Cutting Burr Otoplasty

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Citation

D Wynne, N Balaji. *Cutting Burr Otoplasty*. The Internet Journal of Otorhinolaryngology. 2006 Volume 7 Number 1.

Abstract

Prominent ears may have both psychological and behavioural effects on a child. Many different techniques have been described to correct this deformity. In our department a particular, never been reported technique of “Cutting Burr Otoplasty has been practised for over 6 years by a particular consultant with favourable results. In this paper we discuss the technique of using a cutting burr to obtain a natural cosmetic out come in Otoplasty.

INTRODUCTION

Various techniques of Otoplasty have been practised for well over one hundred years. In 1881 Ely described a technique of cartilage cutting to reduce auricular prominence. Luckett[1] is often credited with describing that the most important deformity in protruding ears is loss of the antihelical fold. He described a technique in which he incised through both skin and cartilage of the anti helix and used sutures to re-approximate the edges to recreate the conchal-scaphoid angle.

Due to the problems of sharp edges of cartilage and the loss of cartilage itself there was as gradual move away from incisional Otoplasty. Converse[2] described a method of using a single incision post aurally cutting and thinning the cartilage and suturing with mattress sutures. Mustarde[3] also described a technique using sutures but he did not thin or weaken the cartilage.

Many other clinicians have developed their own techniques using various incisional and suture methods. We describe below a new never been reported technique of using cartilage sculpting using a burr and a suture technique.

ANATOMY

The normal auricle is approximately 6.4cm in males and 6.0 cm in females, with a width to length ration of 0.6-1. By the age of six years, the auricle is almost completely formed. (Table1) [4]

Figure 1

Table 1

AGE	Male	Male	Female	Female
	Length	Width	Length	Width
1	5.0cm	3.2cm	4.7cm	2.9cm
6	5.5cm	3.3cm	5.4cm	3.3cm
18	6.4cm	3.5cm	5.9cm	3.3cm

The aesthetic looking auricle normally protrudes 20-30 from the mastoid (auriculo-mastoid angle). The mid part of the pinna should be no more than 2cms from the head. The antihelix should form an angle of 75-105 between the concha and scaphoid fossa (concha-scaphoid angle). When the angle of the auricle protrudes more than 30 or the concho-scaphoid angle is larger than 110 then the deformity of protruding ear occurs.

The ear receives its blood supply from the superficial temporal and post auricular arteries; both of these are branches of the superficial temporal artery. Sensory innervation is from the great auricular nerve, auriculotemporal nerve, Arnolds` nerve and small branches of the facial nerve. Lymphatic drainage is to the occipital, preauricular and high cervical nodes.

“CUTTING BURR TECHNIQUE”

We usually perform this procedure under general anaesthetic. The following is a ‘Step-Wise' description of our procedure using clinical photographs.

The ear is manipulated to form the proposed antihelical fold and this position is marked using methlyene blue Fig1.

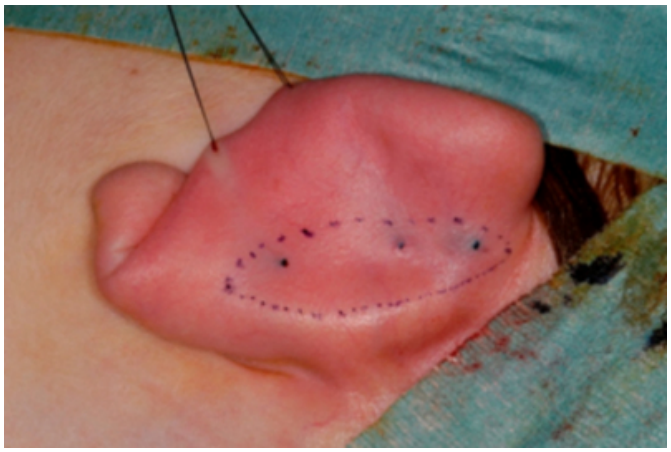
Figure 2

Figure 1

The needle is passed from the anterior side of the auricle through the ear to mark both anterior and posterior surfaces along the anti-helical fold. Fig2 The ear is then infiltrated with 1:80,000 lignocaine and adrenaline.

Figure 3

Figure 2



Following this an ellipse of skin is excised from the posterior aspect of the auricle leaving the underlying cartilage intact. The crescent should be approximately 3x1cm. Fig3.

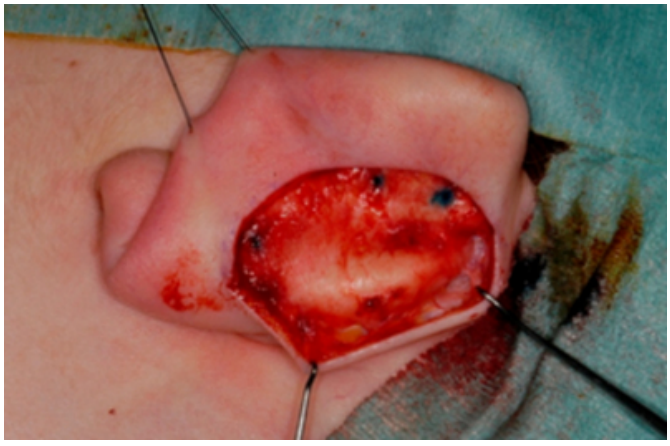
Figure 4

Figure 3

Next the cut edge of the incision is undermined only on the medial mastoid side leaving the lateral edge of the skin intact. Fig 4. This is an example of differential undermining which not only helps in reducing the dead space but also aids in the final cosmetic outcome.

Figure 5

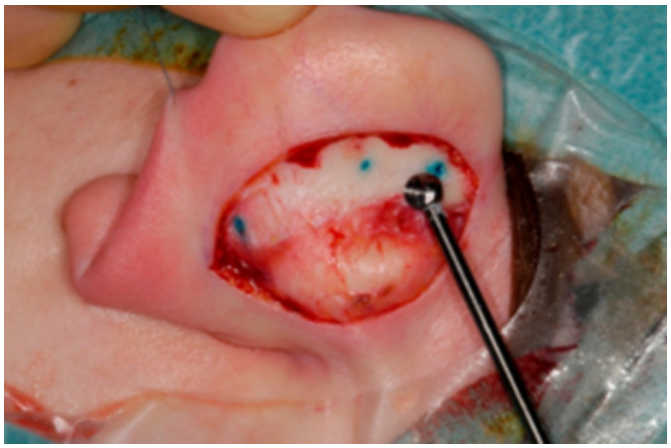
Figure 4



Next a large cutting burr is used to thin the cartilage posteriorly. This is done over 5-6mm width centred on the methylene blue mark. Care must be taken not to damage the surrounding soft tissue. The area should be thinned uniformly and this can be easily achieved with the burr avoiding sharp edges. The direction of drilling should be in a slight arc from concha working towards the mastoid in a gentle sweep posteriorly and not superiorly. Fig 5. This step is very important in aligning the direction of anti-helical fold anteriorly instead of going superiorly giving an ‘operated look'.

Figure 6

Figure 5

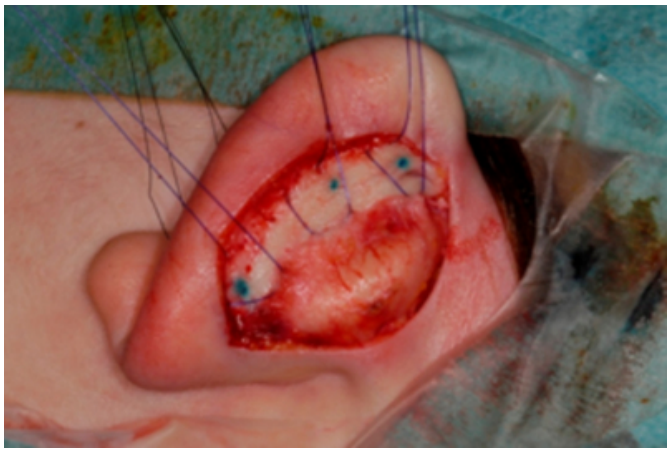


Now that the cartilage has been thinned posteriorly it is easy the manipulate this to

form the new antihelical fold. Mattress sutures are then placed using 4 O ethilon at either side of the thinned cartilage (Fig 6) with outer cartilage bites separated by 10-12 mm and inner cartilage bites separated by 8-10mm.

Figure 7

Figure 6



Once the mattress sutures are placed attention is turned to the anterior aspect of the auricle. The mattress sutures are gradually tightened from above downwards until a satisfactory cosmetic appearance is obtained. Fig 7

Figure 8

Figure 7

In some patients the above technique may have to be combined with limited excision of conchal bowl cartilage.

Finally the wound is closed in two layers. An ear dressing and head bandage is added and should be worn for a week. It should be noted that the dressing and bandage should be placed on carefully to prevent pressure necrosis.

RESULTS

Although this technique has been performed by the senior author from 1995, available figures over the last 6 years shows that a total of 24 ears have been performed using this technique with cosmetic out come being satisfactory to both the patient and operating surgeon. There were no patients requiring revision surgery and there were no recorded complications of haematoma or wound infection.

DISCUSSION

As previously mentioned there are many different techniques that can be performed. The main aims of the surgery in Otoplasty is not only to restore an aesthetically pleasing relationship of the auricle to the skull, but also to restore a pleasant aesthetic soft tissue anatomy avoiding visible edges of cut cartilage thereby averting an ‘operated look'. Our technique describes a cartilage sculpting method using a cutting burr combined with a suture technique to avoid the problems faced be either cartilage splitting techniques or scoring and incision techniques widely described in the literature. The technique described here avoids sharp edges, unnatural and irregular contours of the ear cartilage and will give the final out come of a natural looking cosmetically acceptable ear.

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