



# An Unusual Acute Otitis Media Complication: Luc's Abscess

Case Report ▶  Meltem Akpınar,  Beyza Demirci

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## Abstract ▶

Otitis media, a common childhood disease, can lead to serious complications such as acute mastoiditis and, rarely, Luc's abscess, with life-threatening consequences. Luc's abscess, a rare but severe complication, can occur without acute mastoiditis. This case report details a case of Luc's abscess in a 14-year-old girl with acute otitis media, presenting with ear pain, facial swelling, and hearing loss. Treatment involves a multidisciplinary approach, considering factors like age and abscess extent. Though there is no established standard treatment, this case emphasizes the need for prompt recognition and appropriate intervention to prevent severe complications. This case report emphasizes the importance of tailored, timely interventions for optimal outcomes in affected children.

**Keywords:** Otitis media, complication, mastoiditis, pediatric otorhinolaryngology, case report

## Introduction

Otitis media is a prevalent pediatric condition, frequently diagnosed and treated in clinical practice. While often self-limiting, it can lead to severe complications such as acute mastoiditis, subperiosteal abscess, facial nerve paralysis, and meningitis, given its anatomical proximity to critical structures (1,2).

Acute mastoiditis was a common complication of acute otitis media before the advent of antibiotics, which significantly reduced its incidence. Despite this, acute mastoiditis can still progress to life-threatening situations if the infection is not controlled by antibiotics (3,4). Subperiosteal abscesses of otogenic origin typically result from the spread of infection into the subperiosteal

space, often due to cortical bone erosion secondary to acute mastoiditis. Bezold's abscess involves the sternocleidomastoid muscle, Citelli's abscess is in the digastric triangle, and Luc's abscess, beneath the temporalis muscle, is particularly rare and due to its rarity, diagnosing and treating this condition may be complicated (2). Luc's abscess is distinct in that it usually arises not from the mastoid bone but from a middle ear infection spreading through the pre-existing notch of Rivinus in the external auditory canal, often without concurrent acute mastoiditis (1). A rare route to the temporal fossa is via the pneumatized zygomatic arch, leading to subperiosteal abscesses associated with acute mastoiditis. In these cases, temporal bone computed tomography (CT) is invaluable for diagnosis.

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We present a case of Luc's abscess with mastoid bone involvement as a complication of acute otitis media. Informed consent and ethics committee approval were obtained for presentation of this case.

## Case Presentation

A 14-year-old girl presented to the emergency department with a seven-day history of left ear pain and hearing loss, accompanied by swelling on the left side of her face for the past three days. She also experienced high fever, fatigue, and reduced oral intake. Despite five days of antibiotic treatment (amoxicillin-clavunate 1000 mg, 2x1), there was no improvement. The patient had no previous medical history related to ear issues or trauma.

Upon examination, trismus and swelling from the left temporal region extending towards the cheek and lower eyelid were observed (Figure 1A). Severe edema in the left external ear canal hindered the evaluation of the tympanic membrane. Laboratory analysis indicated leukocytosis, neutrophilia, and elevated C-reactive protein. A pure tone audiogram revealed moderate conductive-type hearing loss in the left ear. CT scans showed opacification of the left middle ear cavity consistent with acute otitis media, along with mucosal thickening and fluid-filled mastoid air cells indicating mastoiditis. A focal defect in the left temporal bone's mastoid cells was observed, leading to widespread edema and inflammation spreading to the left face (Figures 2A and 2B). No other significant feature was found in the evaluation of the same patient by ophthalmology consultation.

The patient was diagnosed with otitis media complicated by Luc's abscess and was hospitalized in our clinic. All

written consent was taken from the patient's parents as she was aged under 18. She was given a start of intravenous (IV) antibiotic (ceftriaxone 1 gr, 3x1) treatment by the recommendation of the infectious disease clinic, moxifloxacin ear drop, and Burow's solution (aluminum subacetate) which was applied to an ear-wick for a day as well as with analgesic and IV fluid replacement therapy. Emergency surgery involved myringotomy, Shepard grommet insertion, and abscess drainage. Approximately 50-100 cc of pus was drained. The surgical area was washed with RIF® (rifampicin 250mg, Koçak, Türkiye) and sodium chloride 0.9% solution. Penrose drain was embedded in the bottom of the temporalis muscle to allow further pus to drain. The patient quickly recovered post-surgery, with a resolution of symptoms and swelling within 48 hours (Figure 1B). Cultures of purulent material showed no growth due to prior antibiotic treatment.

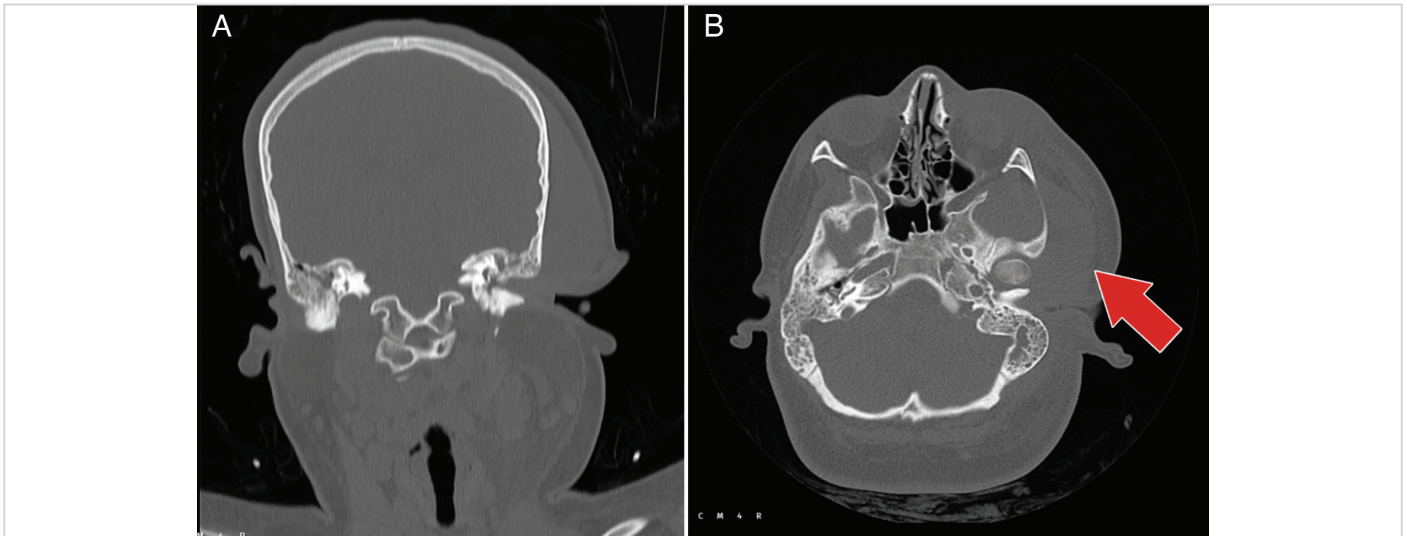
Different surgical approaches exist for acute mastoiditis complications, with some departments performing mastoidectomy concurrently with ventilation tube insertion and abscess drainage. In this case, IV antibiotic treatment continued for 14 days after surgical drainage. The patient was discharged and scheduled for a second-stage mastoidectomy, which was later canceled due to parental refusal. A postoperative one-month follow-up revealed that the ventilation tube was in place, and the patient's hearing had fully recovered.

## Discussion

Luc's abscess is a rare but serious complication of otitis media primarily observed in children. Its rarity can be attributed to the effectiveness of antibiotic therapy in



Figure 1. Preoperative (1A) and postoperative 2<sup>nd</sup> week (1B) images of the patient



**Figure 2.** In the patient's preoperative CT scan, the left middle ear cavity was observed to be opaque with soft tissue density material (2A) compatible with acute otitis media, and further widespread edema and inflammation symptoms spreading to the left half of the face (2B)

CT: Computed tomography

treating most cases of otitis media before complications arise. However, despite its rarity, healthcare professionals must remain vigilant in recognizing this condition due to its potentially life-threatening consequences such as acute mastoiditis, subperiosteal abscess, facial paralysis, and meningitis (4,5).

Early diagnosis and prompt treatment are essential to prevent serious complications. Symptoms typically include persistent ear pain, fever, tenderness, and ear discharge. Diagnosis is based on clinical evaluation, imaging studies, and microbiological tests. Managing Luc's abscess is complex due to the lack of a standard treatment method. The best approach depends on factors such as age, abscess size, complications, and individual patient characteristics, requiring a personalized treatment plan that could include medication, surgery, or supportive care (6,7).

## Conclusion

Luc's abscess is a rare complication of otitis media in children, necessitating early recognition and appropriate treatment due to its potentially life-threatening complications. The most accurate treatment method for Luc's abscess has yet to be defined due to the low incidence of the case. Despite the absence of a definitive treatment approach, combined medical and surgical management is typically employed. Prompt diagnosis, proper management, and close monitoring are essential to ensure the best possible outcomes for affected children.

## Ethics

**Informed Consent:** Informed consent and ethics committee approval were obtained for presentation of this case.

## Footnotes

### Authorship Contributions

Surgical and Medical Practices: M.A., B.D., Concept: M.A., B.D., Design: M.A., B.D., Data Collection and/or Processing: B.D., Analysis and/or Interpretation: M.A., Literature Search: B.D., Writing: M.A., B.D.

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## Main Points

- **Rare Complication of Otitis Media:** Luc's abscess is highlighted as a rare but serious complication of otitis media, particularly in children. This emphasizes the importance of recognizing the condition early to prevent potentially life-threatening consequences.
- **Lack of Defined Treatment Protocol:** Defining a standardized treatment approach for Luc's abscess is challenging due to its low incidence. This suggests a need for further research and clinical guidelines to optimize patient outcomes.
- **Multidisciplinary Approach:** Despite the absence of a definitive treatment protocol, it is important to have a multidisciplinary approach involving both medical management and surgical intervention. This approach aims to address the complex nature of Luc's abscess and mitigate its complications effectively.
- **Importance of Prompt Diagnosis and Management:** This case report stresses the critical role of prompt diagnosis, proper management, and close monitoring to ensure the best possible outcomes for children affected by Luc's abscess. This highlights the significance of early intervention and vigilant care in addressing this condition.

## References

1. Scrafton DK, Qureishi A, Nogueira C, Mortimore S. Luc's abscess as an unlucky complication of mastoiditis. *Ann R Coll Surg Engl.* 2014; 96: 28-30. [Crossref]
2. Mengi E, Tümkaya F, Sağtaş E, Ardiç FN. An unusual complication of otitis media: Luc's abscess. *J Int Adv Otol.* 2018; 14(3): 497-500. [Crossref]
3. Benito MB, Gorricho BP. Acute mastoiditis: increase in the incidence and complications. *Int J Pediatr Otorhinolaryngol.* 2007; 71(7): 1007-1011. [Crossref]
4. Fernandez IJ, Crocetta FM, Pelligra I, Burgio L, Demattè M. Clinical features and management of Luc's abscess: case report and systematic review of the Literature. *Auris Nasus Larynx.* 2020; 47(2): 173-180. [Crossref]
5. Garner EF, McKinnon BJ. Luc's abscess—a case report. *Int J Pediatr Otorhinolaryngol Extra* 2013; 8: e5-7. [Crossref]
6. Ghadersohi S, Young NM, Smith-Bronstein V, Hoff S, Billings KR. Management of acute complicated mastoiditis at an urban, tertiary care pediatric hospital. *Laryngoscope.* 2017; 127(10): 2321-2327. [Crossref]
7. Marom T, Roth Y, Boaz M, et al. Acute mastoiditis in children: necessity and timing of imaging. *Pediatr Infect Dis J.* 2016; 35(1): 30-34. [Crossref]