

# Autologous fat graft

The [autologous fat](#) has come as alternative to various substitute [materials](#) being used previously.

Bohoun et al., reported there experience and technique for the repair of notable [skull base dural defects](#), using autologous fat as [dural substitute](#).

Over a period of five years, 71 consecutive patients operated for skull base pathologies, with an important intra-operative dural defect, repaired using autologous fat tissue as replacement material were reviewed. The graft, withdrawn from the abdomen or thigh was flattened and applied to the defect. The clinical findings and outcomes were assessed.

Main pathologies included Schwannomas (45%) and meningiomas (35.21%), with no side predilection. Surgical approaches such as transcondylar fossa, suboccipital, fronto-temporal; approaches were used. Dural defects were mainly located in the posterior (73.2%) and; middle cranial fossae (25.4%). No harvesting-site related complication occurred. In seven cases, transitory subcutaneous fluid collection, spontaneously resorbing after 8 days to 2 months was; observed. No external cerebrospinal fluid leakage, infection or other complication was noted during the following period.

[Dural repair](#) can be effectively and durably achieved using autologous fat graft as [dural substitute](#) during [skull base approaches](#), even in cases of extended defects. The observed characteristics of the [fat graft](#) along with the achieved outcome make it an ideal [dural substitute](#) <sup>1)</sup>.

---

Cavallo et al., retrospectively analyzed data from a series of 25 patients who underwent skull base [reconstruction](#) according to a novel paradigm following [endoscopic transtuberculum transplanum approach](#) for tumor removal between June 2017 and June 2018. The 3F strategy involves autologous Fat grafting, naso-septal Flap coverage, and Flash mobilization out of bed following the operation.

The 3F technique achieved successful watertight closure in 24 of 25 cases (96%). One case of postoperative CSF rhinorrhea developed on postoperative day 10, which did not require reoperation. No perioperative complications related to the 3F strategy (e.g., overpacking, infections, or hematomas) occurred. No donor graft site infections or hematomas developed.

The 3F skull base reconstruction is a safe and effective method in achieving watertight closure after extended endoscopic endonasal approaches. Despite this study reporting a preliminary experience in a small series of patients, it seems that the 3F technique can be considered as a viable solution among the wide kaleidoscope of available skull base reconstruction methods <sup>2)</sup>.

---

Although abdominal fat can be safely and effectively used as a reconstruction tissue, harvesting it from the abdominal wall is traumatic and invasive, resulting in cosmetic problems. In this report, we present a method of harvesting abdominal fat using a minimally invasive liposuction technique to avoid cosmetic issues. Since 2016, we have been using fat harvested from the abdominal wall by suctioning with a dedicated syringe for reconstruction after TSS in selected cases. The liquefied fat obtained by the liposuction technique was wrapped with an oxycellulose sheet and changed its form to what we termed “fatty candy”. In this form, the fat maintained its configuration and could be handled almost as easily as a conventional fat graft. In our experienced series, there was no case with

wound complication nor postoperative or late-onset CSF leak during a postoperative follow-up of at least 3 months. The fat harvested by this simple and minimally invasive liposuction technique can be expected to provide an autologous graft that is adequate not only for prevention of cosmetic problems but also for prevention of postoperative CSF leak <sup>3)</sup>.

---

Black reports his experience with using fat [grafts](#) for the prevention or repair of CSF leaks and proposes a technique in which a large sheet of fat, harvested from the patient's subcutaneous layer, is used to cover not only the dural tear(s) but all of the exposed dura and is tucked into the lateral recess. This procedure prevents CSF from seeping around the fat, which may be tacked to the dura with a few sutures. Fibrin glue is spread on the surface of the fat and is further covered with Surgicel or Gelfoam. For ventral dural tears (associated with procedures in which disc material is excised), fat is packed into the disc space to seal off the ventral dural leak. Leaks in the posterior fossa are managed similarly to those in the spine. Dural suture lines, following suboccipital or spinal intradural exploration, are prophylactically protected from CSF leakage in the same manner. With one exception, 27 dural tears noted during 1650 spinal procedures were successfully repaired using this technique. There was one case of postoperative CSF leakage in 150 cases in which intradural exploration for tumor or other lesions was undertaken. Both postoperative CSF leaks were controlled by applying additional skin sutures. The use of a fat graft is recommended as a rapid, effective means of prevention and repair of CSF leaks following posterior fossa and spinal surgery <sup>4)</sup>.

## Indications

### Epidural free fat graft for peridural scar prevention

[Epidural free fat graft](#) for [peridural scar prevention](#)

### Closure of internal auditory canal

A retrospective study of 24 consecutive patients who underwent a [Retrosigmoid transmeatal approach for vestibular schwannoma](#), and underwent a method of [fat graft](#)-assisted [internal auditory canal](#) (IAC) closure. They assessed rates of postoperative CSF leak (incisional leak, rhinorrhea, or otorrhea), pseudomeningocele formation, and occurrence of meningitis. Twenty-four patients (10 males, 14 females) with a mean age of 47years (range 18-84) underwent fat graft-assisted IAC closure. No lumbar drains were used postoperatively. There were no instances of postoperative CSF leak (incisional leak, rhinorrhea, or otorrhea), pseudomeningocele formation, or occurrence of meningitis. There were no graft site complications. The results demonstrate that autologous fat grafts provide a safe and effective method of IAC defect closure to prevent postoperative CSF leakage after [vestibular schwannoma](#) removal via a retrosigmoid transmittal approach <sup>5)</sup>.

## References

- <sup>1)</sup>  
Bohoun CA, Goto T, Morisako H, Nagahama A, Tanoue Y, Ohata K. Skull Base Dural Repair Using Autologous Fat As Dural Substitute: An Efficient Technique. World Neurosurg. 2019 Apr 5. pii:

S1878-8750(19)30974-X. doi: 10.1016/j.wneu.2019.03.293. [Epub ahead of print] PubMed PMID: 30959259.

<sup>2)</sup>

Cavallo LM, Solari D, Somma T, Cappabianca P. The 3f (Fat, Flap & Flash) Technique For Skull Base Reconstruction After Endoscopic Endonasal Suprasellar Approach. World Neurosurg. 2019 Mar 20. pii: S1878-8750(19)30803-4. doi: 10.1016/j.wneu.2019.03.125. [Epub ahead of print] PubMed PMID: 30904811.

<sup>3)</sup>

Fujita Y, Taniguchi M, Tsuzuki T, Nakai T, Uozumi Y, Kimura H, Kohmura E. Application of a Minimally Invasive Liposuction Technique for Harvesting Fat during Transsphenoidal Surgery: A Technical Note. Neurol Med Chir (Tokyo). 2019 Feb 28. doi: 10.2176/nmc.tn.2018-0270. [Epub ahead of print] PubMed PMID: 30814422.

<sup>4)</sup>

Black P. Cerebrospinal fluid leaks following spinal or posterior fossa surgery: use of fat grafts for prevention and repair. Neurosurg Focus. 2000;9(1):e4. PubMed PMID: 16865811.

<sup>5)</sup>

Azad T, Mendelson ZS, Wong A, Jyung RW, Liu JK. Fat graft-assisted internal auditory canal closure after retrosigmoid transmeatal resection of acoustic neuroma: Technique for prevention of cerebrospinal fluid leakage. J Clin Neurosci. 2016 Feb;24:124-7. doi: 10.1016/j.jocn.2015.08.016. Epub 2015 Oct 16. PubMed PMID: 26482457.

From:

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

Permanent link:

[https://neurosurgerywiki.com/wiki/doku.php?id=autologous\\_fat\\_graft](https://neurosurgerywiki.com/wiki/doku.php?id=autologous_fat_graft)

Last update: **2024/06/07 02:59**

