Identification of the proximal neck of giant paraclinoidal aneurysms

Technical note

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Introduction of a double-lumen Swan-Ganz balloon catheter into the parent artery facilitated precise identification of the proximal neck in two giant paraclinoidal aneurysms. Reduction of the flow rate as low as possible and positioning of the patient's head were the most important factors in this procedure.

KEY WORDS · aneurysm, giant · balloon occlusion · double-lumen catheter

Visualization of the neck of a giant aneurysm is often difficult, but it is very important to find the proximal portion of the aneurysm neck, especially when it is located in the paraclinoidal region. Precise identification of the proximal neck facilitates logical planning of the operative approach. Using a double-lumen Swan-Ganz catheter, we identified the proximal neck of the giant paraclinoidal aneurysms before surgery and confirmed its location during the clipping operation.

Operative Technique

After routine cerebral angiography via the femoral artery is performed (Figs. 1A and 2A) under local anesthesia, a double-lumen No. 5 or 6 French Swan-Ganz balloon catheter is inserted into the parent artery. The catheter is passed as close to the aneurysm as possible. The patient's head is then positioned on the angiography table so that the artery from which the aneurysm arises will be parallel to the lateral film series.

Fig. 1. A: Preoperative left internal carotid angiogram demonstrating a giant left internal carotid artery paraclinoidal aneurysm. The neck is not clearly identifiable. B: Preoperative left internal carotid angiogram using the double-lumen catheter technique. The site of the aneurysm neck is clearly delineated. C: Postoperative angiogram demonstrating good filling through the site of the aneurysm clipping with obliteration of the aneurysm.
While the internal carotid artery is occluded with the balloon, iodinated contrast medium is injected as slowly as possible (1 ml/5 sec. total 2 ml) into the occluded segment distal to the balloon. The contrast medium rises very slowly, and the point at which it drops (Figs. 1B and 2B) is the proximal neck of the aneurysm. The aneurysm can then be easily clipped (Figs. 1C and 2C).

Discussion

Identification of the neck of a giant paraclinoidal aneurysm is often difficult. Viñuela, et al. was only successful in identifying the aneurysmal neck in 42 of 92 such cases. A method using a double-lumen catheter to identify the orifice of carotid cavernous fistulae or the neck of giant paraclinoidal aneurysms has been described by Tomsick, et al., Mehringer, et al., and Berenstein, et al. The latter group was able to delineate the proximal neck of giant internal carotid artery aneurysms by using a double-lumen catheter.

We believe that the technique described in this report, in which the parent artery is occluded then the dye is gently injected into the distal vessel, gives better and more precise visualization of the neck of a giant aneurysm. This technique should also be applicable to the identification of the neck of cavernous sinus aneurysms and of the site of carotid cavernous fistulae.

References


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![Fig. 2. A: Preoperative right internal carotid angiogram demonstrating a giant paraclinoidal aneurysm. The neck is not clearly identifiable. B: Preoperative right internal carotid angiogram using the double-lumen catheter technique. The location of the neck to the aneurysm is delineated. C: Postoperative right internal carotid angiogram demonstrating successful clipping of the giant aneurysm.](image-url)