Piercing the upper ear: a simple infection, a difficult reconstruction

S. Cicchetti, J. Skillman and D. T. Gault
Department of Plastic and Reconstructive Surgery, Mount Vernon Hospital, Northwood, UK

SUMMARY. Piercing the upper ear to retain jewellery is now commonplace. When infection ensues, devastating chondritis leads to collapse of the ear. To our knowledge, the surgical reconstruction of post-piercing deformities has not been documented in the literature. We present five such cases referred for autogenous-tissue ear reconstruction. In four of these, the destroyed segments of ear cartilage were replaced with a carved costal-cartilage framework. One patient declined surgery. The importance of preventing infection is stressed. © 2002 The British Association of Plastic Surgeons

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During the 1990s body piercing became commonplace. Complications of oral, nose and genitalia piercing have been reported in the literature. 'High' ear piercing, which punctures the upper-pole cartilage rather than the fatty tissue of the lobule, is fashionable. Sometimes the procedure is performed by uncontrolled and untrained personnel, with a risk of cartilage infection and keloid scarring. Previous papers have focused on prevention and early treatment of dangerous complications, such as perichondrial infection. Once established, this is difficult to treat and may lead to serious cartilage deformities.

We present five cases of post-piercing ear deformity referred for autogenous-tissue reconstruction. Destruction of the ear cartilage in such cases is associated with puckering and scarring of the overlying skin envelope, which makes reconstruction especially difficult.

Case histories

Case 1

A 13-year-old girl was referred for reconstruction of a severe deformity of the upper pole of her left pinna. The ear measured 53 mm x 28 mm, compared with the normal right side, which was 62 mm x 28 mm in size. Two years previously, she had had her upper left ear pierced in a hairdressing salon. No sterile measures were taken at the time, nor was she given any aftercare instructions.

One week later she developed an abscess that required incision and drainage. Wound swabs revealed *Pseudomonas aeruginosa* infection, and the patient was given a 48 h course of intravenous flucloxacillin and metronidazole, followed by a 3 week oral course of the same antibiotics. Complete healing occurred after 1 month, but the upper pole of her ear was deformed (30% loss), owing to collapse of the cartilage and shrinkage of the overlying skin (Fig. 1A).

Figure 1—Case 1. (A) Preoperative view; (B) carved framework of costal cartilage; and (C) postoperative view at 4 months.
Case 2

An 18-year-old healthcare assistant presented with a deformity of her right upper pinna. The ear measured 60 mm × 30 mm, compared with the normal left side, which was 65 mm × 35 mm in size. She had developed an ear abscess 3 years previously after having her right pinna pierced in a jeweller’s shop. The abscess was incised and drained. Wound swabs identified *P. aeruginosa*, and the patient was prescribed a 48 h course of intravenous flucloxacillin, penicillin G and metronidazole, followed by a 3 week course of oral medication. The lesion healed completely in 6 weeks, but the upper pole of her cartilaginous pinna was destroyed, leaving the ear with a crumpled appearance (Fig. 2A). The resulting deformity was so psychologically distressing to the patient that she had started to cover her right ear with a tuft of long hair.

Case 3

An 18-year-old woman presented with total destruction of the cartilage of her left pinna. She had developed an abscess 2 years previously, after ear-cartilage piercing. Incision and drainage of the abscess were performed, and the patient was given a 5 day course of intravenous amoxycillin and flucloxacillin, until wound cultures revealed *P. aeruginosa*. The antibiotics were then changed to ciprofloxacin. After 1 month the lesion healed. The resulting deformity involved the upper pole and the middle third of the auricle, in all a 55% ear loss (Fig. 3). This patient declined reconstructive surgery.

Case 4

A 32-year-old care assistant presented with extensive cartilage collapse of her right ear. She had had her pinna pierced by a friend using a heated needle 13 years before; 6 weeks after piercing she was bitten by her partner. The trauma caused a large haematoma at the piercing site. The resulting cartilage necrosis involved the upper pole and the middle third of her right pinna (60% loss). The patient was particularly distressed by her appearance (Fig. 4A).

Case 5

A 12-year-old schoolgirl had her upper right ear pierced at the age of 10. She developed an abscess that grew *P. aeruginosa*, and underwent two surgical procedures to drain the infection.
The upper pole of the right ear was left flat and deformed (15% loss). She was teased considerably, and was referred for reconstruction (Fig. 5A).

**Surgical technique**

In three cases, the patients were smokers of more than 10 cigarettes per day. They were advised to stop smoking before their reconstruction, in order to maximise the blood supply of the coapted skin.

The collapsed and scarred cartilage must first be removed (Fig. 2B). Great care is required to unfold the crumpled skin and the adherent envelope and to preserve it intact. Based on a template from the contralateral ear, a new cartilage framework is carved from costal cartilage.9-11 Two cartilage components are assembled: a central base plate to provide a replacement antihelical fold, and a thin peripheral element from a floating rib to form the helical rim (Figs 1B, 2B, 4B and 5B). The two are joined with 4/0 clear Prolene. The framework is inserted into the skin envelope. The thin peripheral element is wrapped around the remaining ear rim to blend with the normal cartilage architecture, avoiding notches at the joints between the residual and replacement components (Fig. 4B).

Two vacuum drains are inserted, after careful haemostasis using bipolar cautery. Suction is used to coapt the skin onto the new framework. The skin is sutured with subcutaneous 5/0 PDS and continuous 5/0 Prolene. The dressing is designed to keep pressure off the ear. Antibiotic prophylaxis is given in all cases. The drains are removed after 1 week and the stitches after 2 weeks.

None of the four patients who underwent surgery suffered postoperative infection. The patients were reviewed postoperatively at between 3 months and 18 months. At 3 months, the initial oedema of the skin envelope was settling and the final shape could be seen. Long-term follow-up has shown no evidence of infection or cartilage loss.

**Discussion**

Complications after ear piercing are very common.12 Oedema and haematoma, transmission of viral infections, sensitisation to nickel, granulomatous reactions, embedded earrings, keloids, localised argyria and frostbite have all been documented.13 Moreover, piercing of the ear
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The standard ear-piercing gun is designed for use in the lobule. When used for 'high' ear piercing the piston crushes the auricular cartilage, creating a site at which pseudomonas can become established.

In four of our cases P. aeruginosa was cultured. Swabs should be taken and broad-spectrum antibiotics given until the culture results are ready. Use of fluoroquinolones against P. aeruginosa should be considered.

In these five cases there was a considerable delay between the infection and referral for reconstruction (2-13 years). If a case presents primarily, then a delay of at least 3 months after the infection has settled is recommended before reconstruction is attempted.

The best treatment remains prevention, which should focus on educating young people about the risks, and on developing guidelines for a safe procedure. Ideally, piercing of cartilage should be avoided, but if undertaken, then a sterile technique should always be used, and the patient should be instructed in a technique of daily disinfection.

If prevention and conservative measures fail, surgical correction can offer good cosmetic results. If the skin envelope of the original ear cannot be released, then reconstruction with a carved costal-cartilage framework is still possible by means of skin cover from a temporalis fascial flap and skin graft.

References


The Authors

Silvia Cicchetti, Clinical Fellow
Joanna Skillman, Senior House Officer
David T. Gault MB, ChB, FRCS, Consultant Plastic and Reconstructive Surgeon

Department of Plastic and Reconstructive Surgery, Mount Vernon Hospital, Rickmansworth Road, Northwood, Middlesex HA6 2RN, UK.

Correspondence to Silvia Cicchetti, Via Padre Semeria 27a/8, 16131 Genova, Italy.

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