

Morphometric Classification and Surgical Significance of the Occipital Condyle for Lesions of the Lower Clivus

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Introduction

The purpose of this study is to provide a scientific basis for determining whether or not to partially remove the occipital condyle (OC) in the management of lesions located at the lower clivus and ventral foramen magnum (FM) by a far lateral suboccipital approach. A classification of the occipital condyle (OC) was established based upon the morphometric measurements and analysis of the OC and FM.

Methods

Anatomical structures were measured and evaluated in 100 dry adult skulls. Measurements were also obtained from three dimensional computed tomography (3D-CT) in twenty individual subjects. The viewing angle to the lower clivus pre- and post reduction of the posterior third of the condyle were statistically compared in each group. The OC index (OC index) was adopted to classify the OC morphology.

Results

Two hundred occipital condyles in 100 skulls were classified into three morphologic types based upon their size: Type I(small condyle, 8.0%), Type II (middle condyle, 74%) and Type III (large condyle, 18%). There was no statistical difference between the pre- and post-drilling viewing angle in type I (P>0.05), but statistical difference was demonstrated in type II (P<0.05) and was particularly significant in the type III group (P<0.01).

Conclusions

Integrated with the above anatomical classification, we suppose in case of type I condyle, satisfactory exposure should be obtained without reducing the occipital condyle because of its small influence on exposure. For cases of type III condyle, optimal exposure might be given only when condylar reduction is performed. For cases of type II condyle, drilling of the condyle will be determined by the volume of the lesion. In our view, the far lateral transcondylar approach should be utilized selectively in the management of intra and epidural lesions located at the clivus and ventral foramen magnum. The morphological

variations of anatomical structure of the occipital condyle should be considered so that an individual approach can be adopted.

Learning Objectives

- 1.Establish a novel morphometric classification on occipital condyle (OC).
- 2. Elucidate the clinical significance of OC classification in surgical management of lower clivus lesions

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