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Video Abstract

One burr-hole craniotomy: Modified presigmoid approach in Helsinki Neurosurgery

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Abstract

Background: In this video abstract, we present a one burr-hole craniotomy for a modified presigmoid approach developed in Helsinki Neurosurgery to access the space extended to both middle and posterior fossa. Thus, indications for this approach are lesions that extend to both middle and posterior fossa, petroclival tumors, basilar tip aneurysms located extremely low below the posterior clinoid process, trunk basilar aneurysms, and bypass procedures from the P2 segment of the posterior cerebral artery. The procedure is composed by three stages: a temporal and presigmoid craniotomy, a partial petromastoidectomy, and the dura opening with section of the superior petrosal sinus (SPS) and the tentorium. Even though some risks related to the opening of the mastoid cells or cut of the SPS may exist, benefits of this optimized craniotomy are higher compared with the complications.

Case Description: The patient with a giant petroclival meningioma is placed in park bench position and spinal drainage is inserted. Skin incision starts in front of the ear curve going to 1 inch behind the mastoid line. Strong retraction with hooks keeps a clean space for the craniotomy. Hemostatic Raney clips are placed at the superior border of the skin flap. A burr-hole is made at the most cranial part of the temporal bone. After the detachment of the dura with long flexible blunt dissectors, the craniotomy is performed to expose the sigmoid sinus, the SPS and the dura of the inferior temporal lobe, and the floor of the middle fossa. Aiming to access the posterior fossa by a presigmoid route, a partial petromastoidectomy is performed preserving the semicircular canals. Few drill holes are made for tack-up sutures. Once we properly reach the dura of the middle and posterior fossa, dura of the temporal lobe and later, the presigmoid dura are opened joining at the level of the SPS. The SPS, which is running over the petrous bone between the posterior and the middle fossa, is coagulated, ligated, and cut. After SPS is sectioned, the tentorium is cut anterior to the drainage of vein of Labbé and posterior to the deep tentorial insertion of the fourth nerve. Finally, special care should be taken to seal the opened mastoid cells with muscle and glue, and for the hermetic dura closure using pericranium or temporal muscle aponeurosis.

Conclusion: The described one burr-hole craniotomy may represent the more efficient approach for the management of the deep and hardly accessible lesions extended to both middle and posterior fossa.

Videolink: http://surgicalneurologyint.com/videogallery/presigmoid-approach-craniotomy-lt

Key Words: Burr-hole, craniotomy, presigmoid approach

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