ENDOVASCULAR TREATMENT WITH COIL PENUMBRA OF A LARGE ANEURYSM OF THE RIGHT OPHTHALMIC SEGMENT

Tratamiento endovascular con coil Penumbra de un aneurisma grande del segmento oftálmico derecho

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ABSTRAC

Introduction: Coiling is the most common endovascular technique used for the treatment of aneurysms. Different types are available and Penumbra coils are a new option in the endovascular armamentarium.
Case report: We report the case of 63year-old female with a ruptured type IA paraclinoid aneurysm according to Barami classification, treated with 3 Penumbra coils successfully.
Conclusion: Penumbra coils seems to be an adequate option in cases of large and ruptured aneurysms of anterior circulation.

Keywords: *Aneurysm Ruptured, Endovascular Procedures, Female (source: MeSH NLM)*

RESUMEN

Introducción: El uso de coils es la técnica endovascular más común usada en el tratamiento de aneurismas. Diferentes tipos están disponibles y los coils Penumbra son una nueva opción en el arsenal endovascular.
Caso Clínico: Reportamos el caso de una mujer de 63 años con un aneurisma paraclinoidea roto tipo IA según Barami, tratado exitosamente con 3 coils Penumbra.
Conclusión: Los coils Penumbra parecen ser una opción adecuada en casos de aneurismas grandes y rotos de la circulación anterior.

Palabras clave: *Aneurisma Roto, Procedimientos Endovasculares, Femenino (fuente: DeCS Bireme)*

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The complex anatomy of the paraclinoid internal carotid artery (ICA) makes surgical treatment of aneurysms that arise from this segment difficult. Endovascular management has become the therapeutic measure of first choice.[1]

Since the introduction of Coils in clinical neuroendovascular practice in 1995, endovascular embolization with coils has emerged as the dominant treatment modality for ruptured and unruptured intracranial aneurysms worldwide [2]

Penumbra coils are coils thicker than conventional coils, therefore, they provide a potential effect of being more efficient for packaging. Being a more efficient embolization brings with it less time to catheter inside the vessel and less exposure to radiation, both the patient and the medical staff.[3,4]

For all these reasons, the successful case of a patient with a large, ruptured aneurysm of the ophthalmic segment of the right internal carotid artery, who was treated with Penumbra coils, is shown to be completely occluded.

CLINICAL CASE

History and examination: A 63-year-old female patient, with no relevant history, presented severe sudden headache, associated with decreased visual acuity in the right eye. She is taken to a local hospital where they request a cerebral tomography (TEM) and is found to have subarachnoid hemorrhage (HSA) Fisher II (Figure 1). It is referred to our hospital where Angio CT is requested and image compatible with internal carotid artery aneurysm (CCA) right segment C6 broken (Figure 2).

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Fig 1. Cerebral tomography showing SAH Fisher II

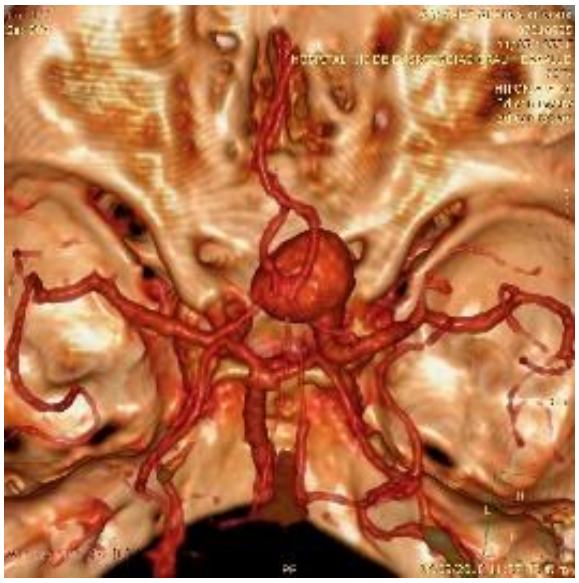

Fig 2. Brain AngioCT showing aneurysm on C6 segment ICA

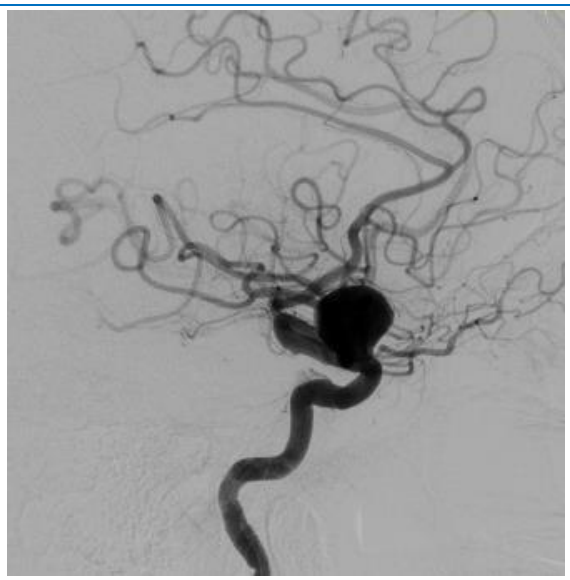

Fig 3. Angiography of the Right Internal Carotid Artery in lateral view showing Barami IA aneurysm

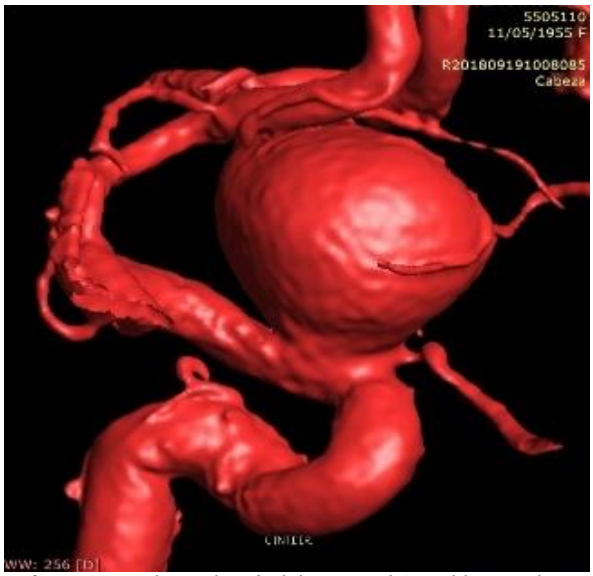

Fig 4. 3D angiography of Right Internal Carotid Artery in lateral view showing Barami IA aneurysm

Treatment: It is decided to perform cerebral Panangiography and embolization, where it is possible to demonstrate saccular aneurysm in the ophthalmic segment of the right internal carotid artery of 18.3x13mm, with neck of 6.05mm, broken, Barami Type IA (Figure 3 and 4).

We navigate with PX Slim 2.6 microcatheter and Traxcess 14 micro guide to the dome of the aneurysm and proceed to package with Penumbra coils the first 22mm x 60cm, then 20mm x 60cm and finally 18mm x 57cm (Figure 5 and 6)

An adequate packing density is achieved and almost no flow passage towards its lumen. In the control angiography, adequate patency of the adjacent arteries is shown, as well as a large flow through the anterior communicating artery from the contralateral side. The rest of the study did not show other alterations (Figure 7).

Evolution: The patient evolved favorably in the postoperative period without presenting complications leaving discharge in the following 7 days.

DISCUSSION

Paraclinoid aneurysms often do not follow the classical teachings on aneurysmal development, the origin of branched vessels or the hemodynamic origin. Multiple classification systems of these lesions have been proposed, being the one that best describes the classification of Barami[1]

In the last two decades, coil technology has evolved significantly, with the current arsenal of devices that include complex conformational shapes, variable degrees of uniform stiffness, larger diameters, and different metal alloys with

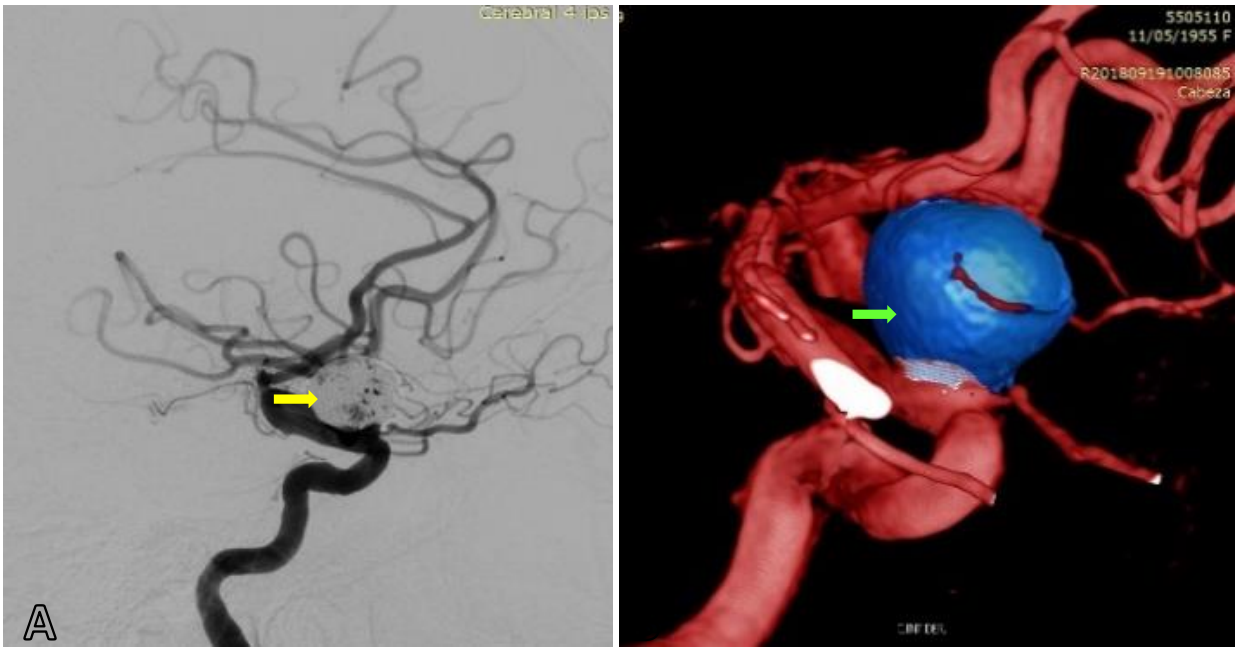

Fig. 7. Angiography of Right Internal Carotid Artery in Lateral Projection. **(A)** The exclusion of the aneurysm from the normal circulation is evident (yellow arrow). **(B)** The packaging inside the aneurysm is evident in blue (green arrow)

Fig 5. Placing the coil inside the aneurysm

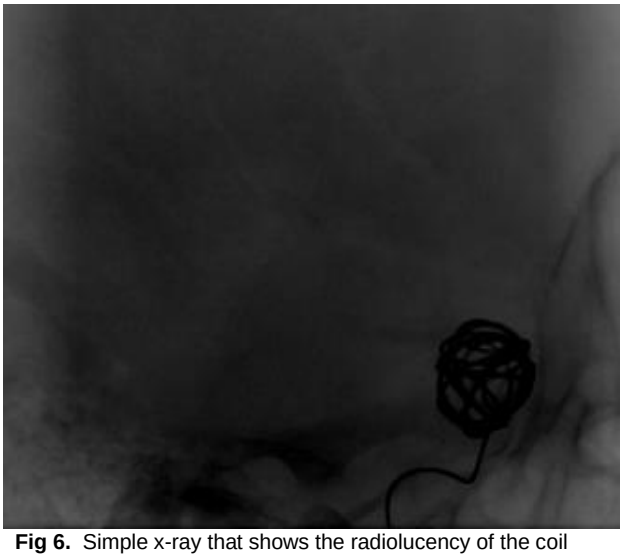

Fig 6. Simple x-ray that shows the radiolucency of the coil

"bioactive" coatings, all developed in an effort to increase angiographic and neurological results after embolization [2]

The Penumbra coil has a larger diameter than conventional coils and is completely made of metal, a feature that increases stability and improves its ability to respect the neck of the aneurysm [3,4]

Compared to other coils, the evidence suggests that Penumbra coils are more efficient and profitable in the treatment of intracranial aneurysms [5]

CONCLUSION

Penumbra coils are an efficient and cost-effective alternative to embolization in large aneurysms, with adequate packing and occlusion, with a low rate of complications and good clinical improvement. Success rates surpass microsurgery in these complex location aneurysms.

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Disclosures

The authors report no conflict of interest concerning the materials or methods used in this study or the findings specified in this paper.

Author Contributions

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