Cranioplasty Technical Note

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With 2 Figures

Summary

A modification of Galicich and Hovind's method of cranioplasty is described. The prosthesis is not made on a side-table in the operation theatre. Steel wire mesh is fastened to the edge of the bone defect with stainless wires passed through drill holes. Acrylic mixture is then poured over the mesh and is cooled with saline. The technique has its main advantage in simplicity, and the result is cosmetically and functionally satisfactory.

Stainless steel mesh combined with thin acrylic mixture has several qualities that recommend it for use in repair of skull defects. Metallic mesh alone is easily fashioned for small defects but does not give adequate protection if the area to be covered is relatively large or involves multiple curved surfaces. Acrylic, whilst quite strong, is brittle and has been known to fracture. The combination of stainless steel mesh and thin acrylic plastic has been found to be notably stronger than acrylic plastic alone. Furthermore, if the acrylic plastic should fracture, the mesh holds the pieces together and reduces the hazard from indriven multiple fragments.

Technical Consideration

The cranial defect is exposed, and the pericranium is incised about 10 mm from the edge of the defect. A shallow ledge 3–5 mm wide is made around the margin of the skull defect. This is carried out with a high speed air drill. The pattern of the defect is first traced and cut out of paper. This pattern is placed on the piece of steel mesh which is then cut with heavy metal shears to form a piece slightly larger than the pattern. The mesh is moulded by hand to conform to the skull contours, and the edge is trimmed so that the plate fits accurately on the ledge around the defect. Before the mesh is fastened in place with stainless wires passed through drill holes in the ledge bordering the defect, a 30 cm
Fig. 1. A plastic catheter, perforated with multiple drainage holes, is placed between the dura and the steel wire mesh in several loops.

Fig. 2. During polymerization the prosthesis is irrigated both from the inside and the outside by cooled saline.