

# Postoperative Pressure Induced Alopecia in Pediatric Patients Undergoing Microtia Reconstruction

H. Charlie Lin, MSN, APRN, NP-C, RNFA, CNOR, CNAMB, FCN<sup>1</sup>

<sup>1</sup>Division of Pediatric Otolaryngology, Stanford Children's Hospital



## Abstract

Postoperative pressure induced alopecia (PPIA) is an uncommonly reported dermatologic complication following prolonged procedures initially reported in hypotensive or complex surgery and in patients requiring intubation with prolonged ICU admission. Patient positioning may also contribute to hair follicle ischemia from constant pressure.

## Introduction

First described in 1959, PPIA occurs in a discrete area of the scalp within a few weeks following surgery or a prolonged immobilization in the intensive care unit (ICU) with focal symptoms of hair thinning, tenderness, swelling, or ulceration.<sup>1</sup> Initially reported in patients undergoing urogynecologic and cardiac procedures, this condition most commonly occurs on the scalp within the first 3 weeks after surgery when the body experiences tissue ischemia due to prolonged scalp pressure from vascular compression of the hair follicles.

## Pressure Induced Alopecia



## Methods

A retrospective chart review of 93 patients that underwent at least unilateral two-stage microtia reconstruction since 2016 at a single pediatric tertiary care facility was performed with 3 reported cases. A comprehensive literature review for PPIA was performed via PubMed and CINAHL with the search terms:

- "alopecia"
- "postoperative period"
- "intraoperative"
- "postoperative"
- "postoperative complications"

A total of 618 articles were resulted with 20 manuscripts reviewed describing the impact of PPIA. 3 of the articles provided recommendations to include frequent head repositioning, use of an alternating pressure air pad versus gel pad, and massaging the patient's scalp.<sup>2, 3, 4</sup>



## Results

Research recommendations support the use of periodic scalp massages and head repositioning to decrease the risk for PPIA. 3 patients between the ages of 8 and 18 experienced PPIA in the region of the occiput within 4 weeks of the postoperative period following unilateral microtia reconstruction, which resolved within 6 months. The total operative time for each procedure was under 7 hours without prolonged hypotension or hypoxemia documented. The incidence of PPIA significantly decreased after the initiation of a protocol to massage the scalp intraoperatively every 3 hours and utilize a pressure redistributing head rest.

## Discussion

The purpose of this study was to review current recommendations for decreasing the intraoperative risk of PPIA, which is likely underreported, and may occur following prolonged immobilization in complex surgery or extended ICU admission. Occurring most commonly at the occiput, the risk for hair loss due to surgery may increase due to tissue ischemia from hypotension, hypoxemia, vasoactive medications, shearing forces with mobilization, and length of surgery that may cause changes in the normal hair cycle.<sup>2, 5</sup> Previous case reports demonstrated that PPIA occurred in procedures lasting >4 hours.<sup>4</sup> Patients may subsequently experience increased psychological distress or social phobias due to anxiety, self-esteem, or changes in body image.

Intraoperative scalp massages to relieve local pressure may provide increased blood flow, tissue flexibility, and reduce edema to help prevent PPIA.<sup>4</sup> Prevention is a collaborative effort between the surgeon, anesthesia, and nursing staff to enhance the quality of care and mitigate the risk of unexpected outcomes.

## Key Point

Routine scalp massage stimulation of the hair follicle at regular intervals during prolonged procedures and utilization of pressure redistributing devices may decrease the risk of PPIA.

## References

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