

# Transient Bobbing Following Fourth Ventricle Decompression in an Epidermoid Tumor. Case Report and Review

*Bobbing Transitório Após Descompressão do Quarto Ventrículo em um Tumor Epidermoide.*

## Relato de Caso

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### ABSTRACT

The ocular bobbing (OB) refers to a distinct pattern of spontaneous vertical eye movements that occurs in various diseases of the posterior fossa pathologies. We describe a case of 42-years-old female submitted to epidermoid tumor removal through a suboccipital approach, presenting an OB during the postoperative period. The clinical aspects of the ocular bobbing are reviewed and discussed. There are other presentations or etiologies for OB, therefore differential diagnosis should always be carefully considered.

**Key words:** Ocular bobbing; Epidermoid tumor; Posterior fossa; Eye movements.

### RESUMO

O bobbing ocular se refere a um padrão distinto de movimentação ocular vertical espontânea que ocorre em várias doenças ou situações, sendo uma delas em pacientes em pós-operatório de neurocirurgia. Nesse relato, descrevemos o caso de uma mulher de 42 anos que foi submetida a uma dissecação tumoral com abordagem suboccipital mediana, com ressecção grosseira completa. No pós-operatório imediato apresentou bobbing ocular. Os aspectos clínicos de bobbing ocular foram revisados e discutidos. Há outras formas ou etiologias para o bobbing ocular; dessa forma, o diagnóstico diferencial deve sempre ser cuidadosamente considerado.

**Palavras-chave:** Bobbing ocular; Tumor epidermoide; Fossa posterior; Movimentos oculares.

## INTRODUCTION

The term ocular bobbing refers to a distinct pattern of spontaneous vertical eye movements that occurs in various diseases. There are four established forms that correspond to the differences between the two main clinical features: vertical initial excursion and phasic ocular velocity<sup>1</sup>. The main vertical excursions seen are up or down, since the initial phasic velocity can be fast or slow<sup>1,2</sup>. The bobbing episodes share basic features, but present important clinical and etiological differences, and a different prognosis<sup>1</sup>.

## CASE REPORT

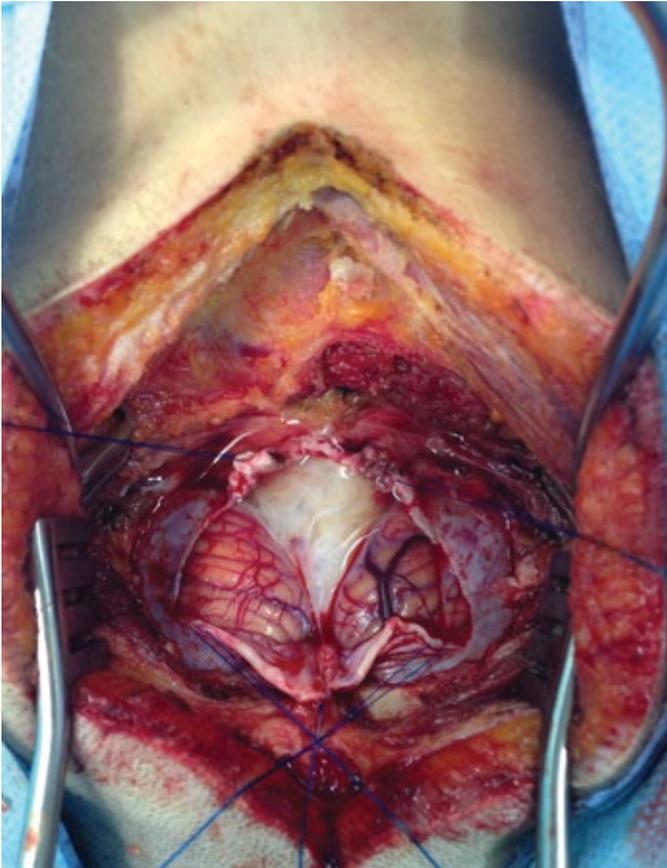
Female, white, 42 year-old, admitted to the emergency department with symptoms of headache, mental confusion, and paresthesia in her right hemiface and hand, dizziness and right visual field abnormalities. Magnetic resonance imaging (MRI) showed a lesion in the craniocervical junction, occupying the cerebellomedullary cistern, suggesting epidermoid tumor. The patient underwent surgery for tumor removal through suboccipital approach, with total gross resection of the tumor, including aspects related to the floor of the fourth ventricle (Figures 1 and 2). In the immediate postoperative period, she

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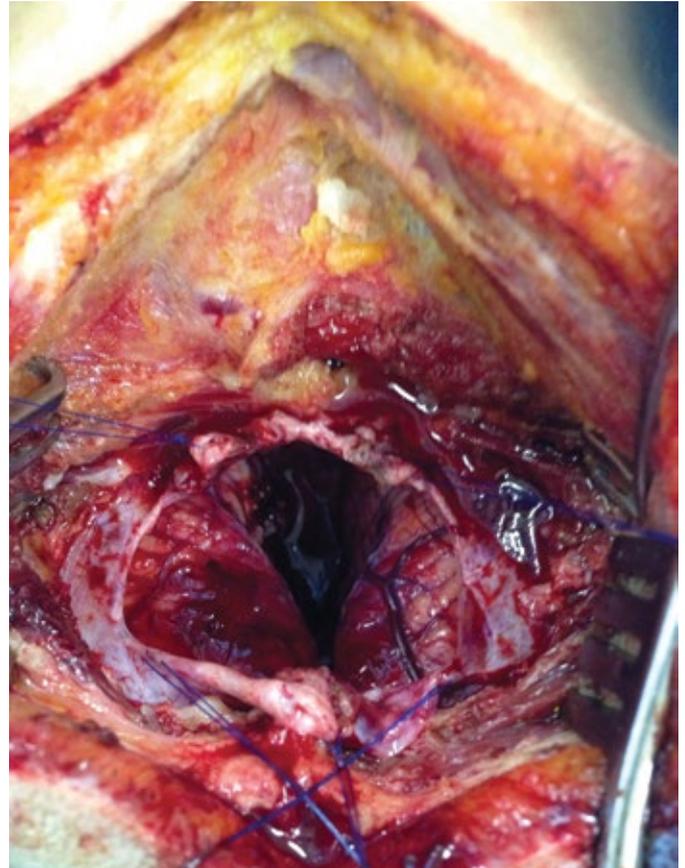
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presented asymmetric ocular bobbing, more intense on the left eye, with diplopia. Patient evolved with full recovery of motility in 30 days, without other abnormalities on neurological examination.



**Figure 1.** Suboccipital approach. Epidermoid tumor in the cerebellomedullary cistern is observed.



**Figure 2.** Suboccipital approach. Total removal of the tumor.

## DISCUSSION

The ocular bobbing represents a class of eye movement disorders that are generally vertical. The bobbing movement is classically characterized by alternating displacement associated with the rapid downward movement of the eye followed by tonic phase and subsequent slow return to its original position. It is commonly associated with intrinsic pontine pathology, especially bleeding, tumors or infarction<sup>1-5</sup>. In the differential diagnosis should be included myoclonus, nystagmus and opsoclonus, which differ from bobbing for not having several characteristics, including a typical frequency, speed in two phases, interval with increased tone and the absence of associated movements<sup>1</sup>.

There are four types of bobbing movements: typical, atypical,

reverse and dipping. The typical bobbing motion is characterized by the movement of fast down vertical excursion, associated with lesions on the pontine locus (hemorrhage, tumor, infarction), extra-axial masses, encephalitis, metabolic encephalopathy. Typical bobbing presents a variable prognosis. In this reported case, the patient presented a typical bobbing with spontaneous recovery within 4 weeks. The atypical bobbing presents fast vertical excursion associated with cerebellar hematoma and metabolic encephalopathy. There are convergence movement and phasic pupillary constriction as important clinical aspects. The reverse ocular bobbing tour presents initial vertical up and fast or low and slow; associated to anoxic encephalopathy, metabolic encephalopathy, and following status epilepticus. Clinical feature that distinguishes from the others is that eye movements reflexes are normal. The prognosis varies widely.

The dipping ocular reverse has its initial vertical excursion up and slow. Associated with metabolic encephalopathy and viral encephalitis. A distinctive clinical feature is intermittent eye movement absence<sup>1, 2, 8, 10</sup>.

The ocular bobbing, therefore, may be due to extra-axial mass in the posterior fossa, in the brainstem, diffuse encephalitis, viruses, toxic and metabolic encephalopathy<sup>6, 7</sup>. The presence of pupillary reactivity and normal ventilatory capacity, in patients greatly affected, indicate that the midbrain and other medullary center were not affected<sup>1</sup>. The different types of bobbing present variable prognosis. There are evidences in the literature that patients can recover, as in the present case, but severe functional deficits may remain<sup>1</sup>. The movements of the ocular bobbing type are probably caused by an irritation of the brainstem, including the rostral interstitial nucleus of the medial longitudinal fasciculus, the inferior rectus subnucleus, the trochlear nucleus, the reticular formation and the oculomotor nucleus. The preservation of pial layer in the fourth ventricle and brainstem is crucial for the possibility of post-operative improvement in cases with the resection of tumors involving fourth structure as seen in the present case.

The literature supports the clinical findings of this case, including the probable pathophysiology of ocular bobbing. Total regression of abnormal movements in a period of thirty days was observed, but the time to full recovering of the eye movement abnormalities are variable in the current literature.

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