

Occipital artery based myocutaneous flap repair for cochlear implant extrusion- How I do it.

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Abstract

Introduction

Cochlear implant extrusion is a challenging complication to manage. It needs meticulous planning, antibiotic cover and a good vascularized tissue covering. Occipital artery based myocutaneous flap is used to cover tissue defects in neurosurgery and oncosurgery practice and the results are widely accepted. In ENT practice we can safely utilize this versatile and reliable flap to achieve good tissue cover over an extruded cochlear implant.

Objective

To improve confidence and share experience to achieve better outcomes when dealing with complications after cochlear implantation.

Method

Occipital artery based flap is used to cover the tissue defects as an axial flap over the exposed implant after antibiotic cover, with the Consultant microbiologist's guidance to overcome biofilm resistance and a through wound debridement.

Results


Good healing achieved with a thick scalp skin cover.

Conclusion

In ENT practice we can safely utilize this versatile and reliable flap to achieve good tissue cover over an extruded cochlear implant

Key words: Extruded cochlear implant, occipital artery based flap, explantation.

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Funding: None

Competing interest: None

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Accepted Date: 03.01.2023

Published Date: 19.03.2023

Introduction

I. Background

Cochlear implantation is carried out in many hospitals in Sri Lanka, although we have started the program recently when compared to developed countries. With the increased number of surgeries, complications also gather in numbers. Implant extrusion and infection is a troublesome complication to manage, especially when it comes to children ^{1, 2, 3}.

Many vascularized pedicle flaps are used to cover tissue defects of the scalp ⁴. Occipital artery based flap is a useful tool to cover cochlear implant site. It has a broad base, easy to rotate and easy to repair.

We present a case study of late implant extrusion: the cochlear implant was performed on the 5th December 2018 and was functioning well, late extrusion found on September 2022.

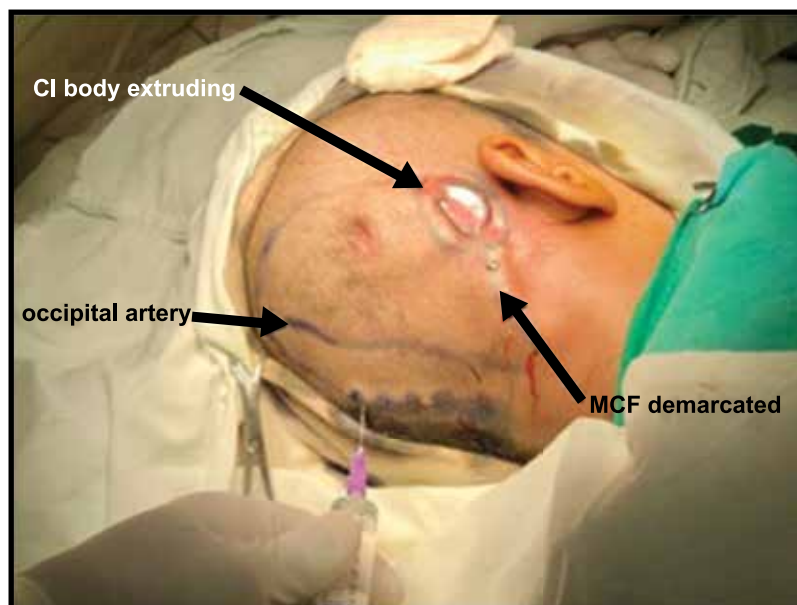
II. Justification

This child was treated with a cochlear implant for profound sensory neural hearing impairment at the age of four years and was schooling at presentation. When presented after almost two years of acceptable language acquisition and social development, we were placed in a difficult situation as the recommendation is explantation followed by re-implantation.

In the present economic hardships previous cost of four million rupees has escalated to eight million rupees, which is not a realistic goal in the contemporary Sri Lanka. Therefore we had to make a bargain on the infection and biofilm formation, child's ongoing development and the available resources.

After careful consideration of the risks involved with the parents, microbiologist, speech therapists; a plan was proposed to control infection and biofilm hazard, keep the implant without explantation and achieve effective tissue cover: NB government subsidizing for a second implant will take a long time which will hinder the child's development. Here we are taking a calculated risk due to resource constrains.

Figure 1: Extruded Cochlear implant with pre op markings and mapping of Occipital artery



We need a reliable and efficient tissue cover. Occipital artery based flap is easy to develop, reliable and safe to use in cochlear implant territory.

III. Literature search

Scalp defects after cranioplasty leaving exposed bone following surgery for head trauma, brain tumors, or strokes, were managed effectively with pedicle scalp flaps 4. When managing cochlear implant extrusions, superficial temporal artery based anterior or posterior based rotation flaps were also used with good results 5.

How I do it.

This is a rare presentation of late extruded implant with infection. Patient was started on antibiotics after taking microbiological cultures. After achieving reasonable control, an occipital artery based rotation flap was planned. During surgery a Doppler study was used to demarcate the occipital artery territory.

Figure 2: A wide based pedicle flap is marked and the myocutaneous flap developed.



Figure 3: A tension free repair was achieved.



Results

Wound closure was achieved with a good thickness scalp flap.

Discussion.

There are time tested pedicle flaps to achieve wound closure at cochlear site. Occipital artery-based flap is a broad flap which can be mobilized easily and can cover a large area. It is very reliable and versatile. It gives a thick flap cover over the implant.

Key Messages

Surgery for a child is significant trauma, and repeated surgery could be damaging and costly. Occipital artery-based flap is food for thought when it comes to reliable wound closure.

We lack a proper database in Sri Lanka to monitor post cochlear implant complications. The volume of surgery done per year is quite significant and it is timely that a national database is maintained.

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