Temporal hollowing

Several alternatives are available to fill the hollowing of the supratemporal fossa during cranial reconstruction, but each has a disadvantage, whether it is expensive or difficult to shape for bilateral symmetry. Park et al. solved the cosmetic problem by using a properly carved silicone block to fill the supratemporal fossa while conducting cranioplasty, and here reports it with a literature review 1).

Temporal hollowing after pterional craniotomy

Temporal hollowing after pterional craniotomy.

Silicone implant for temporal hollowing

Silicone implant for temporal hollowing.

Case series

CT data of patients who received craniectomy and conventional CAD cranioplasty in Mainz between 2012 and 2018 were analyzed. CT datasets prior to craniectomy and after cranioplasty were subtracted to quantify the volume and localization of the defect.

Out of 91 patients, 21 had suitable datasets. Five cases had good cosmetic results with no defect visible, 16 patients had an apparent hollowing defect. Their average defect volume was 5.0 cm³ ± 4.5 cm³. The defect localizations were in the area behind the zygomatic process and just below the superior temporal line, covering an area of app. 3×3 cm². Surgical attempts of temporal muscle restoration were more often found in reports of good results (p<0.01), but also in 50% of reports, whose surgeries resulted in hollowing of the temple. Mean time between the two surgeries was 112 ± 43 days. No significant differences between patients with and without hollowing defect were detected regarding time between the two surgeries, age or performing surgeon.

This work supplies evidence for the indication of a surgical corrective during cranioplasty in the small but cosmetically relevant area of the “frontozygomatic shadow”. Based on these 3D data analysis, future focused surgical strategies may obtain better aesthetical results here 2).

Case reports

A patient who had a skull defect restored using a precisely shaped implant engineered via a computer using the opposite temporalis muscle as a mirror image. Polyether-ether-ketone cranioplasty was performed for the 52-year-old man with temporal hollowing after DC with resection of the temporalis muscle and fascia, due to a ruptured cerebral arteriovenous fistula.

The shape of the patient's surgical side was restored and not asymmetrical. The patient was very satisfied.

In the case of cranioplasty (CP) in patients with DC with resection of the temporalis muscle, CP with implants that include the opposite muscle may increase patient satisfaction without the risk of additional complications 3).

1) Park KH, Park B, Byoun HS, Lim J. Augmentation of Supratemporal Hollowing With Silicone Block
