Use of the Remnant Ear for Reconstruction in Lobule-Type Microtia

Bo Pan, MD; Lin Lin, MD; Yanyong Zhao, MD; Hongxing Zhuang, MD; Honghui Lu, MD; Haiyue Jiang, MD

Objective: To present in detail a reconstruction technique using the remnant ear in lobule-type microtia.

Methods: By comparing the location of residual ear and the contralateral normal ear, we classified 3 different types of the remnant ear. Three techniques of transposition were applied to adjust the location of the reconstructed ear.

Results: The reconstructed earlobes not only looked real but also were symmetrical with the contralateral normal ears.

Conclusion: The remnant ear is a key factor—in addition to the framework and covering skin—in ear reconstruction in microtia.

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MICROTIC AURICULAR deformity has been mainly categorized as the lobule type and the concha type according to the location of the remnant ear present.1,2 Lobule-type microtia, seen as small cutaneous cartilage in the mastoid area, is the most common type. The remnant ear is usually used to reconstruct the inferior part of the auricle. In most lobule-type microtia, the location of the remnant ear is the same as that of the contralateral normal ear; in some cases, however, the remnant ear is higher or lower than the contralateral normal ear. In the latter cases, it is difficult to adjust the reconstructed ear to a proper position by using the technique advocated by Tanzer3 and Brent.4 In this report, we classify the remnant ear of lobule-type microtia and define different types of transposition in ear reconstruction.

METHODS

By comparing the location of residual ear and the contralateral normal ear, we use 3 different classifications for the remnant ear. In type A, the inferior location of the remnant ear is the same as that of the contralateral normal ear. In type B, the inferior location of the remnant ear is higher than the contralateral normal ear. In type C, the inferior location of the remnant ear is lower than the contralateral normal ear (Figure 1A).

We transpose the remnant earlobe using 1 of 3 different methods, according to the classification of the remnant ear. For type A remnant ears, the incision is made in the middle and inferior part of the remnant ear as advocated by Tanzer3 and Brent.4 The lobule flap is then mobilized posteriorly and inferiorly, using an inferior pedicle as a pivot point. The lobule flap is partially split into 2 parts. The anterior part is sutured to the skin flap, and the posterior part is sutured to the inferior border of the recipient incision (Figure 1B). For type B remnant ears, the technique involves 2 stages. In stage 1, a vertical skin incision is made along the lower remnant earlobe margin and infra-aural region. The remnant ear is pushed downward, and the secondary wound surface is then horizontally closed with 6-0 nylon sutures (Figure 1C). In stage 2, the application of the lobule flap is in the superior part of the remnant ear. The pedicle of the lobule flap is rolled posteriorly and superiorly (Figure 1D).
RESULTS

From January 1, 2004, through December 31, 2006, we performed auricular reconstruction in 268 patients with unilateral lobule-type microtia, of whom 204 were male and 64 were female. One hundred sixty-three patients had microtia of the right ear and 105, of the left ear. According to our classification, 208, 40, and 20 remnant ears belonged to types A, B, and C, respectively. Among type B and C remnant ears, 21 and 16, respectively, had dysplasia of the maxilla, zygoma, and mandible. The affected hemiface of the patient often showed dystrophy (Figure 2 and Figure 3).

The blood supply, contour, and location of the remnant ear constituted the main evaluation criteria after transposition to reconstruct the inferior auricle. The blood supply of the lobule flap was good, and there were no cases of necrosis of the flap. There were 12 cases of sulcus in the conjunction areas of the transposed remnant ear and the 3-dimensional framework. This complication could be manipulated by means of a Z-plasty. The reconstructed earlobe looked real, and its location coincided with the contralateral normal ear (Figures 4, 5, and 6).

COMMENT

Ear reconstruction is one of the most challenging surgical procedures faced by the reconstructive surgeon. The location of the remnant ear plays a vital role in deciding the position of the reconstructed ear. In minor cases, the location of the remnant ear is obviously lower than that of the contralateral normal ear. In these cases, it is difficult to adjust the reconstructed ear to a proper position if the remnant ear is applied using the technique advocated by Tanzer and Brent. In this report, we defined a new classification and successfully applied different types of transposition according to that classification. We have proposed a new view of microtia reconstruction in which the remnant ear—in addition to the ear framework and covering skin—is the third key factor in microtia reconstruction. Transposition of the remnant ear is the classic technique in microtia reconstruction. The timing of transposition is controver-
Tanzer advocated starting the reconstruction by transposition of the lobule. However, when the framework is inserted during stage 2, it is difficult to obtain a good match with the already transposed lobule. Brent proposed an approach for correction of the typical lobular type of microtia, which is accomplished in 4 stages: insertion of an autologous cartilaginous framework into a skin pocket, transposition of the lobule, construction of the tragus, and construction of the retroauricular sulcus. In his approach, reconstruction begins by placing the cartilaginous framework in the ideal position. The lobular flap is then correctly adapted to the already constructed contours during stage 2. This procedure is useful in most cases of lobule-type microtia. However, in dystopic microtia, it is difficult to manipulate according to Brent’s method in clinical application. Park addressed reconstruction of dystopic microtia in which the external auditory canal is present. In his approach, the remnant ear is shifted, with attachment of the temporoparietal fascia on its cranial part. In the present study, we provide a new classification of lobule-type microtia according to the position of the remnant ear compared with the contralateral normal ear. Our ultimate goal is to mobilize the displaced lobule to the correct position at the inferior pole of the framework and then to match the long-axis dimension to that of the contralateral normal ear. We anchor the ear framework to the proper position and transpose the lobule flap simultaneously.

The transposition of the type A remnant ear is the basic technique that is widely accepted by plastic surgeons. Of our 268 patients, 77.6% underwent the type A procedure. The procedure for type B is similar to that of Park. Among the patients treated by Park, about 40% of lobule-type microtias had a lobule positioned higher than the contralateral normal ear. However, only 14.9% of this type were included in our study group. The converse transposition of type C remnant ears is unique, and this method was used in a small number of patients (7.5%).

In conclusion, the remnant ear is the third key factor—in addition to the framework and the covering skin—in microtia reconstruction. According to the position of the remnant ear in relation to that of the contralateral normal ear, we provide a new classifica-
tion of lobule-type microtia and describe a different procedure. Our studies in 286 patients show that the reconstructed earlobes not only look real but also are symmetrical with the contralateral normal ears.

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Correspondence: Haiyue Jiang, MD, Plastic Surgery Hospital, Peking Union Medical College, Badachu Road 33, Beijing, China (jianghaiyuepumc@yahoo.com.cn).

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REFERENCES


