

Cranioplasty using osteoconductive scaffold and platelet glue.

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Publication Date: 2008

Abstract:

BACKGROUND: An alternative to autogenous bone grafts or to methyl methacrylate in the reconstruction of full-thickness calvarial bone defect is needed.

METHODS: The safety and efficacy of biphasic calcium phosphate osteoconductive scaffold (Triosite) combined with platelet glue for the reconstruction of posttraumatic calvarial bone defect was evaluated in six consecutive patients. Follow-up averaged 30 months. Postoperative evaluations included serial photographs, repeated physical examination, and three-dimensional computed tomography scan.

RESULTS: High-fibrin concentration of the platelet glue allowed easy molding and sculpting of the scaffold, providing mechanical stability and avoiding spillage of the granules into the operating field. Neither infection of the surgical site nor extrusion of the scaffold was noted. The contour of the reconstructed calvarium was esthetically acceptable, without any secondary depression. Three-dimensional computed tomography scans 2 years after surgery revealed satisfactory reconstruction of the bone defect. Visual inspection of the reconstructed calvarium 2 years after surgery in one patient evidenced conversion of the scaffold into solid new bone. Section of the biopsy demonstrated new bone formation at the expense of the scaffold.

CONCLUSION: Combining an osteoconductive scaffold with platelet glue offers an interesting alternative to autogenous bone graft or methyl methacrylate for posttraumatic calvarium bone defect

reconstruction.