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Journal of Neuroscience and Neurological Surgery
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Neuronavigation of the Galen vein Aneurysm

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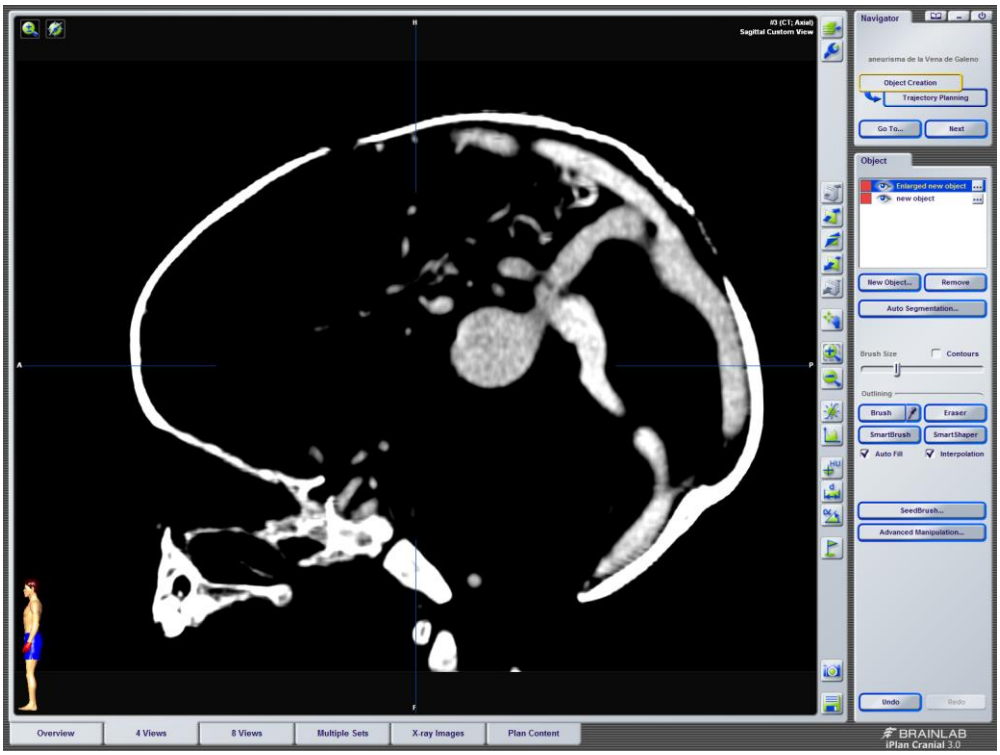
Received date: November 06, 2019; Accepted date: December 21, 2019; Published date: December 26, 2019
Citation: Valencia-Calderón C., Patricia B Fernández. (2019) Neuronavigation of the Galen vein Aneurysm. J. Neuroscience and Neurological Surgery. 5(3); DOI:10.31579/2578-8868/100

The Vein of Galen aneurysmal malformation (VGAM) is a dilatation of the vein of Galen with multiply communications between of the vein of Galen and venous sinus and the cerebral arteries, occurring between 6 and 11 weeks of gestation. It represents a rear vascular anomaly that accounts for 1% of all intracranial malformations, mainly correlated with the persistence of the embryonic median prosencephalic vein of Markowski. Given its high neonatal mortality rate, its diagnosis should be made preferably antenatal, and in more complex cases, complete its postnatal study with the greater anatomical accuracy of the aneurysm as well as its afferent and efferent vessels for the pre-surgical evaluation of the lesion.

Few cases, using neuronavigation with angio-CT, have been reported in the literature. We present a case of a three-month-old boy with an aneurysm of the vein of Galen with ultrasonographic antenatal diagnosis during the third trimester, with angio-CT navigation at two months of age. In this case, we demonstrate the main findings of 3D power vascular reconstruction in this anomaly and the utility of the navigation in the surgical planification of this situation.

The figure 1 (**a** and **b**) showed a midline cystic vascular mass, with tridimensional reconstruction the architecture of the vascular malformation, and its spatial relationships with the other structures of the brain.



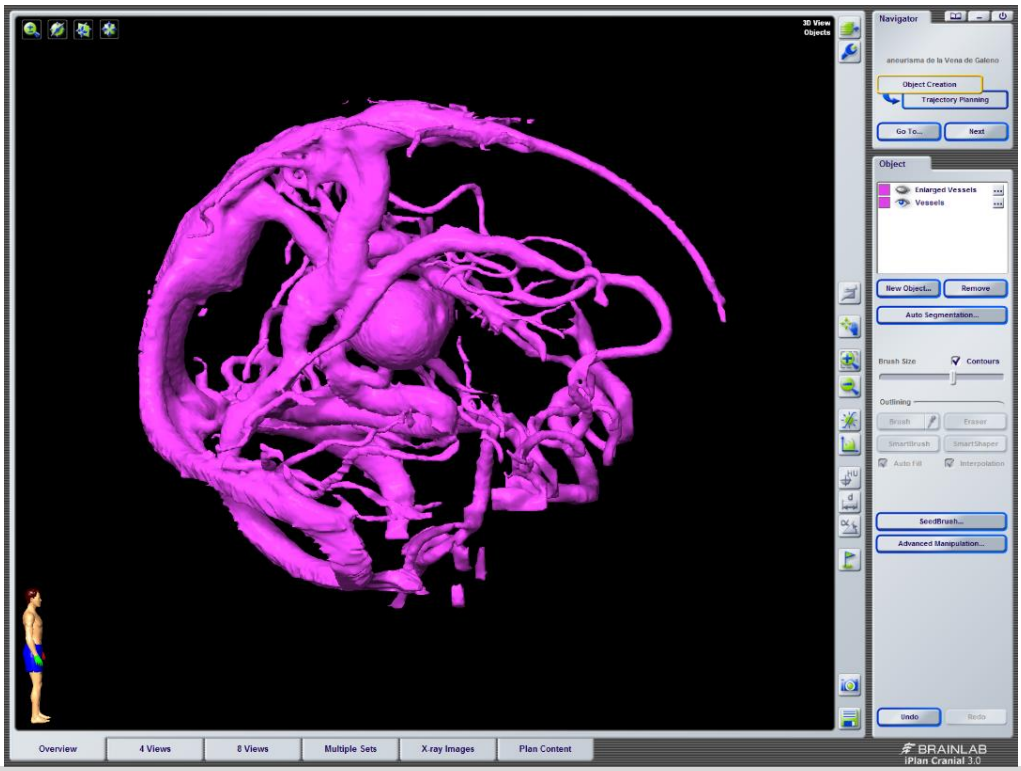
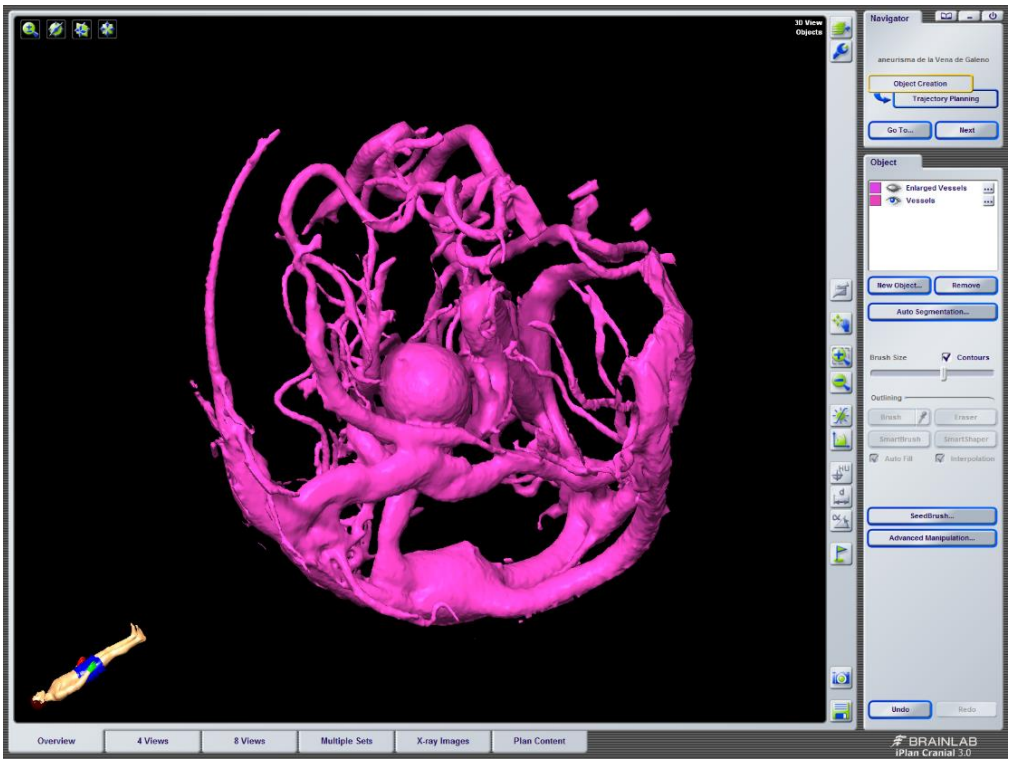


Figure 1: Aneurysm of the vein of Galen (A) image in gray scale in sagittal plane of newborn head, showing the aneurysm of the vein of Galen with dilation of the superior sagittal sinus; (B) image in 3D power angioCT navigation showing the architecture of the vascular malformation.

The figure 2 (a and b), obtained in a navigation workstation showed the angioCT of all complex malformation conformed by an important dilatation of the vein of Galen, a double and dilated occipital sinus, and dilated and ascended torcula among others venous malformations.



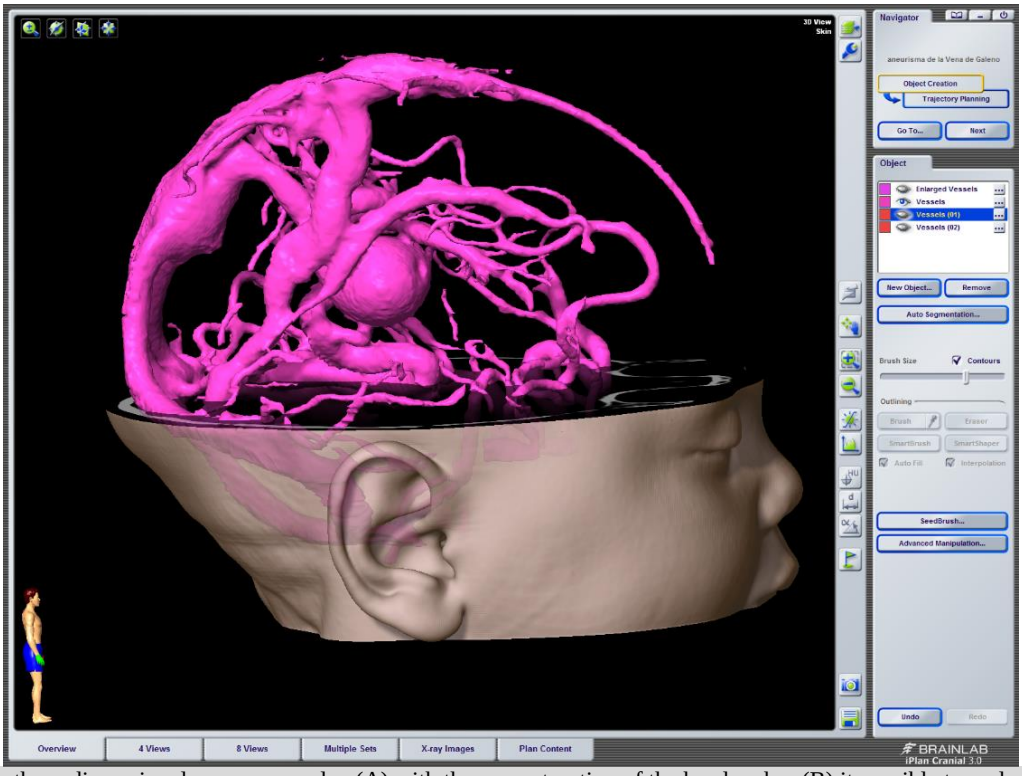


Figure 2: The fusion of the three-dimensional venous complex (A) with the reconstruction of the head makes (B) it possible to understand the magnitude of the malformation that ended up being incompatible with life.

Pre-surgical planning considered embolization of the lesion followed by surgical resection and / or vascular exclusion of the lesion. However, the male newborn survived for several days and died before the surgery due to heart failure.

Early detection is crucial in order to proceed to effective therapeutic management.

The 3D angio-CT neuronavigation can be used as advent image technique for a better understanding for the presurgical planification of aneurysm of the vein of Galen.

The management of VGAMs can be divided into medical, endovascular, and surgical modalities and it depends on the patient's age at diagnosis and on the clinical picture. The goal of treatment in VGAM will not only be to preserve life, but to produce a normally developing child

References

1. Berenstein A, Paramasivam S, Sorscher M, Molofsky W, Meila D, Ghatan S. (2019) Vein of Galen Aneurysmal Malformation: Advances in Management and Endovascular treatment. Neurosurgery. 1; 84(2):469-478.
2. Paramasivam S, Niimi Y, Meila D, Berenstein A. (2014) Dural arteriovenous shunt development in patients with vein of galen malformation. Interv Neuroradiol. 20(6):781-790.
3. Paramasivam S, Fifi JT, Ortiz RA, Niimi Y, Berenstein A. (2012) rare basal vein fistula with dilated vein of Galen. J Neurosurg Pediatr. 9(3):331-334.
4. Berenstein A, Fifi JT, Niimi Y, Presti S, Ortiz R. et al. 2012 Vein of Galen malformations in neonates: new management paradigms for improving outcomes. Neurosurgery. 70(5):1207-1213
5. Karadeniz L, Coban A, Sencer S, Has R, Ince Z, Can G. (2011) J Chin Med Assoc 74(3):134 – 137.
6. McSweeney N, Brew S, Bhate S, Cox T, Roebuck DJ, Ganesan V. (2010) Arch Dis Child. 95(11):903-909.
7. Alvarez H, Garcia Monaco R, Rodesch G, Sachet M, Krings T, Lasjaunias P. (2007) Neuroimaging Clin N Am. 17(4): 189 – 206