

## Letter to the Editor

# Surgery of Complex Brain Arteriovenous Malformations

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Since 2009, our team of the Hospital Clínico San Carlos, Madrid, Spain, has been developing complex brain Arteriovenous Malformations (AVMs) surgery (Spetzler-Martin grades III, IV and V). The result of this work, in its initial phase, has been collected in the study published in the journal "Acta Neurologica Scandinavica" [1]. It describes 13 consecutive patients with complex brain AVMs that were treated by embolization and subsequent surgery (all patients were operated by the same senior neurosurgeon, Rodríguez-Boto G), between January 2009 and June 2010. As it can be seen in Table 3 of this article, there is no similar results in the world scientific literature to the extent that our series contains the best data of morbidity and mortality in treatment of brain AVMs that doubled and tripled in volume to those of the group of Natarajan et al. and Weber et al., respectively. I.e., our multidisciplinary group has succeeded in curing the brain AVMs of greater volume and therefore, most difficult therapeutic, with the best figures of morbidity and mortality known so far. It should be recalled that to date, such lesions had no definitive treatment and possible cure.

In fact, we believe that the limiting factor for the definitive cure of all these malformations, including classically described as untreatable or inoperable (Spetzler-Martin grade VI), lies in the so-

called "normal perfusion pressure breakthrough phenomenon". Two of our 13 patients suffered this phenomenon and were conveniently described in a previous work, published in the journal "British Journal of Neurosurgery" [2].

In order to study the normal perfusion pressure breakthrough phenomenon, we make a historical review of the experimental models that have been referred to it. This work was published in the journal "Neurosurgical Review" with the following reference [3].

At the present time, we have developed our own rat model of chronic cerebral hypoperfusion-reperfusion mimicking normal perfusion pressure breakthrough phenomenon that will be presented at the 15<sup>th</sup> Interim Meeting of the World Federation of Neurosurgical Societies, September 2015 in Rome and at the 2015 Congress of Neurological Surgeons Annual Meeting, September in New Orleans. In this model, we are studying the neuroprotective effect of indomethacin for preventing the normal perfusion pressure breakthrough phenomenon, with the ultimate goal of ending the limiting factor and thus cure definitely any brain arteriovenous malformation, regardless of its size.

**References**

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