

Cranio-Spinal Junction Tumours: Role of Transoral Approach Followed by Stereotactic Radiotherapy

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Abstract

Cranio-spinal junction tumors are usually approached through posterior, postero-lateral and far lateral approaches but, in case of prevalently anterior extension, with posterior and postero-lateral displacement of brainstem, anterior transoral approach should be considered to achieve a satisfactory tumor removal. Anterior transoral approach allows a direct exposition of the tumor without necessity of nervous/vascular structures manipulation. Postoperative instability is not frequent, and usually posterior stabilization is rarely required. Although transoral approach allows removing only the median part of the tumor's and in few cases radical removal can be performed, it presents an extremely low rate of new neurological deficit and a rapid resumption of vital activities. Postoperative tumor remnant can be treated, in our experience, with hypofractionated stereotactic radiotherapy with very satisfactory results concerning tumor regrow and recurrence. We believe that in the modern era its capital to deal with this extremely challenging tumor's with a different goal: to achieve the maximal clinical result, not the maximal surgical resection at all costs.

Keywords: Cranio-spinal tumors; Transoral approach; Conservative surgery; Stereotactic radiotherapy

Editorial

Most frequent tumors of cranio-spinal junction are represented by meningiomas and chordomas. Usually, the classical approaches employed are the posterior, postero-lateral and far lateral ones [1-5] but, in case of prevalently anterior extension, with posterior and postero-lateral displacement of brain stem, vertebro-basilar complex and cranial nerves, these approaches don't allow a satisfactory tumor exposition and removal and are burdened by relevant compliances. For these tumors (Figure 1), in our opinion and experience, anterior transoral approach should be considered to achieve a satisfactory tumor removal. Only few authors report the utility of this approach [6].

Anterior transoral approach, removing anterior tuberculum of atlas, dens of C2 and transverse ligament of atlas (Figure 2), presents several advantages: a direct exposition of the tumor is achieved in case of chordomas, while a direct access to the dura mater is achieved in case of meningiomas which can be exposed opening the dura mater itself. No necessity of nervous/vascular structures manipulation is needed to remove the tumors. Chordomas were removed in our experience by aspiration with standard aspirator, while for meningiomas ultrasonic aspirator was necessary to remove the typical hard-fibrous tissue; microsurgery with the aid of angulate endoscope was performed in all our patients.

Postoperative instability is not frequent, and usually posterior stabilization is rarely required. In our yet unpublished experience with transoral approach for cranio-spinal tumors (14 cases), no postoperative instability was observed in any patients but one, based on postoperative dynamic cervical x-ray and symptoms referred by the patients, as nuchal pain; in the patient with instability, posterior stabilization was performed (Figure 2).

Although transoral approach allows removing only the median part of the tumors and in few cases radical removal can be performed, it presents an extremely low rate of new neurological deficit and a rapid resumption of vital activities, obviously in relation with preoperative clinical status. It should be underlined that for these particular tumors, located forward to brainstem, lateral and far lateral approaches present very high risks of neuro-vascular injuries; moreover, radical removal

for chordomas is usually an illusion, because these tumors present a very high degree of bone infiltration which limit/avoid in most cases the possibility of radical removal with any approach.

Postoperative tumor remnant can be treated, in our experience, with hypo fractionated stereotactic radiotherapy with very satisfactory results concerning tumor regrow and recurrence, delivering a total dose of 40 Gy through 10 fractions twice a week (Figure 3).

We believe that in the modern era it's capital to deal with these extremely challenging tumors with a different goal: to achieve the maximal clinical result, not the maximal surgical resection at all costs.

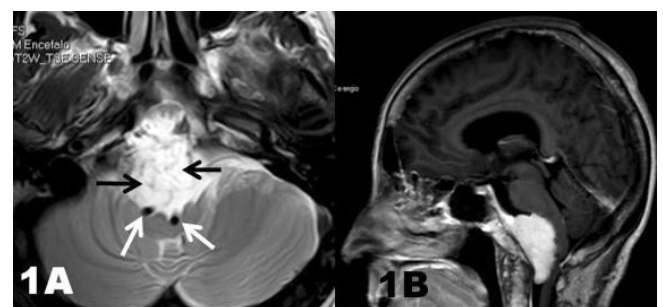


Figure 1: (A) Axial T2 MR Image showing a clival chordoma with posterior displacement of brainstem and vertebral arteries. Black arrows: Chordomas. White arrows: Vertebral arteries. (B) sagittal T1 post-contrast MR image showing anterior position of a cranio-spinal meningioma.

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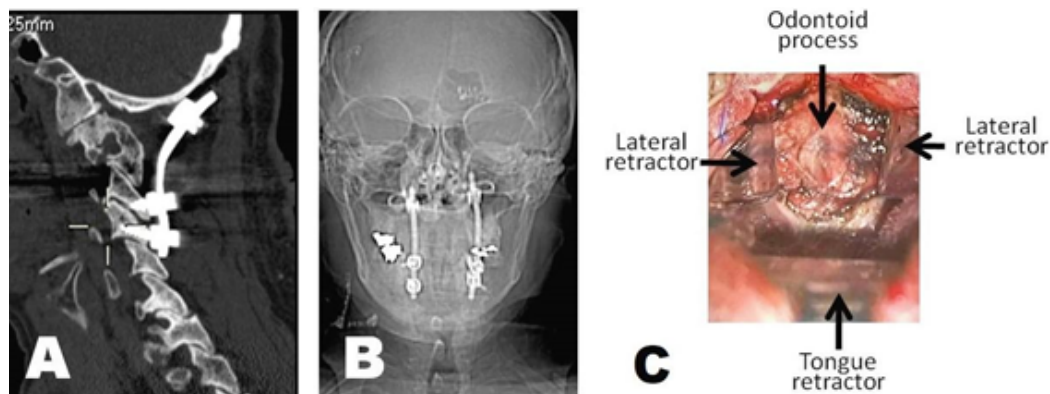


Figure 2: (A) Sagittal CT image showing occipito-cervical stabilization after transoral approach. (B) Anterior X-ray showing the same occipito-cervical stabilization. (C) View of transoral approach at operative microscope.

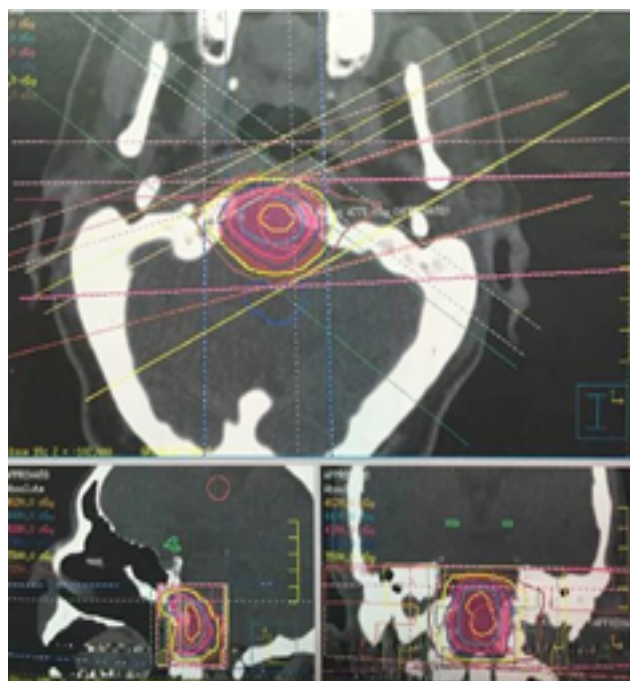


Figure 3: Hypofractionated stereotactic radiotherapeutic plan showing the isodose of the postoperative radiotherapy delivered to patients affected by chordoma.

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