



# Alternative to blind-sac closure after middle ear and mastoid obliteration in the treatment of otogenic cerebrospinal fluid (CSF) leak

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## ABSTRACT

**Objective:** We present an alternative technique for middle ear and mastoid obliteration, to avoid the need for EAC closure, in the setting of CSF rhinorrhea secondary to an otogenic etiology.

**Study Design:** Case report and literature review

**Methods:** A case of a novel technique for middle ear and mastoid obliteration in the setting of otogenic CSF leak is described, and the literature for EAC closure is reviewed.

**Results:** We present a case of a 52-year-old woman with left CSF rhinorrhea and profound left-sided sensorineural hearing loss after undergoing a left posterior fossa meningioma resection. She underwent a left-sided, canal wall down, modified radical mastoidectomy with obliteration of the Eustachian tube, middle ear, and mastoid cavity using an abdominal fat graft. Rather than performing a BSC using the Fisch technique, we opted to not make any incisions in her intact canal skin and tympanic membrane (TM) but rather to remove the posterior and superior ear canal walls, preserving the ear canal skin and TM, and allow the canal skin and TM to coapt with the surrounding fat graft, which to our knowledge has not been reported in literature. She had no evidence of CSF leak at her follow-up visit.

**Conclusion:** Traditionally the BSC technique is an effective method in treating otogenic CSF leak. If the EAC skin and TM is intact, then this an effective alternative method that minimizes additional incisions to the canal skin. Which reduces the risk of canal dehiscence and wound breakdown, and thus, reduce the risk of recurrent CSF leak.

## INTRODUCTION

The most common method of addressing the EAC in CSF leaks is with a blind-sac closure (BSC). This involves the Fisch technique with transection of the EAC skin at the osseocartilaginous junction, eversion of the skin, and a sutured closure. BSC after middle ear and mastoid obliteration is effective in treating CSF leaks, with low complication and recurrence risks. There is, however, still a risk of wound breakdown or dehiscence, which can lead to recurrence of the CSF leak.

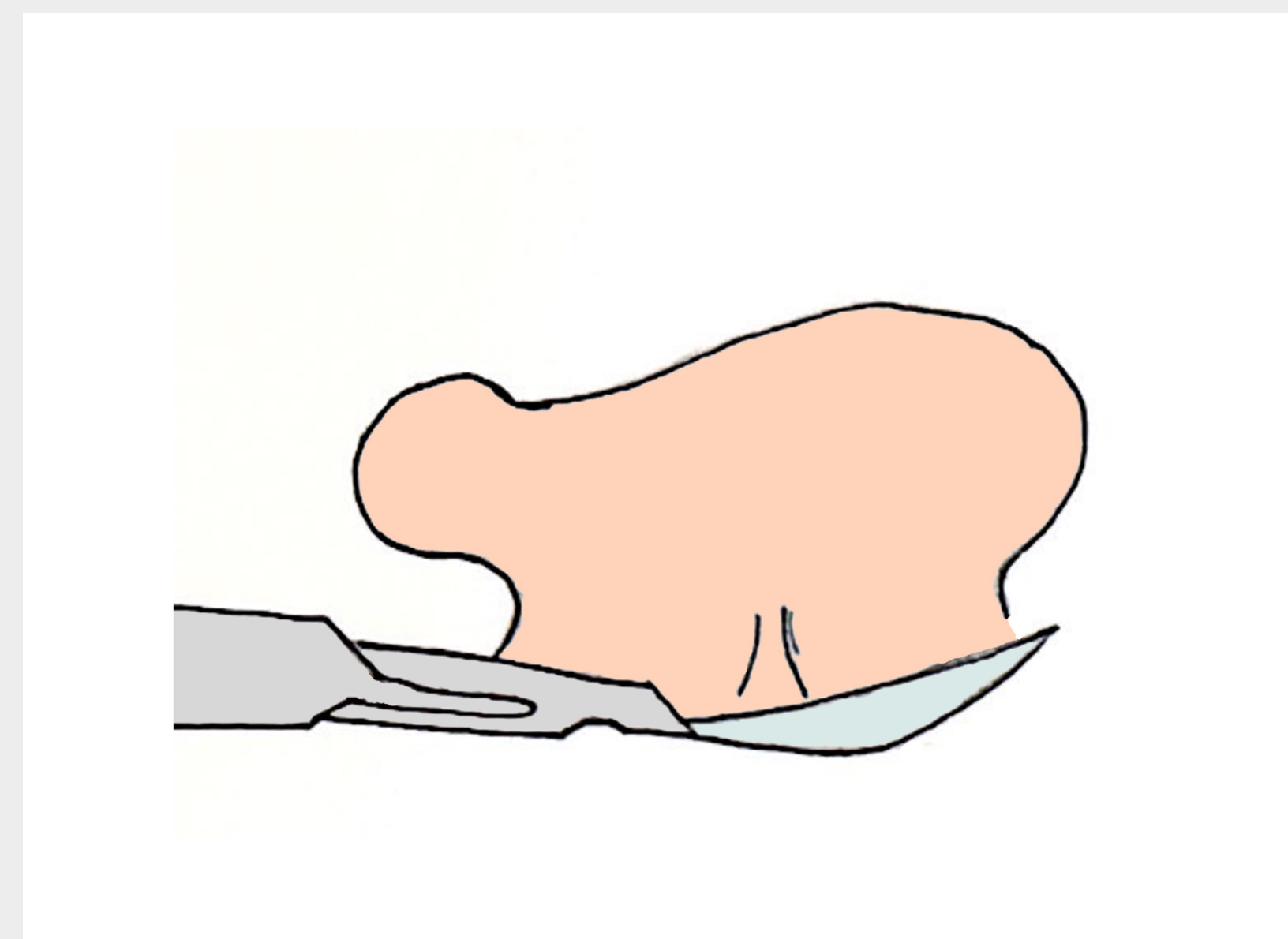
## CONCLUSION

Traditionally the blind sac closure technique is an effective method in treating otogenic CSF leak. If the EAC skin and TM is intact, then this an effective alternative method that minimizes additional incisions to the canal skin. Which reduces the risk of canal dehiscence and wound breakdown, and thus, reduce the risk of recurrent CSF leak.

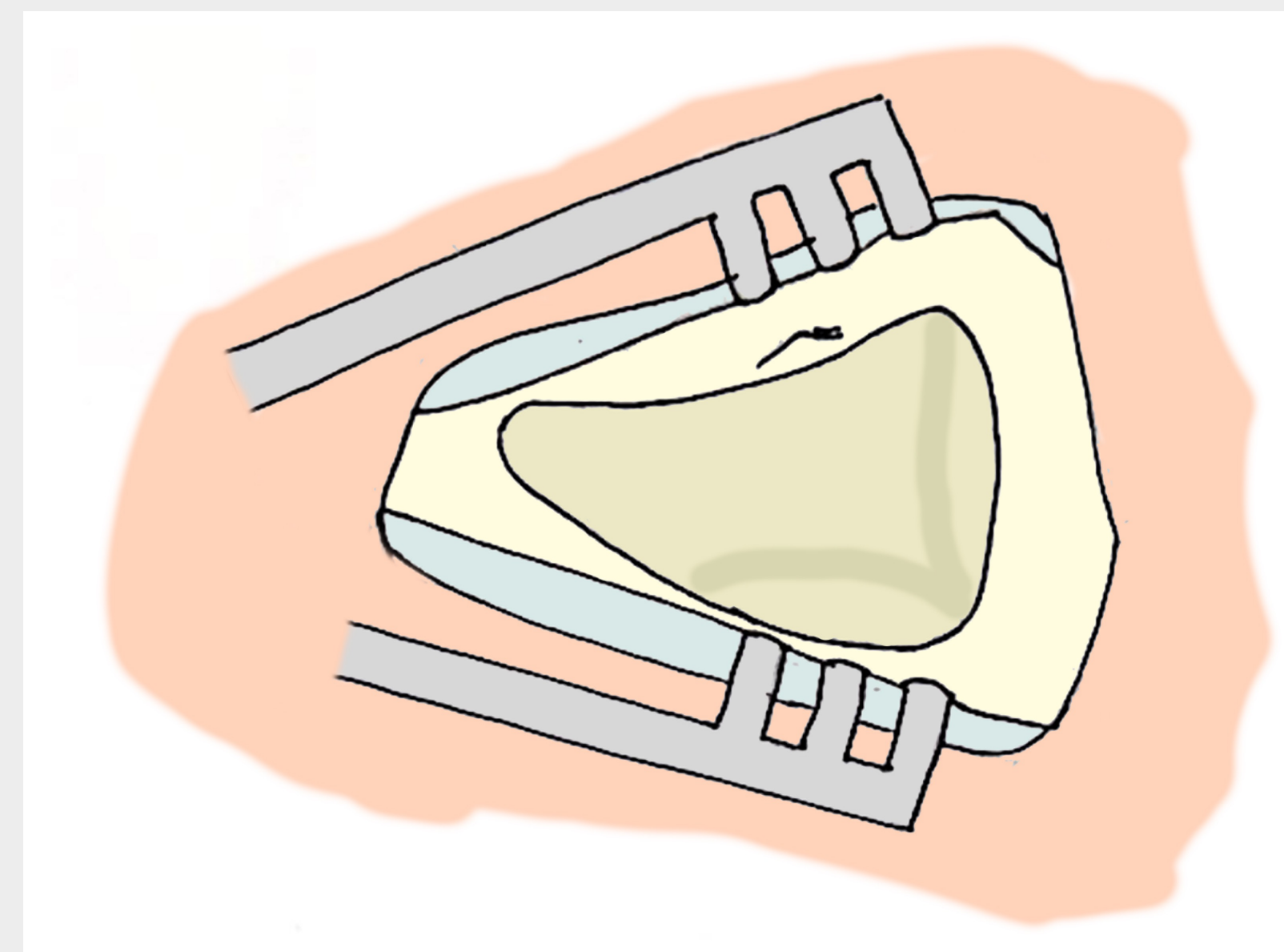
## CASE REPORT

A 52-year-old woman presented with left CSF rhinorrhea and profound left-sided sensorineural hearing loss after undergoing a left posterior fossa meningioma resection. She had no prior otologic history or surgery. She underwent a left-sided, canal wall down, modified radical mastoidectomy with obliteration of the Eustachian tube, middle ear, and mastoid cavity using an abdominal fat graft. Rather than performing a BSC using the Fisch technique, we opted to avoid any incision in her intact canal skin and tympanic membrane (TM) and instead removed the inferior, posterior and superior ear canal walls, preserving the ear canal skin and TM. This allowed the canal skin and TM to coapt with the surrounding fat graft. She had no evidence of CSF leak at her follow-up visit.

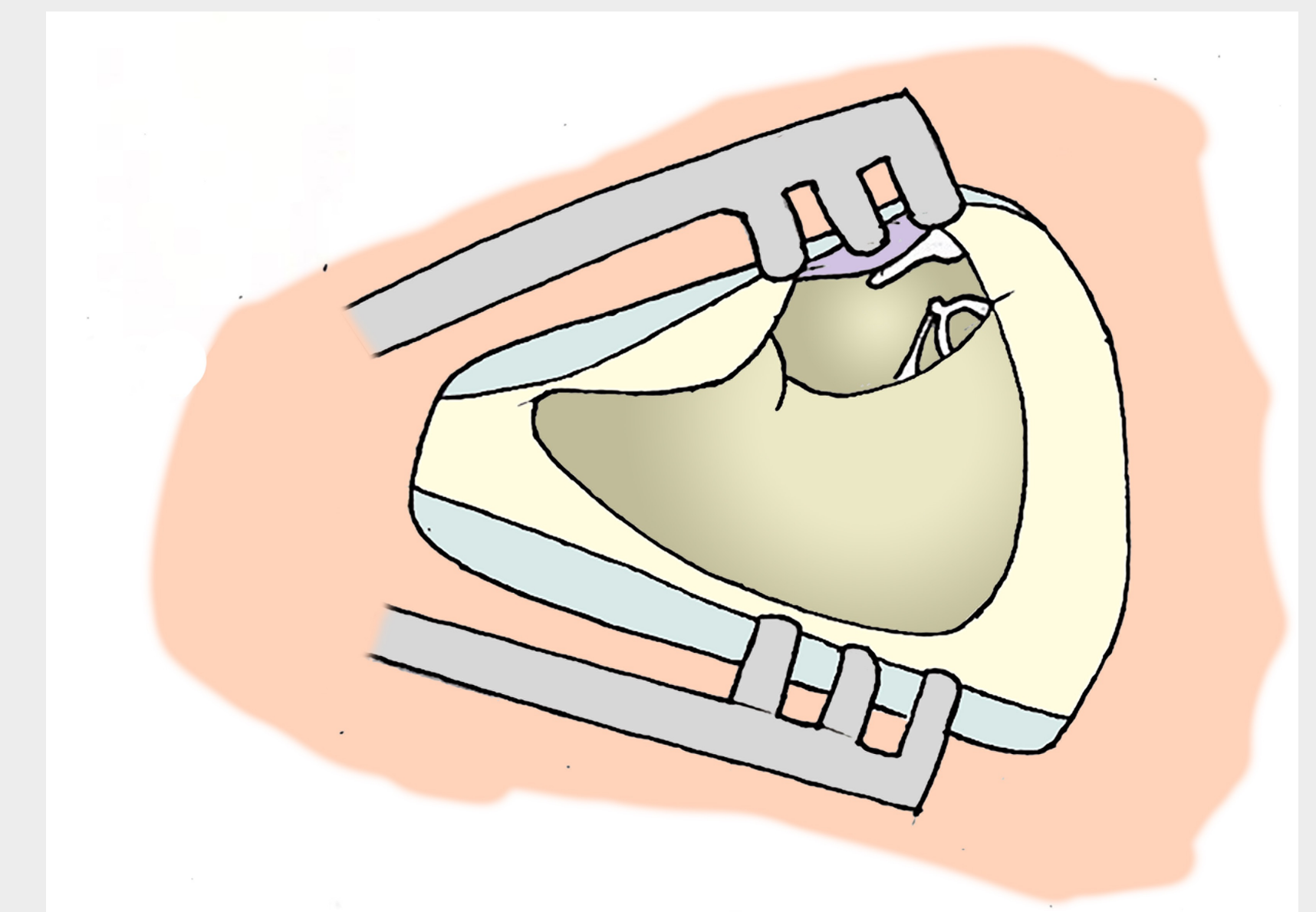
## FIGURES



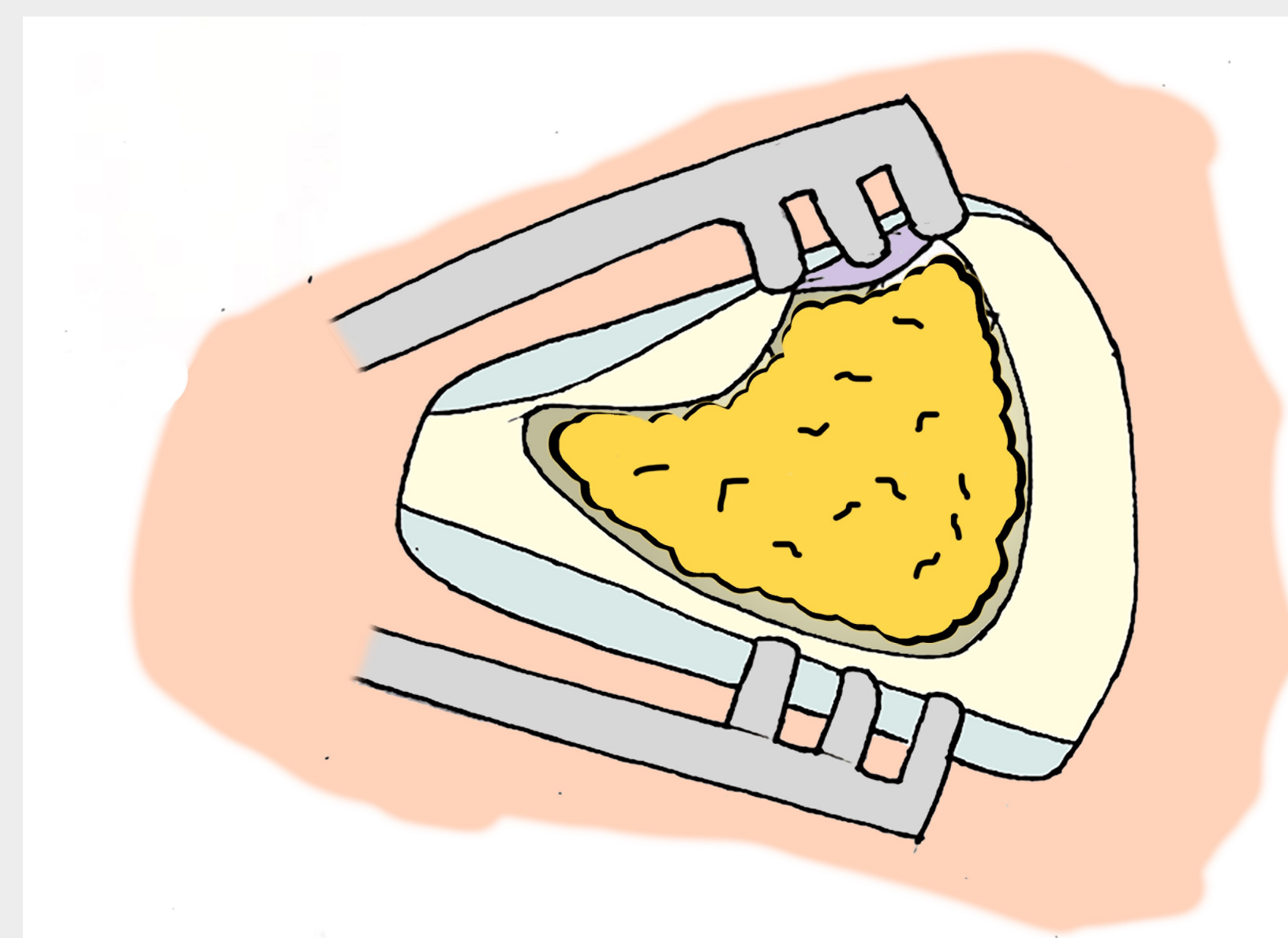
**Figure 1**  
A standard postauricular incision is completed.



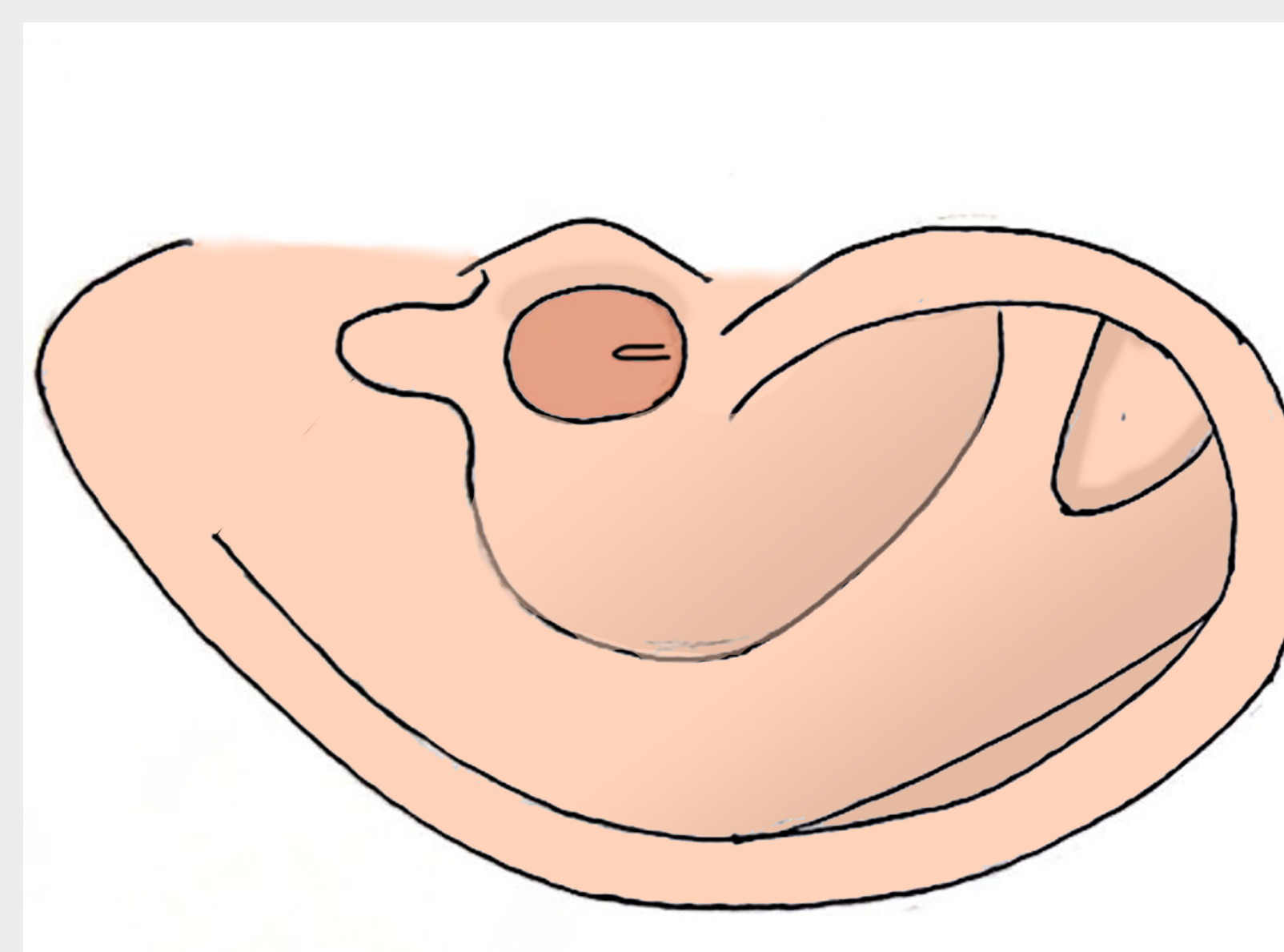
**Figure 2**  
The mastoid cortex is exposed and a mastoidectomy is performed.



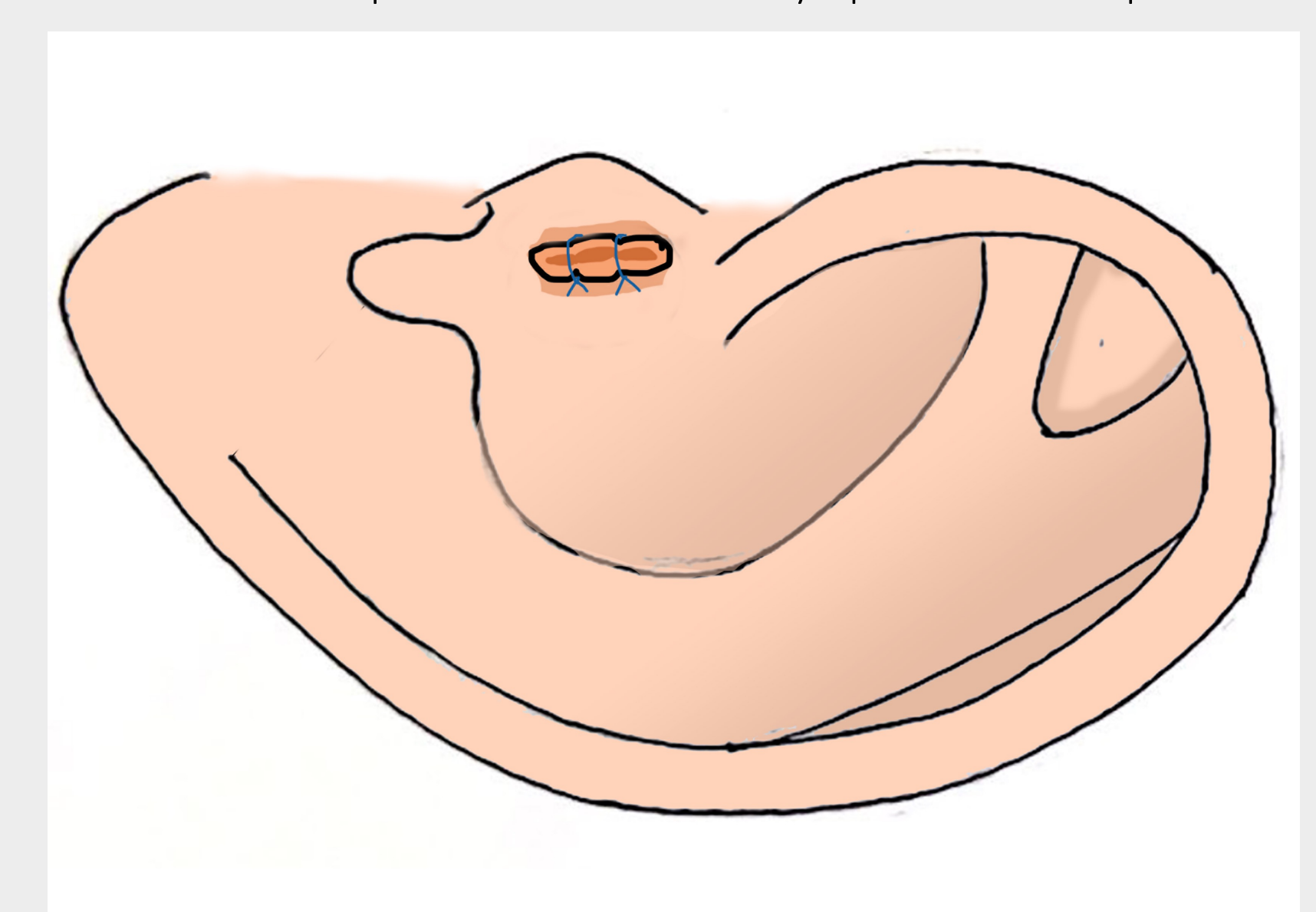
**Figure 3**  
A canal wall down mastoidectomy is completed without making canal incision to preserve the skin and tympanomeatal flap.



**Figure 4**  
The middle ear and mastoid is obliterated with adipose tissue.



**Figure 5**  
The flap is laid back down and wound is closed in layers. Preserving the canal skin and tympanic membrane without any incisions or perforations.



**Figure 5**  
Image of a blind sac closure with potential for dehiscence at the incision sites.

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