period is necessary because these tumors tend to recur [4].

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REFERENCES


