



DOI: 10.5137/1019-5149.JTN.19151-16.0

Received: 02.10.2016 / Accepted: 02.10.2016

Published Online: 26.10.2016

*Letter to Editor*

# Occipital Condyle-C1 Complex Screw for Fixation of Basilar Invagination Patients with Atlas Assimilation

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To the Editor;

We read with interest the recent article by Tong et al. (1). In this article, the authors reported on the C1-occipital condyle complex (CC complex) screw fixation technique in basilar invagination patients with atlas assimilation. When describing their technique and discussing the main difference between the CC complex screw and the condylar screw procedure, they stated the location of the horizontal segment (V3) of the vertebral artery (VA) between the lower edge of the foramen magnum and C2, and additionally showed this in their Figure 1A (1).

Wang et al. (2) classified variations of VA in the presence of an occipitalized atlas into four types on 36 patients and 72 VAs. Type I, wherein the VA enters the spinal canal below the C1 posterior arch, and the course of the VA is below the occipitalized C1 lateral mass (8.3% of 72 vertebral arteries); Type II, wherein the VA enters the spinal canal below the C1 posterior arch, and the course of the VA is on the posterior surface of the occipitalized C1 lateral mass, or makes a curve on it (25%); Type III, wherein the VA ascends externally laterally after leaving the axis transverse foramen, enters an osseous

foramen created between the atlas and occipital bone, and then into the cranium (61.1%, the most common variety); and Type IV, in which the VA is absent (5.6%).

CC complex screw fixation can be dangerous in cases with a persistent first intersegmental artery where the VA courses abnormally below the C1 posterior arch (type I or II of Wang's classification) (2), and if we look for this variety bilaterally, it is not seen in more than 14% in Wang's series, which is very different from the published article by Tong et al. (1).

Based on this knowledge, a detailed preoperative investigation of the VA course should be undertaken before the CC complex screw fixation technique.

## ■ REFERENCES

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