Journal of Plastic, Reconstructive & Aesthetic Surgery (2014) 67, 770—774

JPRAS
An International Journal of Surgical Reconstruction
www.JPRASurg.com

A new skin flap method for total auricular reconstruction in microtia patients with a reconstructed ear canal: Extended scalp and extended mastoid postauricular skin flaps

Euna Hwang [a], Young Soo Kim [b,*], Seum Chung [c,d,e]

[a] *Department of Plastic and Reconstructive Surgery, Bundang CHA Medical Center, CHA University, Seongnam, South Korea*
[b] *Bona Microtia and Aesthetic Ear Surgery Clinic, Seoul, South Korea*
[c] *Department of Plastic and Reconstructive Surgery, National Health Insurance Service Ilsan Hospital, Ilsan, South Korea*
[d] *Department of Plastic and Reconstructive Surgery, National Health Insurance Service Ilsan Hospital, 100 Ilsan-ro, Ilsan-donggu, Goyang-si, Gyeonggi-do 410-719, South Korea*

Received 16 July 2013; accepted 5 February 2014

KEYWORDS
Canaloplasty;
Ear reconstruction;
Microtia

Summary Before visiting a plastic surgeon, some microtia patients may undergo canaloplasty for hearing improvement. In such cases, scarred tissues and the reconstructed external auditory canal in the postauricular area may cause a significant limitation in using the posterior auricular skin flap for ear reconstruction. In this article, we present a new method for auricular reconstruction in microtia patients with previous canaloplasty. By dividing a postauricular skin flap into an upper scalp extended skin flap and a lower mastoid extended skin flap at the level of a reconstructed external auditory canal, the entire anterior surface of the auricular framework can be covered with the two extended postauricular skin flaps. The reconstructed ear shows good color match and texture, with the entire anterior surface of the reconstructed ear being resurfaced with the skin flaps.

Clinical question/level of evidence; therapeutic level IV.

* Corresponding author. Bona Microtia and Aesthetic Ear Surgery Clinic, 60, 3rd Floor Mujin Bldg, Nonhyeon-dong, Gangnam-gu, Seoul, South Korea. Tel.: +82 2 593 0133; fax: +82 2 593 0233.
E-mail addresses: isaacyskim1126@gmail.com, BONA0130@outlook.kr (Y.S. Kim).

[e] Tel.: +82 31 900 0560; fax: +82 31 900 9004.

http://dx.doi.org/10.1016/j.bjps.2014.02.012

Introduction

A sufficient skin envelope and sophisticated auricular framework are prerequisites for a successful auricular reconstruction. Before visiting a plastic surgeon, some microtia patients may undergo canaloplasty for hearing improvement. In such cases, scarred tissues and the reconstructed external auditory canal in the postauricular area may cause a significant limitation in using the posterior auricular skin flap for ear reconstruction. As an alternative, surgeons have commonly used a temporoparietal fascia flap and skin graft technique but the results were frequently unsatisfactory owing to color mismatch, severe edema, and donor site morbidity.[1,2] In this article, we present a new method for auricular reconstruction in microtia patients with previous canaloplasty. By dividing a postauricular skin flap into an upper scalp extended skin flap and a lower mastoid extended skin flap at the level of a reconstructed external auditory canal, covering the entire anterior surface of the auricular framework with the two extended postauricular skin flaps is possible.

Patients and methods

Between January 2012 and January 2013, the authors performed total auricular reconstructions using extended scalp and extended mastoid postauricular flaps in eight microtia patients who previously had canaloplasty. The patients were five boys and three girls aged 5—6 years (mean, 5.8 years) at the time of reconstruction. All the cases were lobule-type microtia (right: six cases, left: two cases) and had chronic drainage from the reconstructed ear canal. The reconstruction was postponed until symptoms and signs (including otorrhea, meatal stenosis, and infection) related to the complications of the canaloplasty had subsided. The time interval between the canaloplasty and auricular reconstruction ranged from 7 to 25 months (mean, 14.3 months). The postoperative follow-up period ranged from 6 to 17 months (mean, 11 months; Table 1).

Operative techniques

Design of the skin flaps

The design of the extended postauricular skin flaps is demonstrated in Figure 1. We divided the postauricular skin flap into an upper and a lower portion at the level of the reconstructed external auditory canal. The upper skin flap was extended to the scalp (extended scalp postauricular skin flap (ESPS) flap) and the lower skin flap was extended to the mastoid area (extended mastoid postauricular skin flap (EMPS) flap). In addition to the two extended postauricular skin flaps, isolated pericanal, tragal, and lobular flaps were also designed.

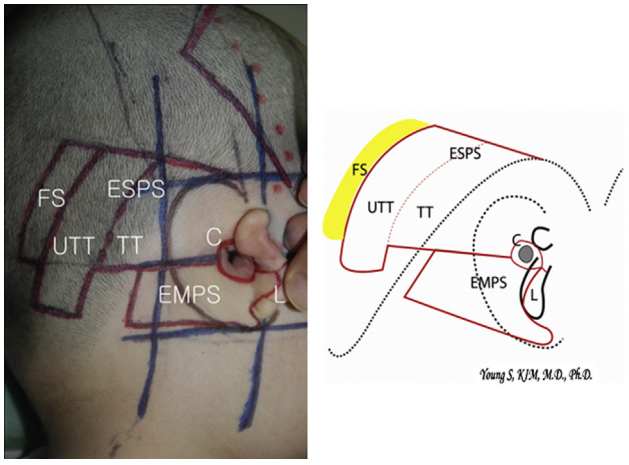

Figure 1 Preoperative design. (Left) The design of the posterior surface. (Right) Illustration of the design of the posterior surface. L, anterior lobular flap; C, pericanal flap; EMPS, extended mastoid postauricular flap; ESPS, extended scalp postauricular flap (TT, thick portion; UTT, ultrathin portion); FS, free skin for graft.

Creation of skin flaps

The ESPS flap was an extended scalp skin flap in continuity with the upper postauricular skin flap. The scalp skin portion of the ESPS flap was divided into two parts according to thickness, namely, a proximal thick scalp skin for covering the upper anterior surface of the auricular framework (1—1.5 × 4—5 cm) and a distal ultrathin scalp skin for the posterior surface of the auricular framework (2 × 7—8 cm). The dimensions of the two components were determined according to the amount of remnant ear and the position of the reconstructed ear canal. Then, the remnant lobule was divided into an anterior and a posterior skin flap, as proposed by Dr. Nagata.[3] The posterior lobular flap was in continuity with the EMPS flap. The EMPS flap and the posterior lobular

Table 1 Patient data.

Case	Age (year)	Sex	Side	Interval* (month)	Follow-up (month)	Complication
1	6	M	Left	14	17	No
2	6	M	Right	18	16	No
3	6	M	Right	16	14	Congestion → resolved
4	6	M	right	25	12	No
5	5	M	Right	11	9	No
6	6	F	Right	7	10	Congestion → resolved
7	5	F	Left	15	6	Congestion → resolved
8	6	F	Right	8	6	No

Interval*: The time interval between the canaloplasty and the auricular reconstruction.