

Plastic and Reconstructive Surgery of the Head and Neck

Proceedings of the Fifth International Symposium

**FACIAL
PLASTIC
SURGERY**

EDUCATIONAL AND RESEARCH FOUNDATION FOR
THE AMERICAN ACADEMY OF FACIAL, PLASTIC
AND RECONSTRUCTIVE SURGERY

American Academy of Facial Plastic and Reconstructive Surgery

Edited by

Fred J. Stucker, M.D., F.A.C.S.

Professor and Chairman,
Department of Otolaryngology,
Head and Neck Surgery
Louisiana State University
School of Medicine
Shreveport, Louisiana

B. C. DECKER

PHILADELPHIA • HAMILTON

4/15/73

CONTENTS

PART ONE

Aesthetic Nasal Surgery

1. The Septocolumellar Complex, 3
Edward H. Farrior
Richard T. Farrior
2. Steroids and Rhinoplasty: A Double-Blind Study, 7
Dieter F. Hoffmann
Ted A. Cook
Vito C. Quatela
Tom D. Wang
Peter J. Brownrigg
Robert E. Brummett
3. The Cover Girl's Nose, 11
Nolan P. Kane
4. Aesthetic Reconstruction of the Platyrhine Nose, 15
Thomas Romo III
Craig A. Foster
Gwen S. Korovin
5. External Rhinoplasty as a Natural Extension of the Millard Forked Flap, 23
Anthony J. Yonkers
Frederic P. Ogren
C. Scott Howe
David G. Schall
6. Revision Rhinoplasty Using the Open-Structure Rhinoplasty Technique, 27
Dean M. Toriumi
Calvin M. Johnson Jr.
7. Functional and Cosmetic Aspects of Nasal Tip Deformities, 33
Wolfgang Stoll
8. The Challenge of the Nasal Dorsum, 37
Frank F. Rubin
9. Aesthetic Refinement in Significant Nasal Augmentation, 41
David H. Slavitt
Vito C. Quatela
Tom D. Wang
10. Assessment and Management of the Difficult Primary Rhinoplasty, 45
Sigmund L. Sattenspiel
11. Rethinking the Nasal Tip: Reshaping Versus Excision of Nasal Tip Cartilage, 55
Thomas C. McLure
12. Projection and Reinforcement of the Lobule with Supratip Narrowing, 67
S. James Baum
13. An Analysis of the Cosmetic Acceptability of the External Rhinoplasty Scar, 71
Gary S. Churchill
Devinder S. Mangat
14. Gender Identity in Rhinoplasty, 75
Krzysztof Conrad
15. Rhinoplasty Surgery in a Residency Training Program, 79
Joedy L. Daristotle
Richard C. Haydon III

PART TWO

Blepharoplasty

16. A Staggered Skin-Muscle Flap to Optimize Support in Lower Lid Blepharoplasty, 85
Michael G. Stampar
H. George Brennan
17. Asian Blepharoplasty, 89
Don Liu

18. A Technique for Blepharoplasty Without Incising or "Puncturing" the Orbital Septum, 91
Emil Bisaccia
Dwight A. Scarborough
19. Lower Lid Blepharoplasty: A Precise Method of Determining the Amount of Skin and Muscle Removal, 95
Ronald A. Fragen
Andrew J. Fragen
20. Useful Variations in Blepharoplasty, 97
Gregory S. Keller
21. Rule of Supratarsal Fixation in Upper Lid Blepharoplasty, 99
Isaac I. Matta
22. Blepharoplasty in the Elderly Patient with Senile Lower Eyelid Changes: Combined Transconjunctival and Lateral Strip Technique, 105
Ira D. Papel
23. Lower Lids—Surgery or Peel?, 109
S. Randolph Waldman
24. Epicanthoplasty in the Asian Eyelid, 113
John A. McCurdy Jr.

PART THREE

Aging Face Surgery

25. An Update on Quadrangular Rhytidoplasty, 119
William H. Friedman
Steven J. Pearlman
26. Deep Temporal Face-Lift: Technique and Indications, 123
Jacques Faivre
27. Defining the Cervical Angle Using an Alloplastic Sling, 135
Pierre F. Giammanco
28. Avoidance of Temporal Bunching in Cheek/Neck Rhytidectomy, 139
Gregory S. Keller
29. Fibrin Glue in Plastic Surgery: A New Method for the Treatment of the Aging Face, 141
Werner L. Mang
30. Aging Face Surgery, 145
Ivo Pitanguy
31. Aesthetic Auricular Contour in Rhytidoplasty, 149
Sigmund L. Sattenspiel
32. Finesse in Forehead Lifting, 159
Keith J. Wahl

33. Face-Lifting in the Nineties: Selecting the Appropriate Technique, 165
E. Gaylon McCollough

PART FOUR

Liposuction, Fat Transplant, and Tissue Expansion

34. Autotransplantation of Fat in the Rabbit Ear: Factors to Enhance Graft Survival, 175
Jeffrey M. Bartynski
Mitchell S. Marion
Tom D. Wang
35. Facial Liposuction—An Office Technique, 181
Emil Bisaccia
Dwight A. Scarborough
36. Liposuction of the Very Young Face, 185
Wafik A. Hanna
Ronald L. DeVore
37. Multiple Procedures and Use of the Liposuction Technique for Facial Contouring and Sculpture, 189
Wafik A. Hanna
Philip K. Robb
38. Tissue Expanders for Reconstruction Within Irradiated Head and Neck Tissues, 195
Michael H. Fritsch
Randal W. Swenson
39. Skin Expanders, 201
Joseph Agris
40. Immediate Versus Chronic Tissue Expansion, 211
Brian K. Machida
Maisie Liu-Shindo
Gordon H. Sasaki
Dale H. Rice
Para Chandrasoma
41. Complications of Tissue Expander Use, 215
Frank W. Shagets
William R. Panje
42. Complications of Soft Tissue Expansion, 219
Joseph Agris

PART FIVE

Procedures of the Auricle, Lip, and Chin

43. Otoplasty: Natural, Safe, and Easy, 225
Thomas C. McLure
44. Correction and Reconstruction of the Malformed Auricle, 229
Claus D. Walter
45. Reproducing a Near-Normal Pinna Anatomy, 233
Hilko Weerda

46. The Surgical Treatment of First- and Second-Degree Auricular Dysplasias, 237
Hilko Weerda
47. The Surgical Treatment of Third-Degree Auricular Dysplasia (Third Degree Microtia and Anotia), 239
Hilko Weerda
48. Cosmetic Surgery of Thin and Wrinkled Lips, 243
Jacques Faivre
49. Lips and the Cosmetic Surgeon, 251
S. Randolph Waldman
50. Mentoplasty Using Rolled Polyamide Mesh: Review of 237 Cases, 257
Chin W. Swong
Fred J. Stucker
51. Surgical Considerations in the Correction of Chin Ptosis, 261
Howard W. Smith
Monte S. Keen

PART SIX

Implants and Augmentation

52. A Porous Implant System (Porecon) for Facial Reconstruction and Augmentation, 267
Alexander Berghaus
53. The Use of Medpor in Cosmetic and Reconstructive Surgery: Experimental and Clinical Evidence, 271
Henry B. Bikhazi
Randy Van Antwerp
54. Mersilene Mesh in Nasal and Facial Augmentation, 275
Jeffrey J. Colton
G. Jan Beekhuis
55. Augmentation Rhinoplasty Using Mersilene Mesh, 285
Devinder S. Mangat
Gary S. Churchill
56. Customized Tissue Clay: A New Surgical Material and Technique for Facial Reconstruction, 289
Michael Evan Sachs
Thomas Romo III
57. Irradiated Homologous Cartilage in Augmentation Rhinoplasty, 297
Richard A.K. Chaffoo
Richard L. Goode

58. Demineralized Bone Grafts for Nasal Reconstruction Versus Irradiated Cartilage, 301
Mark D. McKenney
Walter E. Berman
59. Augmentation Rhinoplasty Using Laminated Allograft Dura (Tutoplast), 307
H. George Brennan
Marcelo Hochman
60. Submalar Augmentation: An Alternative Method for Facial Rejuvenation, 313
William J. Binder

PART SEVEN

Miscellaneous Facial Plastic Surgical Topics

61. AIDS-Related Complications of Soft Tissue Repair, 323
Michael S. Godin
K. Thomas Robbins
C. Daniel Sooy
62. Facial Paralysis Following Local Dental Anesthesia, 329
Richard A. Gallo
Charles P. Kimmelman
63. Minimizing Blood Loss During Outpatient General Anesthesia Through a *Safe Mix* of Vasoconstrictor and Hypotensive Technique—Labetalol is the Key, 331
Anthony S. Krausen
Frederick Carpenter
64. Role of the Expert Witness in Malpractice Litigation, 335
Meron J. Levitats
65. Low-Energy Helium Neon Laser and Tissue Healing: Effects on Human Fibroblast Collagen Production and Rat Sciatic Nerve Morphology, 339
Carl B. Myers
Arlen D. Meyers
Donald W. Goin
Richard A. Clark
66. Zygoma: A Rosetta Stone, 345
Walter R. Sabiston
67. Inverted Continuous Single- or Double-Interlocking Subcuticular Suture (Inverted Zipper), 349
Charles H. Hutchins
Paul T. Davis
68. Double- and Triple-Interlocking Suture Techniques, 353
Charles H. Hutchins
Paul T. Davis

PART EIGHT

Functional and Reconstructive Surgery of the Nose

69. A System of Total Nose Reconstruction, 359
Edward J. Bowen-Jones
Arvin M. Lalbahadur
Ian C. McGibbon
Anil Madaree
70. Axial Frontonasal Flap: Flap Extension and Modification of the Nasal Skeleton, 363
Jung I. Park
Mark Gordon
Ronald B. Minkin
Mitchell L. Bressack
71. Lower Lateral Techniques in Open-Approach Rhinoplasty, 369
Albert L. Roper II
72. Progress of Rhinoplasty in India, 373
V.P. Sood
73. The "Swinging Door" Technique for Septorhinoplasty, 379
Moshe Goldshur
H.Z. Joachims
Steve Becker
Michael Nash
Robert Einhorn
Yosef Krespi
74. Effect of Intranasal Splints in Preventing Complications of Septal Surgery, 383
John A. Fornadley
Gregg S. Parker
Thomas A. Tami
75. The Transfixion Incision, 387
Herbert Kean
76. The Partial-Transfixion Incision in Rhinoplasty, 393
Monte S. Keen
Juan Moscoso
77. The Cartilaginous Columellar Strut for Reconstructive Rhinoplasty: The "Bowie Knife" Strut Revisited, 397
Robert M. Sweet
78. Alar Valvular Collapse, 405
Ritchie A.L. Younger
79. Rhinoplasty and Laser Turbinectomy: Considerations for the In-Office Surgical Suite, 409
Stuart G. Selkin
80. Combined Medical and Surgical Therapy of the Allergic Nose, 413
Richard J. Trevino

81. Laser Turbinectomy Associated with Septorhinoplasty, 415
Fred J. Stucker
82. The Role of Partial Turbinectomy in Aesthetic Septorhinoplasty, 419
Oakley Smith
Peter Adamson
Guy Tropper
Philip Cole
Becky L. McGraw
83. Simultaneous Rhinoplasty and Orthognathic Surgery, 423
Peter D. Waite

PART NINE

Maxillofacial Surgery

84. Banked Fascia Lata and the Repair of Orbital Floor Fractures, 427
Edward H. Bedrossian Jr.
85. External Septorhinoplasty and Nasal Trauma, 431
J. Oliver Donegan
86. Reversible Visual Loss in Orbital Trauma, 439
Gerald S. Gussack
Saunders Hupp
87. Traumatology of the Midface: Miniplate Osteosynthesis, 443
Werner L. Mang
Werner Schwab
Flotian Wendl
88. Facial Burns: Treatment of the Sequelae, 445
Berndt Mayer
Ivo Pitanguy
89. Extended Role of Internal Plate Fixation in Maxillary Fractures, 449
Victor V. Strelzow
90. Degloving Approach for Infraorbital Rim Exposure, 453
Larry J. Shemen
Pamela Lipkin
Cecil Grimes
91. Computerized Three-Dimensional Facial Analysis, 457
Dean M. Toriumi
George Maupin
Wayne F. Larrabee Jr.
92. Mandibular Reconstruction Following Resection for Benign Tumors, 463
George P. Katsantonis
Festus Krebs
Frank Simo

93. Heterologous Demineralized Bone Matrix in Mandibular Defect Repair, 467

Gregory T. Mesna
Lawrence J. Marentette

PART TEN

Head and Neck Surgery: Resection and Reconstruction

94. Oral Function Following Cancer Surgery, 473

Ian A. McGregor

95. Surgical Management of Thyroid Carcinoma with Laryngotracheal Invasion, 479

Michael Friedman

96. Craniofacial Resection: A Tailored Approach, 487

Vinod K. Anand
Ossama Al-Mefty

97. Experiences with Masseter Crossover Flap in Oral-Oropharyngeal Reconstruction, 491

Rammohan Tiwari

98. Large Hemangioma at the Base of the Tongue: A Therapeutic Approach, 493

Chalee Kanchanarak

99. Functional Approaches to Skull Base Surgery, 497

Samuel C. Levine
Lawrence J. Marentette

100. Total Upper Lip Reconstruction, 501

Rammohan Tiwari

101. Transzygomatic and Transpalatal Excision of Juvenile Nasopharyngeal Angiofibroma with Intracranial Extension: Rationale, 505

Stephen J. Haines
Arndt J. Duvall III

102. Lateral Rhinotomy, 511

William W. Montgomery
Mack L. Cheney

103. Cervico-Occipital Flap: A New, Reliable Technique for Resurfacing Defects of the Neck, 515

Rammohan Tiwari

PART ELEVEN

Grafts and Flaps in Facial Reconstruction

104. Controlled Local Hypothermia and Survival of Myocutaneous Flaps in the Pig Model, 521

George S. Goding Jr.
Charles W. Cummings
Donald A. Bright

105. Hyperbaric Oxygen Therapy and the Survival of Surgical Flaps Raised in Irradiated Skin, 525

Arnold L. Goodman
John S. Rubin
Hubert Eddy
Roy A. Myers
Charles Suter

106. Effects of Lipid Angiogenic Factor on Local Skin Flaps, 529

John S. May
James N. Thompson
Jai H. Ryu

107. Superficial Temporal Fascia Flap in Cervicofacial Plastic Surgery, 531

Francois Disant
Alain Morgon

108. Myocutaneous Postauricular Flap as a One-Stage Procedure for Management of Carcinoma of the Ear, 535

Sidney S. Feuerstein

109. Carcinomas of the Face: Local Flaps and Free Microsurgical Flaps, 541

Werner L. Mang
Ulrich Steinau
Werner Schwab

110. Reconstruction of Midfacial Defects Following Mohs' Surgery: Innovations in the Use of Local Flaps, 545

Brian L. Matthews
Jeffery B. Hiltbrand
Barry Leshin
James N. Thompson

111. Z-Advancement Rotation Flap Reconstruction of Full-Thickness Cutaneous Defects of the Nose, 549

John W. Pate Jr.
John C. Wilkinson

112. The Perichondrial-Cutaneous Skin Graft: A Laboratory and Clinical Review, 557

Fred J. Stucker
William A. Portuese

PART TWELVE

Rehabilitation of Seventh Nerve Paralysis

113. Expanded PTFE Patch for Suspension in Facial Paralysis, 561

John M. Dobrowski
Kedar K. Adour
Raymond L. Hilsinger Jr.

114. Facial Reanimation by Cranial Nerve Substitution Without Tongue or Shoulder Paralysis, 565

William R. Panje
Thomas J. Dobleman

- 115. Dual Simultaneous System-2: A New Technique for Facial Reanimation in Total Proximal Facial Nerve Paralysis, 569
Michael Evan Sachs
- 116. The Use of Gold Weight Implants in the Oculoplastic Rehabilitation of Facial Paralysis, 573
Joseph R. Spiegel
Robert Thayer Sataloff
Mary J. Hawkshaw
- 117. Management of the Paralyzed Eyelid, 577
William R. Panje
Gary Y. Shaw
- 118. Facial Paralysis and the Eye: Strategies for Preservation of Function and Cosmesis of the Eyelids, 583
Carl A. Patow
John J. Conley

**PART THIRTEEN
Cutaneous Procedures**

- 119. Noncutaneous Head and Neck Melanomas, 589
Samuel R. Fisher
David J. Hoyt
Jonathan J. Dutton
- 120. Management of Superficial Skin Lesions in a Cosmetic Surgery Practice, 595
S. Randolph Waldman
- 121. Bacitracin: A Unique Sensitizer Used with Increasing Frequency After Skin Surgery, 599
Bruce E. Katz
- 122. Multiple-Margin Frozen Section in Surgery for Facial Skin Malignancies, 603
George G. Kitchens
- 123. Treatment of Recurrent Large and Multiple Keloids, 607
Fred J. Stucker
Chin W. Swong
- 124. Metastases from Solar-Induced Squamous Cell Carcinomas of the Skin, 611
Frank C. Koranda

- 125. Chemical Peel (Chemabrasion of the Face), 613
Emil P. Liebman

**PART FOURTEEN
Congenital Deformities**

- 126. The Role of the Plastic Surgeon in Microtia Repair, 621
Eugenio A. Aguilar III
Robert A. Jahrsdoerfer
- 127. Ear Reconstruction with Rib Cartilage Graft in Children, 625
Francois Disant
Alain Morgon
- 128. Surgical Correction of the Nasal Tip of the Unilateral Cleft Lip Nose: A Combined Approach, 629
Mark V. Connelly
- 129. Maxillary and Mandibular Osteotomies in the Cleft Palate Patient, 637
James H. Pennington Jr.
Richard T. Farrior
- 130. The Maxillary Influence in the Attainment of Perfection in Lip-Nose Correction of Cleft Lip and Palate, 643
Sheila Rohatgi
Sabyasachi Kar
- 131. Congenital Nasal Dermoid Cyst: Management Utilizing the External Rhinoplasty Approach, 649
Raymond J. Konior
Russell W.H. Kridel
- 132. Multiple Congenital Defects: Decisions and Dilemmas, 653
John E. Clemons
- 133. Pediatric Craniofacial Surgery, 655
Lawrence J. Marentette
Stephen J. Haines

CHAPTER 52

A Porous Implant System (Porecon) for Facial Reconstruction and Augmentation

ALEXANDER BERGHAUS, M.D.

Bone, cartilage, or synthetic materials may be used for facial reconstruction and augmentation. I should like to point out the possibilities offered by a modern synthetic material and discuss our results with implants of porous polyethylene (Porecon; Effner GmbH, Berlin, Federal Republic of Germany).

MATERIALS AND METHODS

Polyethylene is altogether one of the simplest synthetic compositions. It is a more or less branched, long-chained hydrocarbon. The material I use has no additives.

Rubin already achieved good long-term results with non-porous, compact polyethylene decades ago in the United States. In Porecon, however, the scanning electron microscope reveals at 2,600-fold magnification the fine ramification of an interconnecting open-pore system with a pore size of approximately 150 μm . These pores permit the ingrowth of connective tissue that is also supplied by capillary vessels. This finding has been repeatedly confirmed experimentally.

Ingrowth of bone has likewise been observed on implantation of the material in an osseous bed. The growth of bone into the pores of a synthetic material can by no means be taken for granted but represents a particular advantage of porous polyethylene. In contrast to polyethylene, Proplast implants from the same series of animal experiments did not display ingrowth of either connective tissue or bone. This is ascribed to the fact that the pore connections of Proplast do not have an adequately large diameter.

With polyethylene, the shape of the implant also remains constant postoperatively, which was demonstrated experimentally using the edge of an implanted cube. Proplast, on the other hand, was fragmented in the implant bed by the host tissue; parts of the synthetic material appeared in medullary spaces.² Further studies have shown that there is apparently much less danger of infection with porous polyethylene than

with silicone. Other advantages are the easy workability of the synthetic material with a scalpel and scissors and the unproblematic sterilization with, for instance, ethylene oxide. Resorption of porous polyethylene has never been unequivocally demonstrated. I have not observed any resorption of this material in either animal experiments or clinical practice.

The good workability of the material has led to the development of manifold implants for diverse defects of the skull and the soft parts of the face. Thus there are implants of the calotte, forehead, cheek, chin, and auricle (Fig. 52-1).

In the area of the nose, however, caution is indicated; in my opinion, the tip of the nose is not suited for the implantation of synthetic materials in view of its exposure to too many micromovements. Porecon implants can, however, be used at the bony bridge of the nose.

Irrespective of the implant bed, such an implant must always be covered by an adequate amount of healthy skin. The coronal incision is particularly appropriate for exposure in the correction of frontal defects. It requires no suturing over the implant, which is favorable for the ingrowth and healing as well as for the cosmetic results.

A smooth surface can be achieved more readily with a synthetic implant than with costal cartilage or bone (Figs. 52-2A and B).

Our patients have shown no signs of resorption even after a postoperative follow-up of 5 years.

In 1982, we inserted a Porecon frame into the skin covering the auricle to replace necrotic cartilage in a case of purulent perichondritis. The result is still satisfactory and stable after 7 years. No resorption has been observed.

Delicate three-dimensional frames have been developed for the correction of microtia. Implantation has been successfully performed with the fan-flap technique, which involves encasing the synthetic frame in fascia of the temporal muscle prior to coverage with a skin transplant (Figs. 52-3A and B).³

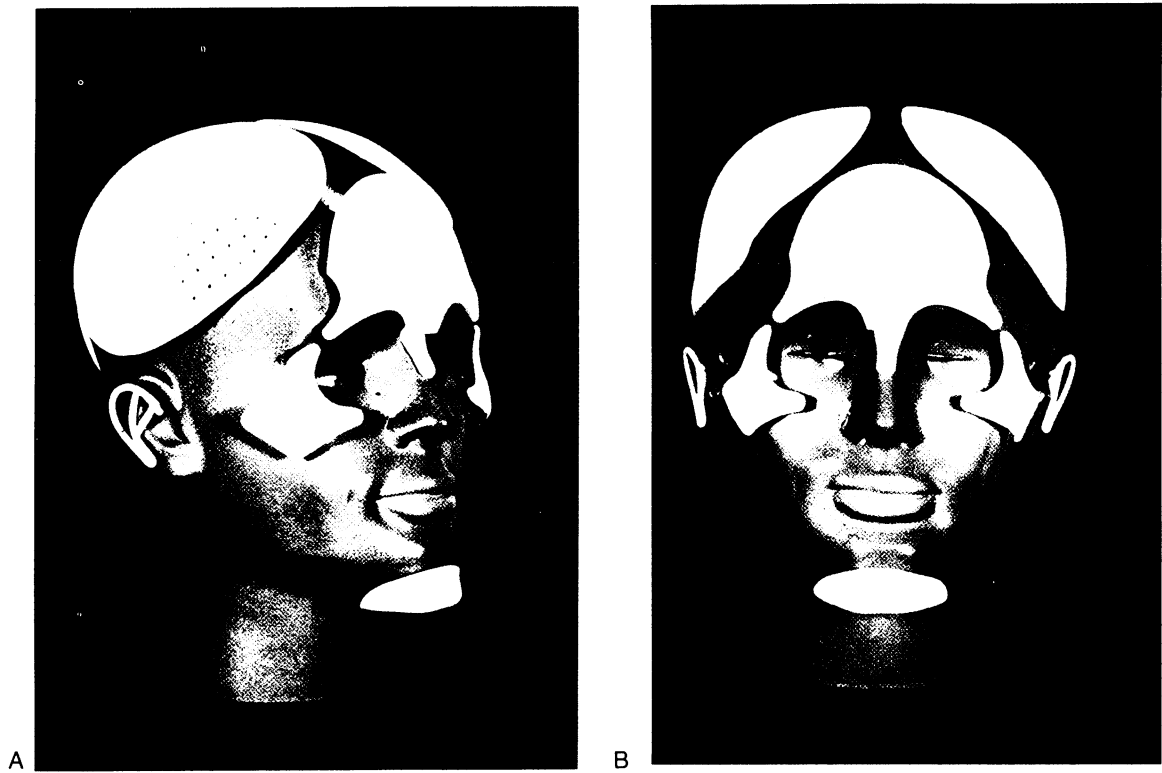


Figure 52-1. Different Porecon facial implants out of porous polyethylene. These parts can be easily cut to desired size and shape.



Figure 52-2. Patient with frontal defect after operation of a mucocele before (A) and 4 years after surgical correction with Porecon implant (B). Note smooth surface, with no resorption.



Figure 52-3. Patient with microtia on the right before (A) and 3 years after correction with Porecon implant and fan flap (B).

We are presently working on a tracheal prosthesis composed of porous polyethylene and silicone. The fact that we have clearly exceeded a 1-year survival time with this implant in repeated animal experiments opens up prospects of it soon being applied for tracheal replacement in humans as well.

RESULTS

We have so far applied 26 Porecon implants for facial reconstruction, primarily for correction of microtia and frontal defects. These implants have shown good to very good long-term results (maximal follow-up of 7 years). A cheek implant had to be removed again because of the implants' hypermobility.

DISCUSSION

With synthetic implants, the risk of possible rejection is offset by the advantage of avoiding a second intervention in the patient.

Porecon implants offer the further advantage of not having to expect resorption, which, at least with conserved cartilage transplants, cannot be ruled out entirely.

Because porous polyethylene is easily workable, can be well sterilized, and does not promote infections, we regard it as an extremely interesting implant material for facial reconstruction and augmentation. The good long-term results confirm this positive assessment.

REFERENCES

1. Rubin LR. Polyethylene as a bone and cartilage substitute: A 32 year retrospective. In: Rubin LR. ed. *Biomaterials in reconstructive surgery*. St. Louis: CV Mosby, 1983.
2. Berghaus A, Mulch G, Handrock M. Porous polyethylene and Proplast; Their behaviour in a bony implant bed. *Arch Otorhinolaryngol* 1984; 240:115-123.
3. Berghaus A. Porecon[®]—Implant and fan flap: A concept for reconstruction of the auricle. *Facial Plast Surg* 1988; 5:451-457.