

Pericranial flap

<html><iframe width="560" height="315" src="https://www.youtube.com/embed/vhvmpzpbQQ4" frameborder="0" allow="accelerometer; autoplay; encrypted-media; gyroscope; picture-in-picture" allowfullscreen></iframe></html>

Indications

Anterior cranial base reconstruction is occasionally necessary following severe **trauma**. Several methods for **reconstruction** have been described and some authors have described their experiences regarding the use of a **pericranial flap** for **anterior cranial base reconstruction** after trauma.

In **1981**, Price et al., first reported the use of the pericranial **flap** for support of the brain following resection of the **anterior skull base**. Since the initial report, considerable experience has been gained with this flap.

It is deployed via a **bifrontal craniotomy** and is placed primarily as a support beneath the **frontal lobes**. The pericranial flap may also be used to repair dural **laceration** and defects. The sinonasal surface is routinely grafted with split-thickness skin or dermis. This technique provides an excellent barrier between the sinonasal cavity and the **cerebrospinal fluid**, establishing a tough, fibrous platform. Herniation of intracranial contents has not occurred. One major complication has been reported in which **radiation necrosis** occurred during postoperative therapy, leading to progressive devitalization of the pericranial flap. Ultimately, dural repair and closure with a latissimus dorsi free flap was required. The pericranial flap repair of anterior skull base defects has a 90% complication-free and 95% overall success rate. It is simple and extremely effective. Bone grafting has not been necessary in there experience ¹⁾.

Malignant lesions of the fronto-ethmoid sinuses and the nasal septum are rare. They typically manifest late in their course and can quickly spread to surrounding vital structures. Consequently, curative treatment usually consists of multimodality therapy, incorporating a combination of surgery and radiation.

One of the documented complications of this modality of treatment is the development of nasocutaneous fistulas in the region of the medial orbital wall and upper lateral nose. These fistulas often drain mucopurulent fluid and can cause orbital infections and skin breakdown. Historically, these fistulas have been repaired using local skin flaps, median forehead flaps, or even primary closure. Newman et al., presented an alternative method for closing these fistulas using a pericranial flap ²⁾.

A 26-year-old woman was admitted with multiple facial bone fractures identified using facial bone computed tomography. Plastic surgeons performed surgery under general anesthesia for the patient's nasal bone fractures. On the seventh day after admission, the patient's brain computed tomography showed an abscess in the frontal lobe. Antibiotic treatment was started, but the lesion deteriorated. Anterior skull base reconstruction was then performed using a pericranial flap with **gelfoam**

compression. No complications, including leakage of cerebrospinal fluid, cerebral hemorrhage, necrosis of the pericranial flap, or frontal lobe herniation, were observed 1 year following surgery.

In this case, Song et al., performed a simple and effective treatment with reconstruction using pericranial flap and gelfoam compression without complications. This technique is useful for reconstructing defects in the base of the [frontal bone](#) resulting from various causes, as well as for fracture of the [anterior skull base](#) following trauma ³.

Unclassified articles

Ferrari M, Vural A, Schreiber A, Mattavelli D, Gualtieri T, Taboni S, Bertazzoni G, Rampinelli V, Tomasoni M, Buffoli B, Doglietto F, Rodella LF, Deganello A, Nicolai P. Side-Door Temporoparietal Fascia Flap: A Novel Strategy for Anterior Skull Base Reconstruction. *World Neurosurg.* 2019 Feb 27. pii: S1878-8750(19)30467-X. doi: 10.1016/j.wneu.2019.02.056. [Epub ahead of print] PubMed PMID: 30822581.

3: Husain Q, Gupta P, Tabar V, Cohen MA. Random nasoseptal flap for revision skull base reconstruction. *J Clin Neurosci.* 2019 Feb;60:167-169. doi: 10.1016/j.jocn.2018.10.038. Epub 2018 Oct 29. PubMed PMID: 30385164; PubMed Central PMCID: PMC6326883.

4: Stavrakas M, Karkos PD, Triaridis S, Constantinidis J. Endoscopic management of paediatric meningoencephaloceles: a case series. *Eur Arch Otorhinolaryngol.* 2018 Nov;275(11):2727-2731. doi: 10.1007/s00405-018-5116-z. Epub 2018 Sep 14. PubMed PMID: 30218386.

5: Noguchi K, Aoki T, Orito K, Kajiwarra S, Fujimori K, Morioka M. Novel Indirect Revascularization Technique with Preservation of Temporal Muscle Function for Moyamoya Disease Encephalo-Duro-Fascio-Arterio-Pericranial-Synangiosis: A Case Series and Technical Note. *World Neurosurg.* 2018 Dec;120:168-175. doi: 10.1016/j.wneu.2018.08.171. Epub 2018 Sep 7. PubMed PMID: 30196169.

6: Takumi I, Akimoto M, Hironaka K, Adachi K, Kon T, Matsumori T, Tanaka Y, Morita A. Pedicle Galeo-pericranial Flap Augmentation in Salvage Frontotemporal Cranioplasty: Additional 'Neurosurgeon-friendly' Reconstruction Technique of Aesthetic Neurosurgery in Superficial Temporal Artery Branch Compromised Host. *Neurol Med Chir (Tokyo).* 2018 Aug 15;58(8):350-355. doi: 10.2176/nmc.tn.2017-0252. Epub 2018 Jul 12. PubMed PMID: 29998933; PubMed Central PMCID: PMC6092603.

7: Alobid I, Langdon C, López-Chacon M, Enseñat J, Carrau R, Bernal-Sprekelsen M, Santamaría A. Total septal perforation repair with a pericranial flap: Radio-anatomical and clinical findings. *Laryngoscope.* 2018 Jun;128(6):1320-1327. doi: 10.1002/lary.26966. Epub 2017 Nov 8. PubMed PMID: 29114890.

8: Koderu T, Tada H, Akazawa A, Hashimoto N, Arishima H, Yamada S, Arai H, Higashino Y, Kitai R, Takeuchi H, Kikuta KI. Evaluation of the Use of Calcium Phosphate Cement for Aesthetic Neurosurgical Cranial Reconstruction. *World Neurosurg.* 2018 Feb;110:e296-e304. doi: 10.1016/j.wneu.2017.10.153. Epub 2017 Nov 4. PubMed PMID: 29113902.

9: Chakravarthi S, Gonen L, Monroy-Sosa A, Khalili S, Kassam A. Endoscopic Endonasal Reconstructive Methods to the Anterior Skull Base. *Semin Plast Surg.* 2017 Nov;31(4):203-213. doi: 10.1055/s-0037-1607274. Epub 2017 Oct 25. Review. PubMed PMID: 29075159; PubMed Central PMCID: PMC5656444.

- 10: Gagliardi F, Bailo M, Spina A, Boari N, Donofrio CA, Piloni M, Gragnaniello C, Caputy AJ, Mortini P. Bilateral Temporal Myofascial Flap for the Reconstruction of Frontal Sinus Defects. *World Neurosurg*. 2017 Nov;107:477-481. doi: 10.1016/j.wneu.2017.08.022. Epub 2017 Aug 12. PubMed PMID: 28807777.
- 11: Sigler AC, D'Anza B, Lobo BC, Woodard TD, Recinos PF, Sindwani R. Endoscopic Skull Base Reconstruction: An Evolution of Materials and Methods. *Otolaryngol Clin North Am*. 2017 Jun;50(3):643-653. doi: 10.1016/j.otc.2017.01.015. Epub 2017 Mar 31. Review. PubMed PMID: 28372814.
- 12: Santamaría A, Langdon C, López-Chacon M, Cordero A, Enseñat J, Carrau R, Bernal-Sprekelsen M, Alobid I. Radio-anatomical analysis of the pericranial flap "money box approach" for ventral skull base reconstruction. *Laryngoscope*. 2017 Nov;127(11):2482-2489. doi: 10.1002/lary.26574. Epub 2017 Mar 21. PubMed PMID: 28322453.
- 13: Xu X, Lwin S, Ong YK. Delayed Breakdown of an Onlay Pericranial Flap Following Endoscopic Craniofacial Resection. *J Craniofac Surg*. 2017 Jun;28(4):1021-1023. doi: 10.1097/SCS.0000000000003676. PubMed PMID: 28277484.
- 14: Golinko MS, Harter DH, Rickert S, Staffenberg DA. Cerebrospinal Fluid Fistula for the Craniofacial Surgeon: A Review and Management Paradigm. *J Craniofac Surg*. 2017 Feb 23. doi: 10.1097/SCS.0000000000003148. [Epub ahead of print] PubMed PMID: 28234640.
- 15: Perkins EL, Brandon BM, Sreenath SB, Desai DD, Thorp BD, Ebert CS, Zanation AM. Transfacial and Craniofacial Approaches for Resection of Sinonasal and Ventral Skull Base Malignancies. *Otolaryngol Clin North Am*. 2017 Apr;50(2):287-300. doi: 10.1016/j.otc.2016.12.006. Epub 2017 Feb 3. Review. PubMed PMID: 28162241.
- 16: Arai N, Tabuse M, Nakamura A, Miyazaki H. Spontaneous Intraventricular Pneumocephalus. *J Craniofac Surg*. 2017 May;28(3):738-740. doi: 10.1097/SCS.0000000000003392. PubMed PMID: 28085764.
- 17: Fadle KN, Hassanein AG, Kasim AK. Orbitocranial Fibrous Dysplasia: Outcome of Radical Resection and Immediate Reconstruction With Titanium Mesh and Pericranial Flap. *J Craniofac Surg*. 2016 Nov;27(8):e719-e723. doi: 10.1097/SCS.0000000000003033. PubMed PMID: 28005795.
- 18: Ryu J, Chung SB, Choi SK, Lee SH, Chung Y. A Technically Simple and Safe Method for Preparing an Anterior Pericranial Flap Using Saline Injection into the Subgaleal Space: A Technical Note. *World Neurosurg*. 2017 Mar;99:336-339. doi: 10.1016/j.wneu.2016.12.019. Epub 2016 Dec 18. PubMed PMID: 27993740.
- 19: Anami H, Ikeda S, Nakaya K, Sugiura M, Kawamata T. [A Case Report of Spontaneous Cerebrospinal Fluid Otorrhea]. *No Shinkei Geka*. 2016 Dec;44(12):1053-1057. Japanese. PubMed PMID: 27932750.
- 20: Righini CA, Atallah I, Reyt E. Optimal enlargement of the frontal sinus approach. *Eur Ann Otorhinolaryngol Head Neck Dis*. 2016 Nov;133(5):349-353. doi: 10.1016/j.anorl.2016.04.008. Epub 2016 May 12. PubMed PMID: 27183818.
- 21: Velasco-Torres HS, Gómez-Amador JL, Ramirez Andrade JJ, Navarro-Bonnet JM. Vascularized pericranial flap for the reconstruction of dural defect in a watertight fashion in patients with history cranial radiation exposure: technical note. *Neurosurg Rev*. 2017 Jan;40(1):95-103. doi: 10.1007/s10143-016-0739-2. Epub 2016 May 28. PubMed PMID: 27235130.

- 22: Yano T, Okazaki M, Tanaka K, Tsunoda A, Aoyagi M, Kishimoto S. Feasibility and Advantage of a Muscle-Sparing Laterally Based Pericranial Flap. *J Craniofac Surg*. 2016 May;27(3):552-7. doi: 10.1097/SCS.0000000000002438. PubMed PMID: 27159855.
- 23: Ramprasad VH, Woodard CR, Jang DW. Surgical Correction of an Extensive Skull Base Defect as a Result of Pneumocele. *J Craniofac Surg*. 2016 Jan;27(1):163-5. doi: 10.1097/SCS.0000000000002315. PubMed PMID: 26674910.
- 24: Klatt-Cromwell CN, Thorp BD, Del Signore AG, Ebert CS, Ewend MG, Zanation AM. Reconstruction of Skull Base Defects. *Otolaryngol Clin North Am*. 2016 Feb;49(1):107-17. doi: 10.1016/j.otc.2015.09.006. Review. PubMed PMID: 26614831.
- 25: Safavi-Abbasi S, Komune N, Archer JB, Sun H, Theodore N, James J, Little AS, Nakaji P, Sughrue ME, Rhoton AL, Spetzler RF. Surgical anatomy and utility of pedicled vascularized tissue flaps for multilayered repair of skull base defects. *J Neurosurg*. 2016 Aug;125(2):419-30. doi: 10.3171/2015.5.JNS15529. Epub 2015 Nov 27. PubMed PMID: 26613175.
- 26: Archer JB, Sun H, Bonney PA, Zhao YD, Hiebert JC, Sanclement JA, Little AS, Sughrue ME, Theodore N, James J, Safavi-Abbasi S. Extensive traumatic anterior skull base fractures with cerebrospinal fluid leak: classification and repair techniques using combined vascularized tissue flaps. *J Neurosurg*. 2016 Mar;124(3):647-56. doi: 10.3171/2015.4.JNS1528. Epub 2015 Oct 16. PubMed PMID: 26473788.
- 27: Ravindra VM, Neil JA, Shah LM, Schmidt RH, Bisson EF. Surgical management of traumatic frontal sinus fractures: Case series from a single institution and literature review. *Surg Neurol Int*. 2015 Aug 24;6:141. doi: 10.4103/2152-7806.163449. eCollection 2015. PubMed PMID: 26392917; PubMed Central PMCID: PMC4553660.
- 28: Velasco-Torres HS, Gómez Amador JL, Feinholz SR. Mass Effect Due to Hypertrophic Pericranial Flap in the Reconstruction of Dural Defect. *World Neurosurg*. 2015 Dec;84(6):2077.e11-4. doi: 10.1016/j.wneu.2015.07.070. Epub 2015 Aug 14. PubMed PMID: 26278866.
- 29: Yano T, Okazaki M, Tanaka K, Tsunoda A, Aoyagi M, Kishimoto S. Use of Intraoperative Fluorescent Indocyanine Green Angiography for Real-Time Vascular Evaluation of Pericranial Flaps. *Ann Plast Surg*. 2016 Feb;76(2):198-204. doi: 10.1097/SAP.0000000000000519. PubMed PMID: 25910023.
- 30: König SA, Ranguis S, Gramlich V, Spetzger U. Reconstruction of the anterior skull base after major trauma or extensive tumour resection. *Acta Neurochir (Wien)*. 2015 Jan;157(1):139-44. doi: 10.1007/s00701-014-2273-8. Epub 2014 Dec 2. PubMed PMID: 25435393.
- 31: Yoshioka N. Modified cranialization and secondary cranioplasty for frontal sinus infection after craniotomy: technical note. *Neurol Med Chir (Tokyo)*. 2014;54(9):768-73. Epub 2014 Aug 27. PubMed PMID: 25169030; PubMed Central PMCID: PMC4533363.
- 32: Tomio R, Toda M, Tomita T, Yazawa M, Kono M, Ogawa K, Yoshida K. Primary dural closure and anterior cranial base reconstruction using pericranial and nasoseptal multi-layered flaps in endoscopic-assisted skull base surgery. *Acta Neurochir (Wien)*. 2014 Oct;156(10):1911-5. doi: 10.1007/s00701-014-2174-x. Epub 2014 Jul 5. PubMed PMID: 24996809.
- 33: Bot GM, Ismail NJ, Usman B, Shilong DJ, Obande JO, Aliu SO, Hassan I, Shehu BB. Subpericranial shunt valve placement: a technique in patients with friable skin. *Childs Nerv Syst*. 2014 Aug;30(8):1431-3. doi: 10.1007/s00381-014-2433-4. Epub 2014 May 17. PubMed PMID: 24839037.
- 34: Nakahara K, Ikemoto S, Shimizu S, Yamada M, Kumabe T. Relaxed pericranial flap for distraction

osteogenesis to treat craniosynostosis: a technique for wound reinforcement-technical note. *Childs Nerv Syst.* 2014 Jul;30(7):1283-6. doi: 10.1007/s00381-014-2406-7. Epub 2014 May 4. PubMed PMID: 24793014.

35: Uchida Y, Udagawa A, Suzuki H, Mitsukawa N, Numata O, Ito C. The “stepped caudal exposure” technique for excision of nasal dermoids with intracranial extension. *J Craniofac Surg.* 2014 Mar;25(2):648-51. doi: 10.1097/SCS.0b013e3182a28b1d. PubMed PMID: 24621714.

36: Gordon CR, Fisher M, Liauw J, Lina I, Puvanesarajah V, Susarla S, Coon A, Lim M, Quinones-Hinojosa A, Weingart J, Colby G, Olivi A, Huang J. Multidisciplinary approach for improved outcomes in secondary cranial reconstruction: introducing the pericranial-onlay cranioplasty technique. *Neurosurgery.* 2014 Jun;10 Suppl 2:179-89; discussion 189-90. doi: 10.1227/NEU.0000000000000296. PubMed PMID: 24448187; PubMed Central PMCID: PMC4703091.

37: Lehmborg J, Krieg SM, Meyer B. Anterior clinoidectomy. *Acta Neurochir (Wien).* 2014 Feb;156(2):415-9; discussion 419. doi: 10.1007/s00701-013-1960-1. Epub 2013 Dec 10. Review. PubMed PMID: 24322583.

38: Krischek B, Vescan A, Zweifel C, Zadeh G, Gentili F. Endonasal endoscopic release of a delayed tension pneumocephalus after craniofacial resection of a tumor of the anterior skull base. *J Neurol Surg A Cent Eur Neurosurg.* 2013 Dec;74 Suppl 1:e271-4. doi: 10.1055/s-0033-1349337. Epub 2013 Oct 24. PubMed PMID: 24158900.

39: Pease M, Marquez Y, Tuchman A, Markarian A, Zada G. Diagnosis and surgical management of traumatic cerebrospinal fluid oculorrhea: case report and systematic review of the literature. *J Neurol Surg Rep.* 2013 Jun;74(1):57-66. doi: 10.1055/s-0033-1347902. Epub 2013 May 23. PubMed PMID: 23943723; PubMed Central PMCID: PMC3713559.

40: de Melo WM, Coléte JZ, Mariano RC, Shinohara EH, Souza FÁ, Garcia IR Jr. Anterior pericranial flap for frontal sinus duct obliteration: is it a valuable resource? *J Craniofac Surg.* 2013 Mar;24(2):e147-9. doi: 10.1097/SCS.0b013e31827c7ff2. PubMed PMID: 23524817.

41: Jimbo H, Muto J, Masubuchi T, Miura K, Kamata S, Ikeda Y. Efficacy of a new instrument for dural defect repair in anterior skull base reconstruction: a technical note. *Acta Neurochir (Wien).* 2013 Apr;155(4):733-6. doi: 10.1007/s00701-013-1630-3. Epub 2013 Feb 13. PubMed PMID: 23404431.

42: Powers AK, Neal MT, Argenta LC, Wilson JA, DeFranzo AJ, Tatter SB. Vacuum-assisted closure for complex cranial wounds involving the loss of dura mater. *J Neurosurg.* 2013 Feb;118(2):302-8. doi: 10.3171/2012.10.JNS112241. Epub 2012 Nov 16. PubMed PMID: 23157181.

43: Boari N, Gagliardi F, Roberti F, Barzaghi LR, Caputy AJ, Mortini P. The trans-frontal-sinus subcranial approach for removal of large olfactory groove meningiomas: surgical technique and comparison to other approaches. *J Neurol Surg A Cent Eur Neurosurg.* 2013 May;74(3):152-61. doi: 10.1055/s-0032-1325630. Epub 2012 Oct 1. PubMed PMID: 23027435.

44: Eloy JA, Kalyoussef E, Choudhry OJ, Baredes S, Gandhi CD, Govindaraj S, Liu JK. Salvage endoscopic nasoseptal flap repair of persistent cerebrospinal fluid leak after open skull base surgery. *Am J Otolaryngol.* 2012 Nov-Dec;33(6):735-40. doi: 10.1016/j.amjoto.2012.07.005. Epub 2012 Aug 22. PubMed PMID: 22921244.

45: Arnaud E, Di Rocco F. Faciocraniosynostosis: monobloc frontofacial osteotomy replacing the two-stage strategy? *Childs Nerv Syst.* 2012 Sep;28(9):1557-64. doi: 10.1007/s00381-012-1853-2. Epub 2012 Aug 8. PubMed PMID: 22872273.

- 46: Kusumi M, Fukushima T, Aliabadi H, Mehta AI, Noro S, Rosen CL, Fujii K. Microplate-bridge technique for watertight dural closures in the combined petrosal approach. *Neurosurgery*. 2012 Jun;70(2 Suppl Operative):264-9. doi: 10.1227/NEU.0b013e3182356269. Review. PubMed PMID: 21904260.
- 47: Kamoshima Y, Terasaka S, Hamauchi S, Kaneko S, Murakami H, Houkin K. [The repair of traumatic cerebrospinal fluid leak using temporal loose areolar connective tissue insertion into the frontal sinus and pericranial flap covering: a case report]. *No Shinkei Geka*. 2011 Aug;39(8):783-8. Japanese. PubMed PMID: 21799229.
- 48: Yang Z, Yuan X, Wu J, Yuan D, Liu Q, Jiang X. [The prevention cerebrospinal fluid leakage during operating anterior skull base meningioma involving paranasal sinuses]. *Lin Chung Er Bi Yan Hou Tou Jing Wai Ke Za Zhi*. 2011 Mar;25(5):210-2. Chinese. PubMed PMID: 21604465.
- 49: Ailawadhi P, Agrawal D, Mahapatra AK. Novel treatment of traumatic CSF rhinorrhea using titanium mesh and onlay graft. *J Pediatr Neurosci*. 2010 Jan;5(1):25-6. doi: 10.4103/1817-1745.66678. PubMed PMID: 21042502; PubMed Central PMCID: PMC2964788.
- 50: Kuroda S, Houkin K, Ishikawa T, Nakayama N, Iwasaki Y. Novel bypass surgery for moyamoya disease using pericranial flap: its impacts on cerebral hemodynamics and long-term outcome. *Neurosurgery*. 2010 Jun;66(6):1093-101; discussion 1101. doi: 10.1227/01.NEU.0000369606.00861.91. PubMed PMID: 20495424.
- 51: Patel MR, Shah RN, Snyderman CH, Carrau RL, Germanwala AV, Kassam AB, Zano AM. Pericranial flap for endoscopic anterior skull-base reconstruction: clinical outcomes and radioanatomic analysis of preoperative planning. *Neurosurgery*. 2010 Mar;66(3):506-12; discussion 512. doi: 10.1227/01.NEU.0000365620.59677.FF. PubMed PMID: 20173545.
- 52: Ozlen F, Abuzayed B, Dashti R, Isler C, Tanriover N, Sanus GZ. Low-profile 1-piece bifrontal craniotomy for anterior skull base approach and reconstruction. *J Craniofac Surg*. 2010 Jan;21(1):233-8. doi: 10.1097/SCS.0b013e3181c5a217. PubMed PMID: 20072003.
- 53: Fattahi T, Dipasquale J. Utility of the pericranial flap in frontal sinus and anterior cranial fossa trauma. *Int J Oral Maxillofac Surg*. 2009 Dec;38(12):1263-7. doi: 10.1016/j.ijom.2009.09.006. PubMed PMID: 19836208.
- 54: Habu M, Niino M, Toyoshima M, Kawano Y, Matsune S, Arita K. Transthemoidal meningoencephalocele involving the olfactory bulb with enlarged foramina of the lamina cribrosa—case report. *Neurol Med Chir (Tokyo)*. 2009 Jun;49(6):269-72. PubMed PMID: 19556738.
- 55: Lin Y, Zhang W, Luo Q, Jiang J, Qiu Y. Extracranial microanatomic study of supraorbital keyhole approach. *J Craniofac Surg*. 2009 Jan;20(1):215-8. doi: 10.1097/SCS.0b013e318191cf8a. PubMed PMID: 19165030.
- 56: Park MC, Goldman MA, Donahue JE, Tung GA, Goel R, Sampath P. Endonasal ethmoidectomy and bifrontal craniotomy with craniofacial approach for resection of frontoethmoidal osteoma causing tension pneumocephalus. *Skull Base*. 2008 Jan;18(1):67-72. doi: 10.1055/s-2007-993046. PubMed PMID: 18592021; PubMed Central PMCID: PMC2435469.
- 57: Mohanty A, Suman R. Role of galeal-pericranial flap in reducing postoperative CSF leak in patients with intracranial endoscopic procedures. *Childs Nerv Syst*. 2008 Aug;24(8):961-4. doi: 10.1007/s00381-008-0594-8. Epub 2008 Mar 7. PubMed PMID: 18324408.

- 58: Abe T, Goda M, Kamida T, Fujiki M, Kobayashi H, Nakano T, Mori T, Watanabe T, Suzuki M. Overlapping free bone graft with galea-pericranium in reconstruction of the anterior skull base to prevent CSF leak and sequestrum formation. *Acta Neurochir (Wien)*. 2007 Aug;149(8):771-5; discussion 775. Epub 2007 Jun 14. PubMed PMID: 17565426.
- 59: Siniscalchi EN, Angileri FF, Mastellone P, Catalfamo L, Giusa M, Conti A, De Ponte FS, Tomasello F. Anterior skull base reconstruction with a galeal-pericranial flap. *J Craniofac Surg*. 2007 May;18(3):622-5. PubMed PMID: 17538328.
- 60: Than KD, Kretzer RM, Dorsi MJ, Weingart JD. Symptomatic mass effect of a hypertrophied pericranial flap after repair of a dural defect: case report. *Neurosurgery*. 2007 Apr;60(4):E773; discussion E773. PubMed PMID: 17415182.
- 61: Origitano TC, Petruzzelli GJ, Leonetti JP, Vandevender D. Combined anterior and anterolateral approaches to the cranial base: complication analysis, avoidance, and management. *Neurosurgery*. 2006 Apr;58(4 Suppl 2):ONS-327-36; discussion ONS-336-7. PubMed PMID: 16582657.
- 62: Torres A, Acebes JJ, López L, Marnov A, Viñals J, Serra JM, Maños M, Monner A. [Complications of craniofacial resection in anterior skull base tumors]. *Neurocirugia (Astur)*. 2005 Dec;16(6):492-8. Spanish. PubMed PMID: 16378131.
- 63: Nameki H, Kato T, Nameki I, Ajimi Y. Selective reconstructive options for the anterior skull base. *Int J Clin Oncol*. 2005 Aug;10(4):223-8. PubMed PMID: 16136365.
- 64: Gil Z, Fliss DM. Pericranial wrapping of the frontal bone after anterior skull base tumor resection. *Plast Reconstr Surg*. 2005 Aug;116(2):395-8; discussion 399. PubMed PMID: 16079662.
- 65: Sen O, Ozerdem OR, Kizilkilic O, Aktas L, Sener L, Seyhan T, Altinors N. Fronto-orbital leptomeningeal cyst manifested with exophthalmus. *J Craniofac Surg*. 2005 Jul;16(4):668-72. PubMed PMID: 16077314.
- 66: Yoshioka N, Rhoton AL Jr. Vascular anatomy of the anteriorly based pericranial flap. *Neurosurgery*. 2005 Jul;57(1 Suppl):11-6; discussion 11-6. PubMed PMID: 15987565.
- 67: Kubo A, Sakata K, Maegawa J, Yamamoto I. Transethmoidal meningoencephalocele in an elderly woman. Case report. *Neurol Med Chir (Tokyo)*. 2005 Jun;45(6):322-6. Review. PubMed PMID: 15973068.
- 68: Salyer KE, Barcelo CR, Por YC. Extensive neglected psammomatoid ossifying fibroma with craniofacial deformity. *J Craniofac Surg*. 2004 Nov;15(6):1033-9. PubMed PMID: 15547400.
- 69: Mahabir RC, Szymczak A, Sutherland GR. Intracerebral pneumatocele presenting after air travel. *J Neurosurg*. 2004 Aug;101(2):340-2. PubMed PMID: 15309929.
- 70: Rodrigues M, O'malley BW Jr, Staecker H, Tamargo R. Extended pericranial flap and bone graft reconstruction in anterior skull base surgery. *Otolaryngol Head Neck Surg*. 2004 Jul;131(1):69-76. PubMed PMID: 15243560.
- 71: Obeid F, Al-Mefty O. Recurrence of olfactory groove meningiomas. *Neurosurgery*. 2003 Sep;53(3):534-42; discussion 542-3. PubMed PMID: 12943570.
- 72: Paolini S, Ciappetta P. Pericranial flap fixation using titanium miniplates and screws. *Br J Neurosurg*. 2003 Feb;17(1):65-6. PubMed PMID: 12779204.

- 73: Georgantopoulou A, Hodgkinson PD, Gerber CJ. Cranial-base surgery: a reconstructive algorithm. *Br J Plast Surg*. 2003 Jan;56(1):10-3. PubMed PMID: 12706142.
- 74: Califano J, Cordeiro PG, Disa JJ, Hidalgo DA, DuMornay W, Bilsky MH, Gutin PH, Shah JP, Kraus DH. Anterior cranial base reconstruction using free tissue transfer: changing trends. *Head Neck*. 2003 Feb;25(2):89-96. PubMed PMID: 12509790.
- 75: Song D, Zhou L, Li S. Long-term follow-up results of dural reconstruction without bone graft at anterior skull-base defects. *Chin Med J (Engl)*. 2002 Apr;115(4):552-4. PubMed PMID: 12133296.
- 76: Dare AO, Landi MK, Lopes DK, Grand W. Eyebrow incision for combined orbital osteotomy and supraorbital minicraniotomy: application to aneurysms of the anterior circulation. Technical note. *J Neurosurg*. 2001 Oct;95(4):714-8. PubMed PMID: 11596969.
- 77: Chang DW, Langstein HN, Gupta A, De Monte F, Do KA, Wang X, Robb G. Reconstructive management of cranial base defects after tumor ablation. *Plast Reconstr Surg*. 2001 May;107(6):1346-55; discussion 1356-7. PubMed PMID: 11335798.
- 78: Cantù G, Solero C, Mattavelli F, Pizzi N, Valentini V, Santamaria S, Barberi F, Riccio S. [Malignant maxillary tumors involving the pterygo-maxillary and infratemporal fossae: a series of 200 cases]. *Acta Otorhinolaryngol Ital*. 2000 Apr;20(2):91-9. Italian. PubMed PMID: 10992601.
- 79: Arai H, Sato K, Okuda, Miyajima M, Hishii M, Nakanishi H, Ishii H. Transcranial transsphenoidal approach for tuberculum sellae meningiomas. *Acta Neurochir (Wien)*. 2000;142(7):751-6; discussion 756-7. PubMed PMID: 10955669.
- 80: Cantù G, Solero CL, Pizzi N, Nardo L, Mattavelli F. Skull base reconstruction after anterior craniofacial resection. *J Craniomaxillofac Surg*. 1999 Aug;27(4):228-34. PubMed PMID: 10626256.
- 81: Roux FX, Moussa R, Devaus B, Nataf F, Page P, Laccourreye O, Schwaab G, Brasnu D, Lacau Saint-Guily J. Subcranial fronto-orbito-nasal approach for ethmoidal cancers surgical techniques and results. *Surg Neurol*. 1999 Nov;52(5):501-8; discussion 508-10. PubMed PMID: 10595771.
- 82: Jensen R, McCutcheon IE, DeMonte F. Postoperative swelling of pericranial pedicle graft producing intracranial mass effect. Report of two cases. *J Neurosurg*. 1999 Jul;91(1):124-7. PubMed PMID: 10389891.
- 83: Kiyokawa K, Tai Y, Tanabe HY, Inoue Y, Hayakawa K, Shigemori M, Tokudomi T. A surgical method for treating anterior skull base injuries. *J Craniomaxillofac Surg*. 1999 Feb;27(1):11-9. PubMed PMID: 10188122.
- 84: Tsutsumi K, Asano T, Shigeno T, Matsui T, Ito S, Kaizu H. Transcranial approach for transsphenoidal encephalocele: report of two cases. *Surg Neurol*. 1999 Mar;51(3):252-7. PubMed PMID: 10086487.
- 85: Park P, Chandler WF, Telian SA, Doran S. Spontaneous chronic epidural pneumocephalus resulting from hyperpneumatization of the cranium causing mass effect: case report. *Neurosurgery*. 1998 Jun;42(6):1384-6. PubMed PMID: 9632201.
- 86: Somekawa Y, Asano K, Hata M. [En bloc resection of the temporal bone for middle ear carcinoma extending to the cranial base]. *Nihon Jibiinkoka Gakkai Kaiho*. 1997 Jul;100(7):782-9. Japanese. PubMed PMID: 9277100.

- 87: Seery GE. Anchor scalp reduction. *Dermatol Surg*. 1996 Dec;22(12):1009-13. PubMed PMID: 9078312.
- 88: Peng Z, Shang Y, Zou J, Wu Y, Ren G, Wang H, Wang Z, Wang M, Fu S. Approaches and reconstruction in skull base operation. *Chin Med J (Engl)*. 1996 Sep;109(9):700-4. PubMed PMID: 9275339.
- 89: Undt G, Hollmann K, Schuster H, Rasse M. Pedicled calvarial bone flap for reconstruction of the anterior skull base following tumor resection. *Plast Reconstr Surg*. 1996 Sep;98(4):730-4. PubMed PMID: 8773699.
- 90: McCutcheon IE, Blacklock JB, Weber RS, DeMonte F, Moser RP, Byers M, Goepfert H. Anterior transcranial (craniofacial) resection of tumors of the paranasal sinuses: surgical technique and results. *Neurosurgery*. 1996 Mar;38(3):471-9; discussion 479-80. PubMed PMID: 8837798.
- 91: Kumon Y, Zenke K, Ohta S, Hatakeyama T, Sakaki S, Yanagihara N. [Operative results in fourteen cases of paranasal sinus and anterior cranial fossa lesions surgically treated by an extended transbasal approach]. *No Shinkei Geka*. 1995 Oct;23(10):889-95. Japanese. PubMed PMID: 7477698.
- 92: Rotondo M, Parlato C, Iaccarino C, Scrocca A. Tissue expansion in neurosurgical reconstructive technique: case report. *Surg Neurol*. 1995 Feb;43(2):201-3; discussion 203-4. PubMed PMID: 7892669.
- 93: Gliklich RE, Lazor JB. The subcranial approach to trauma of the anterior cranial base: preliminary report. *J Craniomaxillofac Trauma*. 1995 Winter;1(4):56-62. PubMed PMID: 11951468.
- 94: Goel A, Gahankari D. Extended subgaleal fascia-pericranial temporalis flap for skull base reconstruction. *Acta Neurochir (Wien)*. 1995;135(3-4):203-5. PubMed PMID: 8748816.
- 95: Kraus DH, Shah JP, Arbit E, Galicich JH, Strong EW. Complications of craniofacial resection for tumors involving the anterior skull base. *Head Neck*. 1994 Jul-Aug;16(4):307-12. PubMed PMID: 8056574.
- 96: Andrew Danks R, Kaye AH, Millar H, Kleid S. Craniofacial resection in the management of paranasal sinus cancer. *J Clin Neurosci*. 1994 Apr;1(2):111-7. PubMed PMID: 18638740.
- 97: Scher RL, Cantrell RW. Anterior skull base reconstruction with the pericranial flap after craniofacial resection. *Ear Nose Throat J*. 1992 May;71(5):210-2, 215-7. Review. PubMed PMID: 1505369.
- 98: Goffin J, Fossion E, Plets C, Mommaerts M, Vrielinck L. Craniofacial resection for anterior skull base tumours. *Acta Neurochir (Wien)*. 1991;110(1-2):33-7. PubMed PMID: 1882716.
- 99: Choudhury AR. Avoidable factors that contribute to the complications of ventriculoperitoneal shunt in childhood hydrocephalus. *Childs Nerv Syst*. 1990 Sep;6(6):346-9. PubMed PMID: 2257549.
- 100: Arita N, Mori S, Sano M, Hayakawa T, Nakao K, Kanai N, Mogami H. Surgical treatment of tumors in the anterior skull base using the transbasal approach. *Neurosurgery*. 1989 Mar;24(3):379-84. PubMed PMID: 2927611.
- 101: Czorny A, Roche JL. [Repair of osteomeningeal loss of substance of the skull in infants. A personal technic used in dehiscence fractures and neonatal craniectomies]. *Neurochirurgie*. 1988;34(5):323-7. French. PubMed PMID: 3231292.
- 102: Wetmore SJ, Suen JY, Snyderman NL. Preauricular approach to infratemporal fossa. *Head Neck*

Surg. 1986 Nov-Dec;9(2):93-103. PubMed PMID: 3623943.

103: Rosen HM, Simeone FA, Bruce DA. Single stage composite resection and reconstruction of malignant anterior skull base tumors. Neurosurgery. 1986 Jan;18(1):7-11. PubMed PMID: 3945378.

104: Schuller DE, Goodman JH, Miller CA. Reconstruction of the skull base. Laryngoscope. 1984 Oct;94(10):1359-64. PubMed PMID: 6090826.

105: Johns ME, Winn HR, McLean WC, Cantrell RW. Pericranial flap for the closure of defects of craniofacial resection. Laryngoscope. 1981 Jun;91(6):952-9. PubMed PMID: 7242191.

1)

Price JC, Loury M, Carson B, Johns ME. The pericranial flap for reconstruction of anterior skull base defects. Laryngoscope. 1988 Nov;98(11):1159-64. PubMed PMID: 3185068.

2)

Newman J, Costantino P, Moche J. The Use of Unilateral Pericranial Flaps for the Closure of Difficult Medial Orbital and Upper Lateral Nasal Defects. Skull Base. 2003 Nov;13(4):205-209. PubMed PMID: 15912179; PubMed Central PMCID: PMC1131853.

3)

Song TW, Lee SK, Kim TS, Joo SP. Pericranial Flap Anterior Skull Base Reconstruction With Gelfoam Intradural Compression. J Craniofac Surg. 2019 Mar 9. doi: 10.1097/SCS.0000000000005364. [Epub ahead of print] PubMed PMID: 30921076.

From:

<https://neurosurgerywiki.com/wiki/> - **Neurosurgery Wiki**

Permanent link:

https://neurosurgerywiki.com/wiki/doku.php?id=pericranial_flap

Last update: **2024/06/07 02:55**

