

Prominent Ears-Pitanguy's Island Technique: Long-Term Results

Ivo Pitanguy, MD, Giuseppe Fiazza, MD, Carlos Alberto Calixto, MD, Paulo Malta Muller, MD,
Alberto M. L. Caldeira, MD, and Adelson Alexandrino, MD

Reprinted from Head & Neck Surgery, May/June 1985

4.6.27

SELECTED TOPIC

PROMINENT EARS—PITANGUY'S ISLAND TECHNIQUE: LONG-TERM RESULTS

Ivo Pitanguy, MD, Giuseppe Fiazza, MD,
Carlos Alberto Calixto, MD, Paulo Malta Muller, MD,
Alberto M. L. Caldeira, MD, and Adelson Alexandrino, MD

Abstract: Through the analysis of 300 cases of prominent ears operated by Pitanguy's technique with a follow-up of 1–15 years we observed the preservation of the aesthetic aspect as well as the cephaloauricular angle. We call attention to its easy performance and almost no incidence of early or late complications.

HEAD & NECK SURGERY 7:418–426 1985

Prominent ears are the most common congenital deformities of the auricle.^{1–3} In its normal development, the auricle increases its protrusion from the cephalic wall during the third month of pregnancy, and at the end of the sixth month, the helical border bends over itself; the body of the anthelix is then definitely angulated and its inferior and superior portions are formed.^{4–6} Failure of development of the anthelix fold and an excessive development of the conchal cartilage, alone or associated, is responsible for the embryologic genesis of this anomaly.^{7–9} The size of the ear in this deformity corresponds to the patient's body development, growing rapidly during the first 2 years of age; its vertical axis reaches 5 cm, after which the growth slows down, reaching its

maturity around 17 years of age when the auricle usually attains 6 to 6.5 cm.^{10–12} Certain parameters that determine a pattern of normality of the auricle attachment to the skull (the cephaloauricular angle) is normally between 20° and 30°, and between the scapha and the concha (scaphoconchal angle), it is approximately 90°.^{13–16} Although of utmost importance for a precise evaluation of each deformity, any surgical correction based only on angles and measures would lead to a less natural auricle shape.^{17–23} Luckett, in 1910 was the first to recognize an important factor regarding this deformity: the insufficient definition of the anthelix, yielding a wide-opened scaphoconchal angle and consequent separation of the auricle from the head. Thus, Luckett developed incisions on the medial aspect of the auricular cartilage and on the scaphoconchal junction for reconstruction of the anthelix fold. This technique produces a less natural aspect, since the thin edges of the incised cartilage bulge under the skin on the anterior aspect of the auricle. To avoid this drawback, Barsky²⁴ made two more parallel incisions beside Luckett's incision, attempting to tube instead of angulate the anthelix. Barsky was followed by Becker,^{25,26} Converse et al.,^{27,28} and Erich,²⁹ who discarded the central incision. Straith³⁰ overlies the incision margins, Cloutier³¹ narrows by bevelling them, whereas Pitanguy^{32–38} hides them behind a cartilaginous "island."

MATERIALS AND METHODS

Analyzing 300 consecutive cases of prominent ears operated on at the Ivo Pitanguy Clinic and

From the Department of Plastic Surgery of the Catholic University of Rio de Janeiro, Brazil.

Address reprint requests to Dr. Pitanguy, Rua Dona Mariana, 65, Botafogo, Rio de Janeiro, RJ, Brazil.

Accepted for publication November 12, 1984.

0148-6403/0705/0418 \$04.00/0

© 1985 John Wiley & Sons, Inc.

38th Infirmary of the "Santa Casa de Misericórdia" General Hospital, we focused on the following: the aesthetic result and the cephaloauricular angle at long-term, as well as the early and late complications. The aesthetic result was evaluated on a four-value scale, such as excellent, good, adequate, and unfavorable, taking into consideration the degree of pre-existent deformities documented by preoperative photographs. The cephaloauricular angle was evaluated by measuring the distance from the helix, at its medial third to the retroauricular sulcus and the distance of its projection on the lateral aspect of the head; we transposed these measures to paper, calculating the corresponding angle.³⁹⁻⁴¹ Among the early complications, we researched hematomas, infections, dehiscences, and necroses. Among the late complications, we focused on recurrence, asymmetry, hypertrophic scars, and problems of sensitivity and growth.

We conclude from this research that the aesthetic result in the long run is satisfactory and, as for the cephaloauricular angle, we observed measures slightly larger than those judged as ideal in the world literature, i.e., instead of 30°, the average was 35°. Nonetheless, the operation produced an improvement of the pre-existent pathology, the least valued angle being 60°.

As for the early complications, we found only one case of partial dehiscence of the cutaneous suture line; it was treated conservatively, leading to the only case of hypertrophic scar. Regarding late complications, asymmetry was found in 1% of the cases (when there was a difference of 5° or more) and recurrence in 1%.

PSYCHOLOGICAL ASPECTS

We consider preschool age the ideal time for surgery (around 6 years of age). At that time, the child usually expresses the desire to be operated on, so as to diminish the psychological problems evolving from nicknames and schoolmates censure.⁴²⁻⁴⁶

Postponing the operation results in serious changes of the child's personality and psychic structures, whereas correction of the deformity will procure a perfect adaptation of the child to his environment and society, avoiding later psychic traumas.^{47,48}

SURGICAL CONSIDERATIONS

Pitanguy's technique consists of the creation of an island of cartilage for construction of the anthelix and the superior crux, conveying a more definite shape to the triangular fossa and correcting the

scaphoconchal angle.³⁶⁻³⁸ The cartilaginous island, completely released and adherent to the anterior aspect of the skin is projected forward, reconstructing the anthelix.

As the cartilage is incised throughout its thickness, transfixing contention sutures become unnecessary as it loses its elastic strength.

Correction of the cephaloauricular angle is obtained by resecting a retroauricular skin ellipse and, eventually, by rotating the concha.

The operation can be performed under local or general anesthesia; in both cases the posterior aspect of the ear, the mastoid region, the radix of the helix, and the lobule are infiltrated with a solution of 1% xylocaine and adrenalin 1:100,000.

PITANGUY'S ISLAND TECHNIQUE

The patient is placed in a supine position, on an anti-Trendelenburg position of 25°. The ear is folded posteriorly with the thumb and the index finger, thus defining the appropriate site for drawing the island that will reconstruct the anthelix. The drawing is elliptical in shape, slightly concave anteriorly, and of variable measures. A skin ellipse is resected from the posterior aspect, its width being determined by the degree of the ear protraction. A fine layer of tegument should be resected, leaving sufficient amount of connective tissue and perichondrium. The demarcated skin island is transferred from the anterior surface of the auricle to the posterior surface of the cartilage by means of straight needles soaked in methylene blue. The cartilage is incised following the tattooed points and the edges of the cartilaginous island are undermined. This maneuver allows the approximation of the cartilage margins without tension, being sutured with absorbable stitches. The cartilaginous island is thus immediately projected forward, simulating the anthelix. The concha, which may contribute to or even be responsible for the deformity, is treated by undermining of its posterior aspect at the level of the external acoustic meatus. The concha is rotated and secured to the mastoid region by a few stitches of absorbable material. This rotation is performed according to the surgical judgment of the surgeon, who must avoid any excessive rotation that could lead to a narrowing of the external acoustic meatus⁴⁶ (Fig. 1). A correct ear position must be assessed before suturing the retroauricular skin. The cephaloauricular angle should be approximately 30° and the anthelix should never be more prominent than the helix, especially in its superior position. If the lobule remains markedly

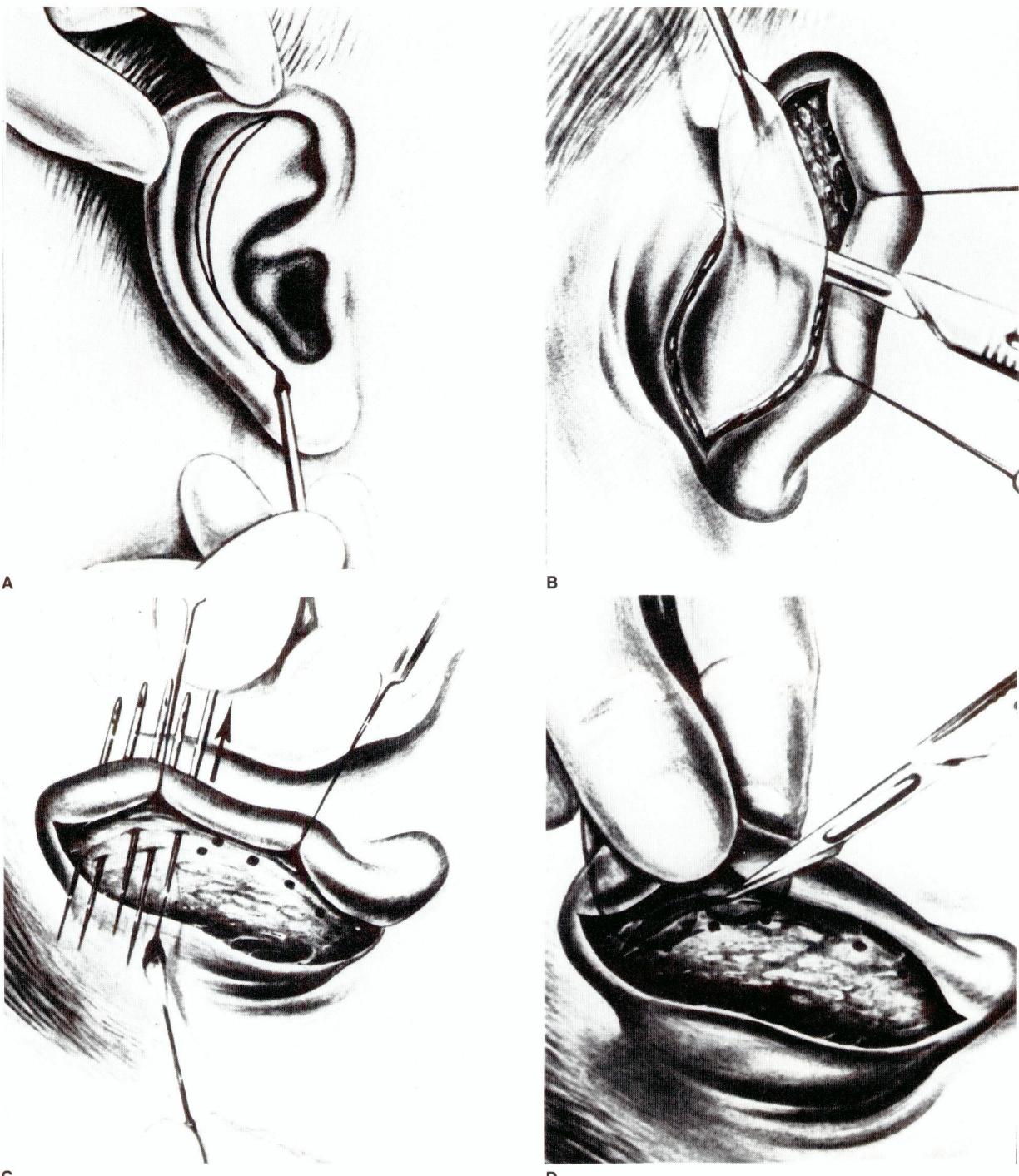
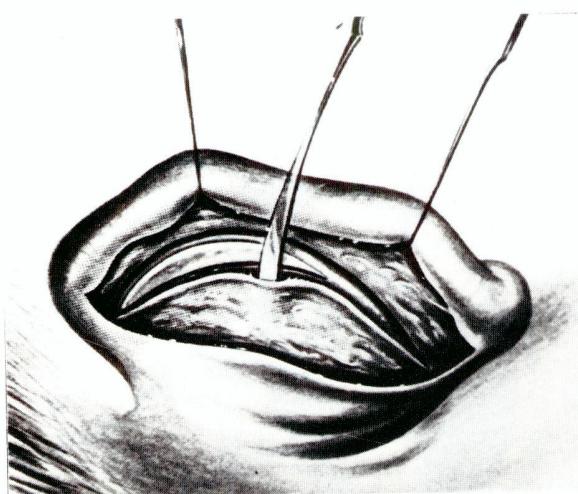
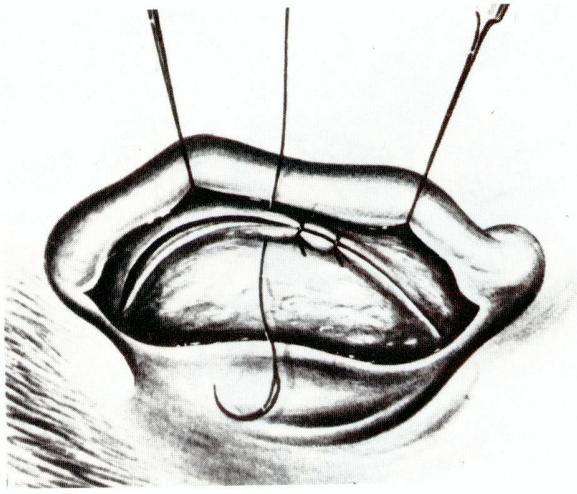


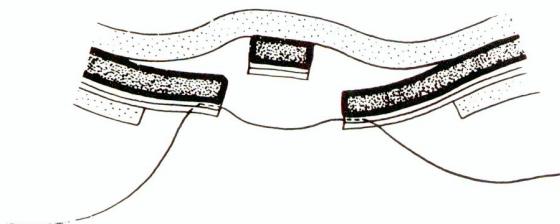
FIGURE 1. (A) Marking the island with methylene blue. (B) Resection of the retroauricular skin. (C) Drawing transfer to the posterior aspect by means of a straight needle dipped in methylene blue. (D) Cartilaginous island incision. (E) Small undermining freeing the cartilaginous borders that envelop the island. (F) Approximation of the cartilaginous borders that envelop the island, projecting it forward, including just subcutaneous tissue and perichondrium. (G) Diagram illustrating the approximation points. (H) Diagram illustrating the island projected forward. (I) Undermining the concha till the acoustic meatus. (J) Rotating the concha and its fixation to the mastoid bone.



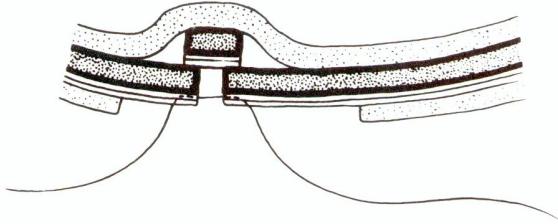
E



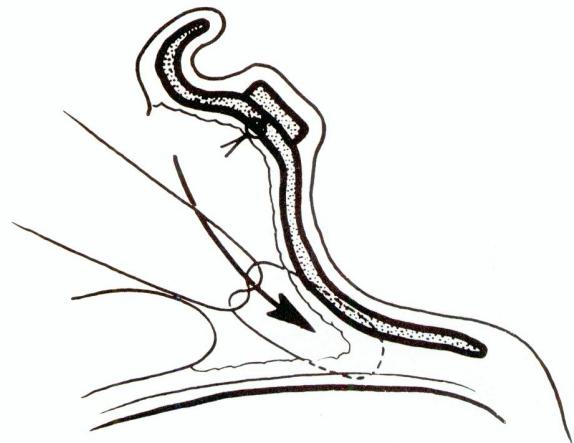
F



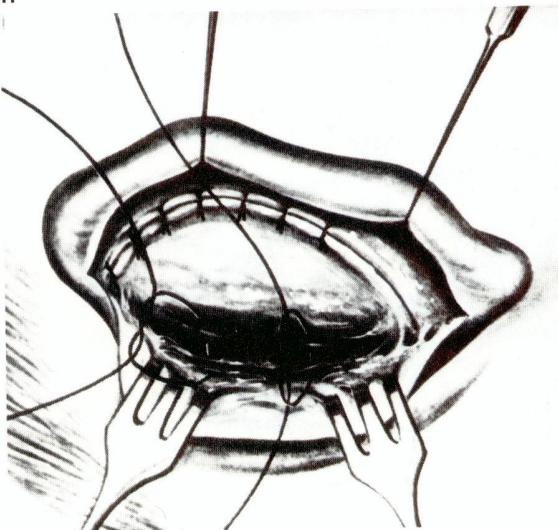
G



H



I

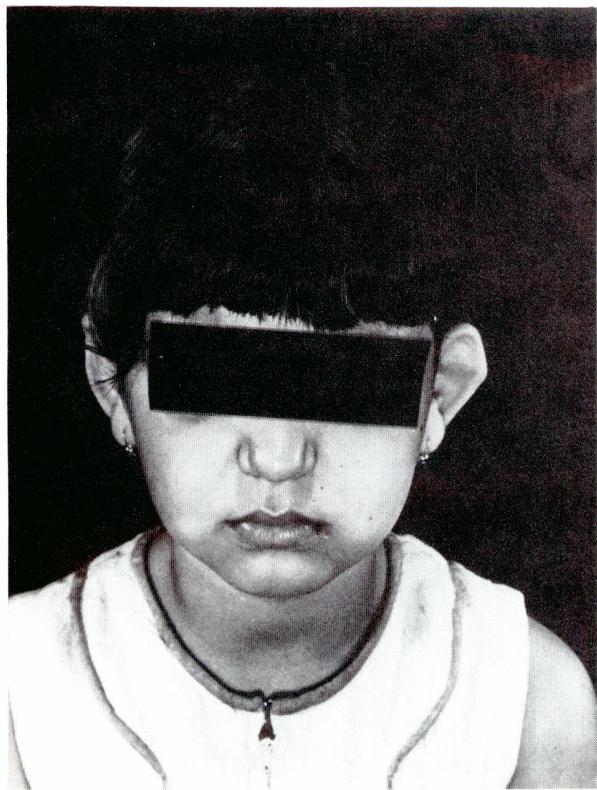


J

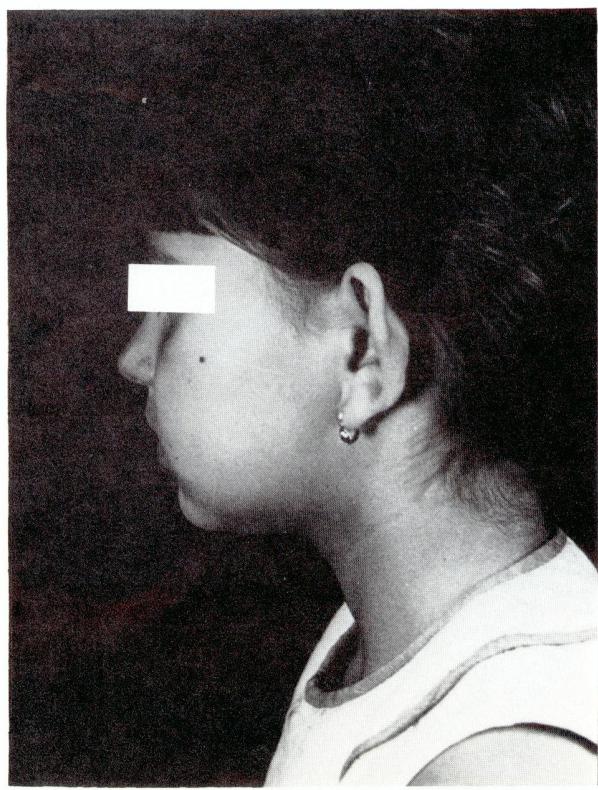
FIGURE 1 (continued)

protruded, or depending on the case, an elliptical or triangular resection should be effected on its posterior aspect. If the ear remains prominent, it is usually caused by an ill-positioning of the tail of the helix, which must be undermined and posteriorly fixed to the concha. If the antitragus is

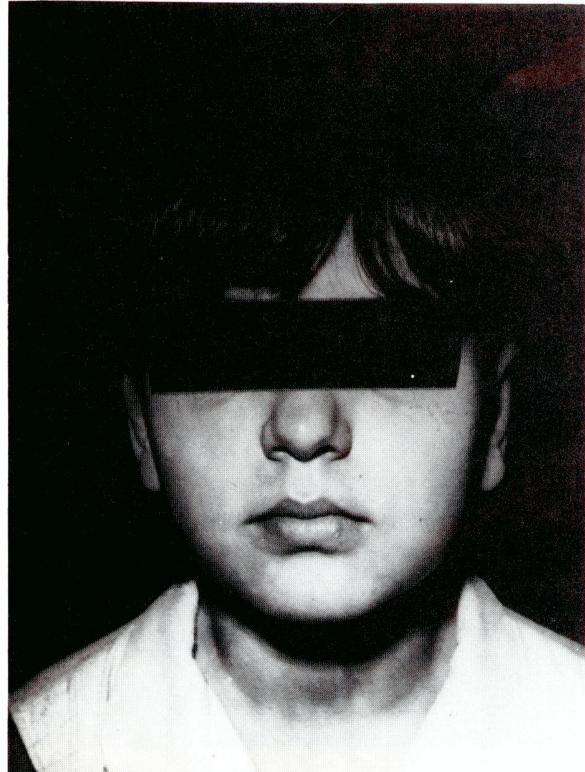
bulging in excess, it can be undermined and easily resected. The dressing consists of moistened cotton-wool, which shapes the anterior aspect of the auricle, Vaseline gauze on the retroauricular sulcus, and padded gauze and elastic bandage completing the dressing^{37,38} (Figs. 2-4).



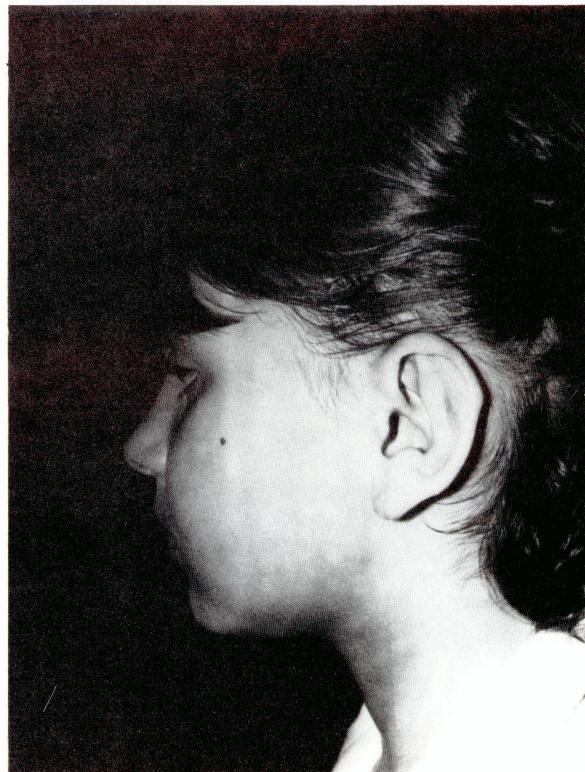
A



B

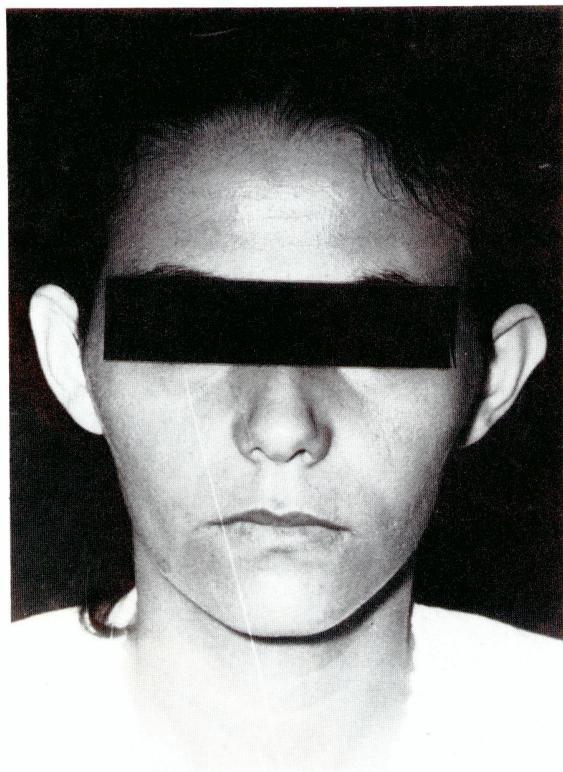


C



D

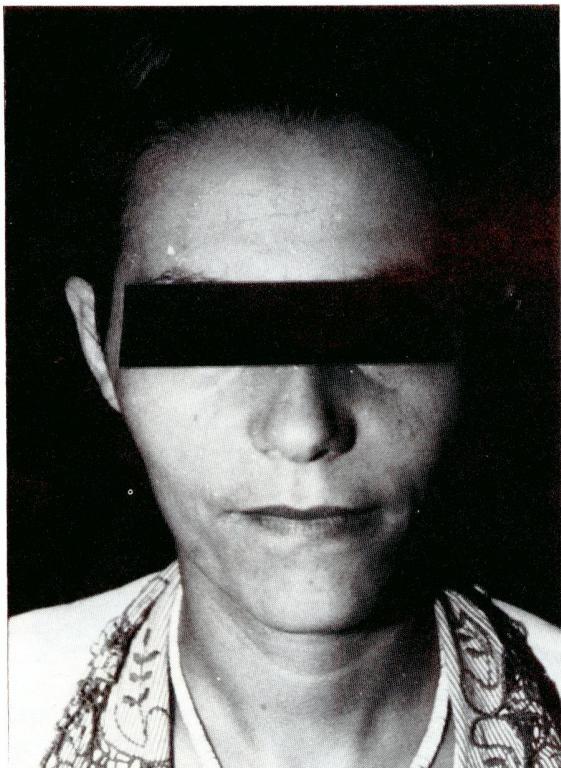
FIGURE 2. (A,B) Patient presenting the asymmetry of the auricle, more prominent on the left side, with complete effacement of the upper crux and of the horizontal fold of the auricle on its upper third. **(C,D)** Three years postoperatively.



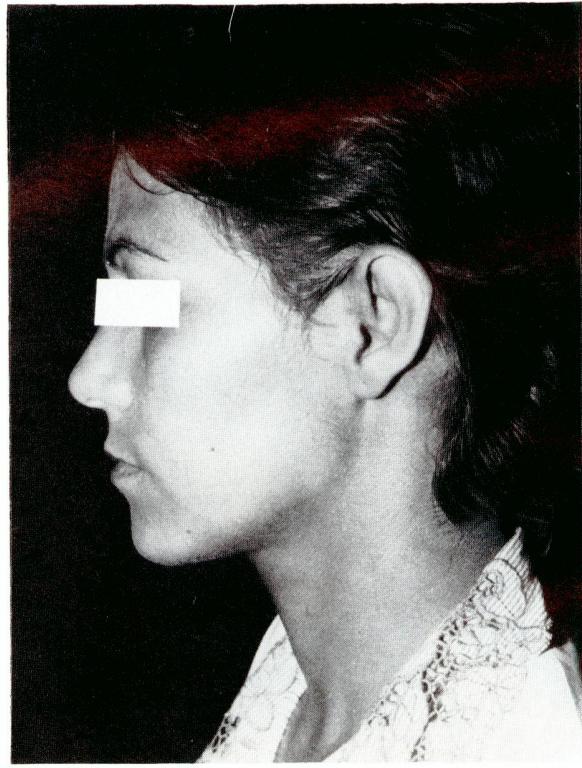
A



B

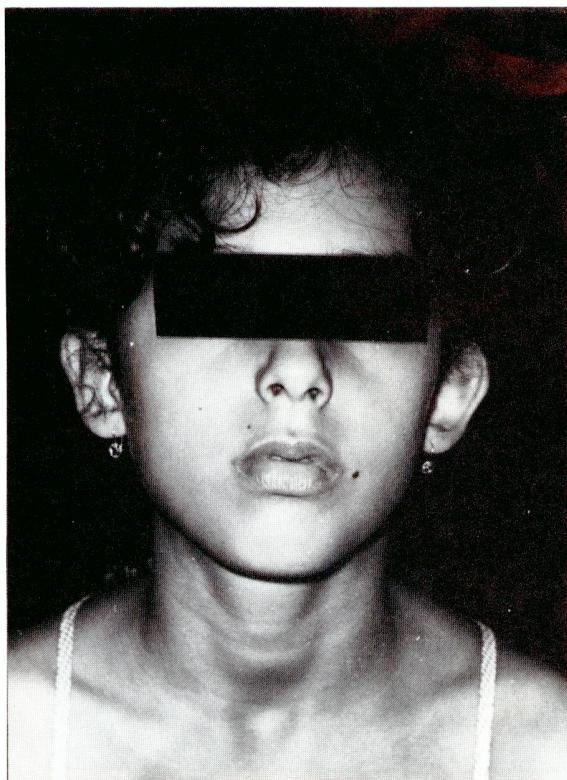


C



D

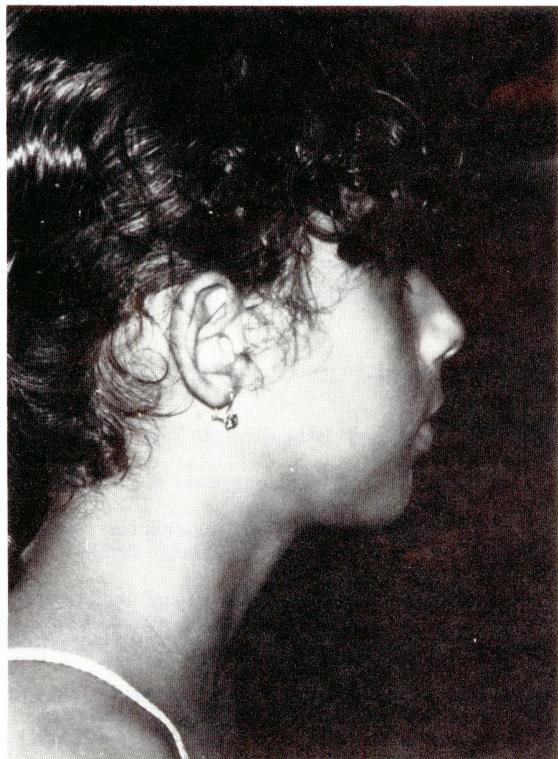
FIGURE 3. (A,B) Patient with effacement of the upper crux and of the horizontal fold of the auricle on its upper third. **(C,D)** Eighteen months postoperatively.



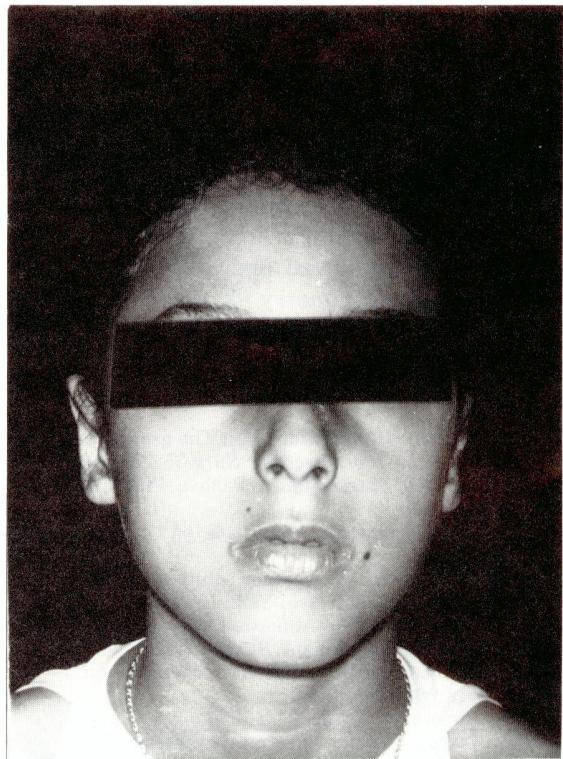
A



B

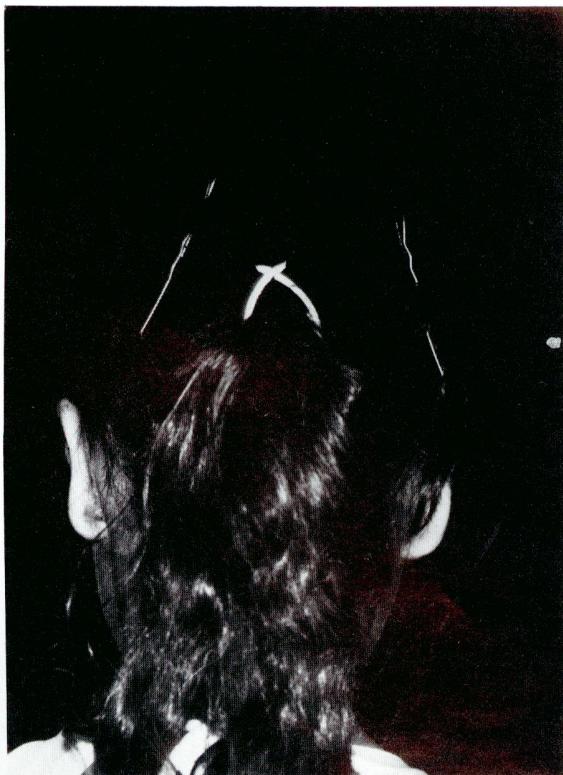


C



D

FIGURE 4. (A–C) Patient presenting effacement of the upper crux and of the horizontal fold of the auricle on its upper third. (D–F) Five years postoperatively.



E

FIGURE 4 (continued)

DISCUSSION

Pitanguy's island technique for correcting prominent ears is a safe procedure, with practically no early postoperative problems, and easy to perform. The low rate postoperative problems are probably due to the limited manipulation of tissues, small undermining, and reduced operative time. The low incidence of asymmetry is secured as the



F

cartilaginous island is demarcated bilaterally through measurement transfer.

It is interesting to observe that the shape of the operated auricle remains harmonious in all the cases, and that no postoperative alterations developed with this technique. Finally, as a stimulating observation, we verified that the long-term results remained unaltered.

REFERENCES

1. Adam JE, Horton CE, Crawford HH: The growth pattern of the external ear. *Plast Reconstr Surg* 35:466, 1965.
2. Skoog T: *Chirurgia Plastica* (ed 1). Padova, Piccin Editore, 1976, pp 251-260.
3. Differenbach JF: *Die Operative Chirurgie* (ed 1). Leipzig, FA Brockhaus, 1845.
4. Crikelair GF, Cosman B: Another solution for the problem of the prominent ear. *Ann Surg* 160:324-328, 1964.
5. Davis JS, Kilowsky EA: Abnormal prominence of the ears: a method of readjustment. *Surgery* 2:835-839, 1937.
6. Chongchet V: A method of anthelix reconstruction. *Br J Plast Surg* 16:268-273, 1963.
7. Pensa A, Favaro G: *Trattato di Anatomia Umana Sistematica*. Torino, Unione Tipografico Editrice, vol 2, pp 874.
8. Pernkoff E: *Atlante di Anatomia Sistematica e Topografica Dell'Uomo* (ed 2). Padova, Piccin Editore, vol 1, 1963, pp 1976-1984.
9. Pierce GW, Klabunde EH, Bergeron VL: Useful proce- dures in plastic surgery. *Plast Reconstr Surg* 2:358-361, 1947.
10. Owens N, Delgado DD: The management of outstanding ears. *South Med J* 58:32-36, 1955.
11. Paletta FX, Ship A, Von Norman R: Double spring release in otoplasty for prominent ears. *Am J Surg* 106:506-509, 1963.
12. Pellnitz D: Die Bedeutung von Ohrmuschel und Nasenwachstum für die Indikationsstellung kosmetischer Operationen. *Arch Ohren Nase Kehlkopfheilkd* 180:387-390, 1962.
13. Courtiss EH, Webster RC, White MF: Otoplasty: direct surgical approach, in Masters FW, Lewis JR (eds): *Symposium on Aesthetic Surgery of the Nose, Ears and Chin*. St. Louis, St. Louis Co, 1973, pp 128.
14. Dufourmentel C: La greffe cutanée libre tubulée. Nouvel artifice pour la réfection de l'helix au cours de la reconstruction du pavillon de l'oreille. *Ann Chir Plast* 3:311-315, 1958.

15. Spira M, McCrea R, Gerow FJ, Hardy SB: Analysis and treatment of the protruding ear. Trans. Fourth International Congress Plastic Surgery. Amsterdam, Excerpta Medica, 1969, pp 1090.
16. Stark RB, Saunders DE: Natural appearance restored to the unduly prominent ear. *Br J Plast Surg* 15:385–397, 1962.
17. Tanzer RC: Congenital deformities of the auricle, in Converse JM (ed): *Reconstructive Plastic Surgery* (ed 2). Philadelphia, WB Saunders Co, 1977, pp 1710–1719.
18. Webster GV: The tail of the helix as a key to otoplasty. *Plast Reconstr Surg* 44:455–461, 1969.
19. Stenström SJ: A “natural” technique for correction of congenitally prominent ears. *Plast Reconstr Surg* 32:509–518, 1963.
20. Ely ET: An operation for prominence of the auricles. *Arch Otolaryngol* 10:97–102, 1881.
21. Mustardé JC: The correction of prominent ears using simple mattress sutures. *Br J Plast Surg* 16:170–176, 1963.
22. Mustardé JC: The treatment of prominent ears by buried mattress sutures: a ten-year survey. *Plast Reconstr Surg* 39:382–386, 1967.
23. Nordzell B: A new method for correction of protruding ears. *Acta Chir Scand* 129:317, 1965.
24. Barsky AJ: *Plastic Surgery* (ed 1). Philadelphia, WB Saunders Co, 1938.
25. Becker OJ: Surgical correction of the abnormally protruding ears. *Arch Otolaryngol* 50:541–547, 1949.
26. Becker OJ: Correction of the protruding deformed ear. *Br J Plast Surg* 5:187–196, 1952.
27. Converse JM, Nigro A, Wilson F, Johnson N: A technique for surgical correction of lop ears. *Plast Reconstr Surg* 15:411–418, 1955.
28. Converse JM, Nigro A, Wilson FA, Johnson N: A technique for surgical correction of lop ears. *Trans Am Acad Ophthalmol Otolaryngol* 59:551–559, 1956.
29. Erich JB: Surgical treatment of protruding ears. *Eye Ear Nose Throat Monthly* 37:390–395, 1958.
30. Straith RE: Correction of a lop ear deformity. *Plast Reconstr Surg* 24:277–285, 1959.
31. Cloutier Am: Correction of outstanding ears. *Plast Reconstr Surg* 28:412–416, 1961.
32. Pitanguy I, Rebello C: Orelhas em abano—considerações em torno do problema e sugestão de técnica pessoal. *Rev Bras Cir* 42:267–277, 1961.
33. Pitanguy I, Rebello C: Ansiform ears correction by “island” technique. *Acta Chir Plast* 4:4–14, 1962.
34. Pitanguy I, Cansanção A, D’Andrea S, Avelar J: Orelhas em abano. *Rev Bras Cir* 61:219–226, 1971.
35. Pitanguy I, Aldeia O, Garcia LC, Carreirão SE: Orelhas em abano: alguns detalhes úteis de técnica. *Rev Bras Cir* 63:535–549, 1972.
36. Pitanguy I, Fleming I: Plastische Eingriffe an der Ohrmuschel, in Naumann HH (ed): *Kopf-und-Hals-Chirurgie*. Stuttgart, New York, Georg-Thieme Verlag, vol 3, pp 1–69, 1982.
37. Pitanguy I: *Aesthetic Plastic Surgery of the Head and Body* (ed 1). Heidelberg, Springer-Verlag, pp 303–350, 1982.
38. Pitanguy I, Fleming I: Plastic operations on the auricle, in Naumann HH (ed): *Head and Neck Surgery*. Stuttgart, Georg-Thieme Verlag, vol 3, pp 1–69, 1982.
39. Furnas DW: Correction of prominent ears by conchomastoid sutures. *Plast Reconstr Surg* 42:189–198, 1968.
40. Kaye BL: A simplified method for correcting the prominent ear. *Plast Reconstr Surg* 40:44–48, 1967.
41. Kaye BL: Follow-up clinic: current comment on 1967 article. *Plast Reconstr Surg* 52:184, 1973.
42. Keen WW: New method of operating for relief of deformity of prominent ears. *Ann Surg* 11:49–53, 1890.
43. Gibson T, Davis W: The distortion of autogenous cartilage grafts: its cause and prevention. *Br J Plast Surg* 10:257–260, 1958.
44. McEvitt WG: The problem of the protruding ear. *Plast Reconstr Surg* 2:481–495, 1947.
45. Monks GH: Operation for correcting the deformity due to prominent ears. *Boston Med Surg J* 124:84–87, 1891.
46. Morestin MH: De la reposition et du plissement cosmétiques du pavillon de l’oreille. *Rev Orthop* 4:289–291, 1903.
47. Holmes FM: A new procedure for correction of outstanding ears. *Arch Otolaryngol* 69:409–414, 1959.
48. Ju DMC, Li C, Crikelair GF: The surgical correction of protruding ears. *Plast Reconstr Surg* 32:282, 1963.