A novel approach to free flap repair of secondary CSF leak

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CASE

A 53F with a previous craniofacial resection, bi-coronal approach and radial free forearm flap of an olfactory neuroblastoma. New presentation with pneumocephalus and persistent CSF leak.

BACKGROUND

Free flap reconstruction of anterior skull base defects are frequently required following open approach craniofacial resection for advanced skull base tumours. Free flap compromise is risked by an inadequate vascular pedicle at the recipient site, particularly in previously irradiated patients or when secondary salvage surgery is required.

OBJECTIVES:

Here we suggest a novel approach to the inset of the vascular pedicle of free flaps in the repair of large dural defects.

OPERATIVE METHOD

1. Bicoronal reopened.
2. Dura raised from around frontal defect. Elevation around defect to planum, orbital roof right and left.
3. Bone remodelled.
4. Temporal vessels explored - right previous pedicle not running. Left - poor vessels.
5. Small craniotomy over lateral orbit created for pedicle.
6. Dissection down infra-temporal fossa to coronoid.
7. Left neck explored. Facial vein and occipital artery delineated and delivered to angle of mandible.
8. Tunnel completed anterior to masseter.
9. RFFF inset to frontal defect onto bed of Whitehead's varnish. Tisseel.
10. End to end artery and vein left neck

PRE-OPERATIVE IMAGING

CT Head – bone windows

A – coronal section

B - sagittal section

DISCUSSION

After inserting the flap to repair the anterior cranial base defect the pedicle was passed along the anterior cranial floor above the orbital roof and a second small craniotomy was created above the lateral orbital wall to allow the pedicle direct access to the temporal fossa without having to pass superficial to the skull risking compromise by compression and reducing the required pedicle length to reach the facial vessels which in this case avoided the need for a vein graft/loop.

CONCLUSION:

This novel approach to a challenging repair of a secondary CSF leak provides access for the free flap pedicle across the orbit superiorly and extended over to the superior temporal vessel.

The advantages of this more direct approach include:

1. Shorter distance (so less pedicle length required)
2. Avoidance of vein loop
3. Less at risk of damage