# Patient-specific polyetheretherketone implants for repair of craniofacial defects.

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## Abstract

**BACKGROUND:**

Large cranial defects represent reconstructive challenges. Polyetheretherketone (PEEK) implants are preoperatively tailored to the exact size of the defect and exhibit an excellent combination of strength, durability, and environmental resistance. This study presents our experience with patient-specific PEEK implants with computer modeling.

**METHODS:**

A retrospective chart review was conducted on all patients who underwent cranioplasty treated by a PEEK implant between 2007 and 2012. Analysis of the preoperative and perioperative data as well as outcome analysis was performed.

**RESULTS:**

A total of 11 patients were included. Mean age was 46 years. The indication for cranioplasty was bone flap infection and subsequent removal in 8 patients, traumatic bone loss in 2 patients, and acquired defect due to cancer resection in 1 patient. The mean time to PEEK cranioplasty since the patient's last operation was 16 months. The mean defect size was 74 cm(2). The mean surgical blood loss was 124 mL. The mean length of stay was 3 days. Complications included 1 postoperative bleeding that required reoperation, but the PEEK implant was successfully salvaged. The mean time to follow-up was 6 months.

**CONCLUSIONS:**

Use of patient-specific PEEK implants is a good alternative for alloplastic cranioplasty. It is associated with low morbidity as reported in our series, with additional advantages including strength, stiffness, durability, and inertness. It would be beneficial to assess the longer-term outcomes; however, it appears at first glance that PEEK implants show great promise in calvarial reconstruction.