NEW DIMENSIONS IN OTORHINOLARYNGOLOGY

—

HEAD AND NECK SURGERY

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FACIAL RECONSTRUCTION WITH IMPLANTS OF POROUS POLYETHYLENE

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Porous polyethylene is a sintered synthetic with a pore size of approximately 150 µ. The material can easily be formed with the scalpel or thermoplastically and is sterilized with ethylene oxide gas. In the ear, nose and throat field it has so far only become known for its use in the replacement of auditory ossicles.

Experimental animal studies have shown that there is ingrowth into the pores of both connective tissue and bone.

Since, moreover, the danger of infection appears to be relatively low, we have used porous polyethylene for the correction of various defects in the head and neck area.

For the correction of forehead defects, a profile plate of porous polyethylene is formed thermoplastically on a plaster model (Fig. 1).

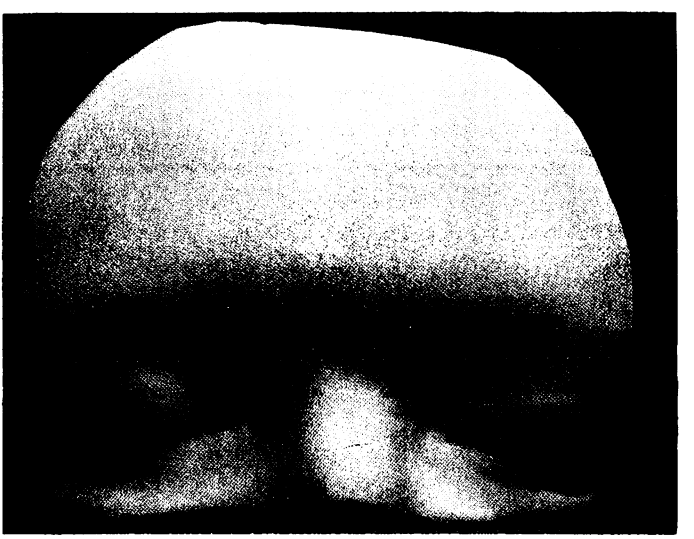
After an arcuate incision behind the hairline, the defect cavity is filled with a multiply perforated block of porous polyethylene, which can easily be shaped to the required size with the scalpel. Final profiling is done by putting on the prepared profile plate and fixing it with fibrin glue. This type of operation has so far been performed in four patients. In one patient, the defect cavity was filled with iliac crest bone. The roentgenogram before and 2 years after the correction shows the expected ossification of the defect area in this case. But also in cases where filling was accomplished with the perforated synthetic plate, the roentgenogram later shows an obliteration with bone or dense connective tissue. The results were satisfactory in all cases. This material even permits correction of large defects where the skin has grown directly onto the dura.

The maximal postoperative observation period is about three years. There were no complications in any of the cases. The cosmetic result is lasting; resorption has so far not been observed.

The favorable properties of porous polyethylene have induced us to also use it as a frame for reconstruction of the external ear. We use a light implant without edges or points, as shown in Fig. 2. If necessary, it can be reduced in size intraoperatively and used for partial ear reconstructions. For a microtia operation, the implant is covered with the temporalis fascia, the so-called "fan-flap" according to FOX and EDGERTON. This reduces the risk of post-

operative complications. We have implanted such frames five times. None of the implants for correction of microtia have had to be removed. The synthetic frame was particularly suitable in a case of abscess-forming pericondritis of the external ear. The nearly totally destroyed auricular cartilage was replaced by a polyethylene frame after the acute inflammation had been brought under control. Three years later, the relief is satisfactory; the retroauricular fold is normally formed.

If the results obtained continue to be favorable, porous polyethylene could obviate the removal of autogenous bone or cartilage for reconstructive surgery in the head and neck region.



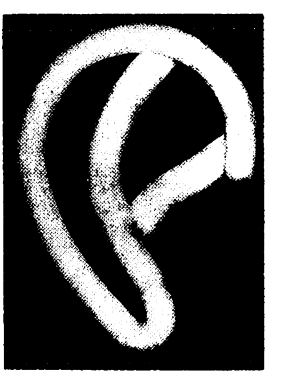


Fig. 1 (left). Profile plate of porous polyethylene cut to the desired shape intraoperatively.

Fig. 2 (right). Framework of PHDPE for auricular reconstruction.

REFERENCES

Berghaus A (1985) Porous polyethylene in reconstructive head and neck surgery. Arch Otolaryngol 111:154-160