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SYSTEMATIC JOURNAL REVIEW (SJR): CURRENT MANAGEMENT OF PREURICULAR FISTULA WITH AND WITHOUT ABSCESS

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Abstract

Preauricular fistula is a congenital anomaly that may lead to recurrent infections and abscess formation. Its management typically involves a combination of antibiotic therapy and surgical interventions, such as tract excision or a supra-auricular approach, which have been shown to reduce recurrence rates. However, a standardized clinical consensus regarding the optimal treatment method remains lacking. This systematic review aims to identify the most effective diagnostic and therapeutic strategies based on the latest scientific evidence to assist clinicians in managing these cases optimally. This study employed the Systematic Journal Review (SJR) method to critically appraise the scientific literature concerning the management of preauricular fistulas, both with and without abscess formation. A structured approach following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines was used, with data sourced from reputable databases including PubMed, Scopus, ScienceDirect, and Google Scholar. Articles were selected based on stringent inclusion and exclusion criteria through a stepwise process, from keyword search to full-text appraisal, yielding 27 eligible studies for comprehensive analysis. Findings from this review emphasize the importance of complete fistula tract excision to prevent recurrence, highlighting various surgical techniques such as hidden incisions and local skin flaps that enhance both aesthetic and clinical outcomes. Standardized procedures, including the use of magnification and methylene blue dye, are also considered essential to ensure complete excision. Nevertheless, limitations such as study heterogeneity, small sample sizes, and lack of controlled trials restrict the strength of conclusions and meta-analytic synthesis. Therefore, further research with robust design, larger sample sizes, standardized protocols, and the inclusion of negative findings is necessary to strengthen the evidence base for preauricular fistula management.

Keywords: Abscess Incision and Drainage, Antibiotics, Congenital Disease, Fistulectomy, Surgical and Non-Surgical Management.

Introduction

Preauricular fistula is a common congenital anomaly with a prevalence ranging from 0.1% to 10%, more frequently observed in Asian and African populations. This condition may lead to recurrent infections and abscess formation. Management strategies range from antibiotic therapy to complete surgical excision of the fistulous tract, which has been proven effective in preventing recurrence (1). Appropriate surgical techniques such as total excision aided by magnification and tract staining have demonstrated efficacy in minimizing recurrence risk. Therefore, clinicians must

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maintain a high index of suspicion for preauricular fistula in patients presenting with recurrent periauricular abscesses to ensure accurate diagnosis and appropriate treatment.

Inadequate management of preauricular fistula may result in recurrence and further complications, including repeated infections and abscess formation. A study by Wang (2) indicated that surgical intervention during the active infection phase can increase operative time and recovery duration, although it does not significantly affect recurrence rates if granulation tissue is thoroughly excised. The fistulectomy technique utilizing fascial anchor sutures has been shown to be safe and effective, with a postoperative infection rate of 4.7% and recurrence rate of 2.7%, with no significant differences based on preoperative status or patient age (3). Additionally, the supra-auricular approach has demonstrated a lower recurrence rate compared to standard sinectomy techniques, making it a recommended option, particularly in abscess-associated cases. Thus, thorough evaluation and implementation of effective management methods whether in the presence or absence of abscess are essential to prevent complications and recurrence in patients with preauricular fistulas (4).

In the management of anal fistulas, two primary approaches are employed: surgical interventions such as fistulectomy and non-surgical options including antibiotic administration or observation. In cases involving perianal abscess, incision and drainage (I&D) remain the standard treatment; however, its long-term efficacy is still debated due to the risk of postoperative fistula formation. Several studies suggest that performing a primary fistulotomy concurrently with I&D can reduce the incidence of persistent fistulas without increasing the risk of fecal incontinence (5). Conversely, in non-abscess cases, the timing of surgical intervention primary versus delayed fistulectomy remains a subject of discussion, with considerations regarding recurrence risk and continence outcomes.

Antibiotics are a crucial component in the management of acute infections, particularly as empirical therapy pending microbiological culture results. However, their role as a definitive treatment remains controversial, especially in the context of rising antibiotic resistance due to irrational use. Research indicates that inappropriate antibiotic use such as incorrect dosage or inadequate treatment duration can reduce therapeutic effectiveness and increase the risk of resistance (6). Therefore, the application of rational antibiotic use principles is essential, including selecting antibiotics based on culture and sensitivity testing of the causative pathogen. Proper antibiotic utilization can thus improve treatment success rates and mitigate the negative impact of antimicrobial resistance.

Preauricular fistula is a congenital anomaly caused by incomplete fusion of the auricular hillocks during embryonic development, often resulting in recurrent infections requiring surgical intervention. However, there is currently no comprehensive clinical consensus or standardized guideline for its optimal management, leading to variability in clinical practice across institutions and countries. A study by Widodo & Harbai (7) demonstrated that surgical approaches combined with local flap reconstruction can reduce recurrence risk, although no widely accepted standard exists. Additionally, research by Kurnia et al. (8) highlighted that the supra-auricular approach results in lower recurrence rates compared to simple sinusectomy, yet adoption of this technique remains inconsistent. The absence of standardized guidelines underscores the need for further research and the development of globally adoptable clinical protocols to improve treatment outcomes for patients with preauricular fistulas.

The management of preauricular fistulas, whether accompanied by abscess or not, requires an appropriate approach to minimize the risk of recurrence and complications. Although various surgical techniques have been developed, a clear consensus on the most effective method is still lacking, highlighting the need for a systematic review of the most recent scientific literature. The supra-auricular approach has demonstrated a lower recurrence rate compared to conventional sinusectomy; however, its effectiveness in abscess-associated cases remains a subject of debate (7). By

comprehensively reviewing both surgical and non-surgical approaches, this study aims to provide a thorough overview that may serve as a foundation for future clinical guidelines. This systematic review is expected to assist medical practitioners in selecting the most effective and safest management strategies for patients with preauricular fistulas. Based on the aforementioned background, the objective of this Systematic Journal Review (SJR) is to evaluate current management strategies for preauricular fistulas, both with and without abscess formation. This study aims to identify the most effective diagnostic and therapeutic approaches based on the latest scientific evidence. Furthermore, it is expected to provide clinical recommendations to guide healthcare professionals in the optimal management of preauricular fistula cases.

Method

Type of Research

This study employed a Systematic Journal Review (SJR) method to examine relevant scientific literature on the management of preauricular fistula, both with and without abscess. This method was chosen because it allows for a comprehensive synthesis of data from various reputable medical journal sources. Through this approach, the study systematically filters and analyzes the most recent evidence, ensuring that the resulting recommendations are based on valid and up-to-date data. Therefore, SJR is considered an appropriate method to gain a thorough understanding of preauricular fistula management.

Data Sources

The data in this study were collected from national and international journal articles available through several reliable academic databases, including PubMed, Scopus, ScienceDirect, and Google Scholar. These databases were selected based on their credibility and quality in providing access to relevant and current scientific literature. By utilizing multiple sources, the study is able to cover a broad and diverse range of high-quality articles, strengthening the scientific validity of the systematic journal review. Thus, using broad and credible databases is a crucial foundation for this research.

Inclusion and Exclusion Criteria

The inclusion criteria for this study encompassed articles published within the last five years (2020–2025), written in either English or Indonesian, and specifically discussing the management of preauricular fistula through surgical and non-surgical approaches. The primary focus includes procedures such as fistulectomy, incision and drainage (I&D) of abscesses, antibiotic usage, and issues related to congenital disorders. Articles that were not relevant to the topic, single case reports, or sourced from non-peer-reviewed publications were excluded. This strict selection ensured the quality and relevance of the data analyzed in this study.

Data Collection Process

Data were collected by conducting keyword-based searches using terms such as: *surgical management, non-surgical management, fistulectomy, incision and drainage, congenital disorders,* and *antibiotics*. The search process involved several steps: initial screening based on article titles to assess relevance, followed by abstract evaluation to confirm alignment with the study focus. Articles that passed these stages were then reviewed in full text to validate their content. This stepwise process ensured the inclusion of only credible and relevant data sources for the systematic review of preauricular fistula management.

Review Reporting

In reporting the review findings, the selection of articles was conducted using a systematic approach guided by the PRISMA flow diagram (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) (Haddaway et al., 2022). The review used a systematic selection process based on the PRISMA flow diagram. Articles were screened and categorized according to specific inclusion criteria and key clinical variables. This structured approach ensured transparency and consistency in analyzing and comparing the findings.

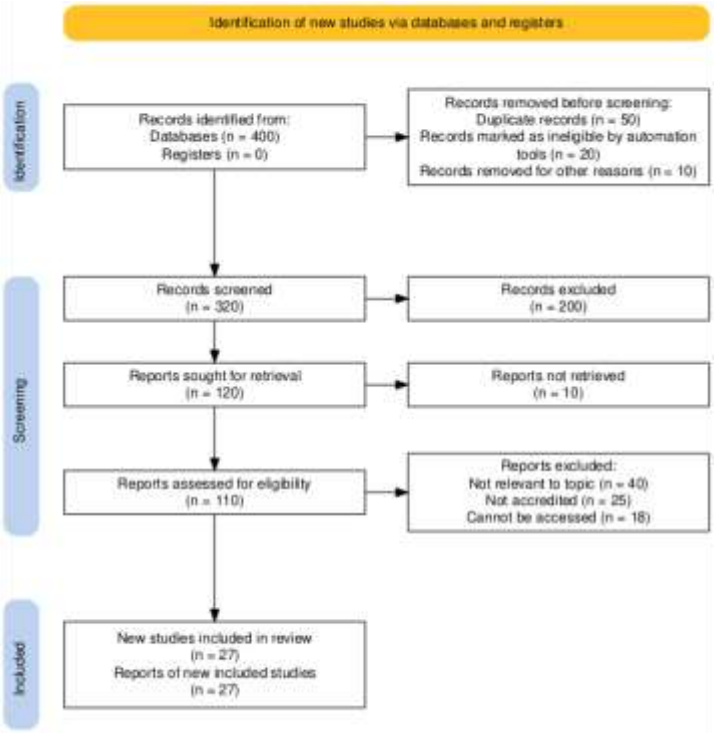

Figure 1. Prism Diagram

This PRISMA diagram illustrates the literature selection process in a systematic review conducted through database searches, possibly using tools like Publish or Perish. From the 400 articles retrieved from the databases (without additional records from registers), 80 articles were removed prior to screening because they were duplicates (50), deemed ineligible by automation tools (20), or removed for other reasons (10), leaving 320 articles for screening. After the initial screening, 200 articles were excluded for not meeting the criteria, and 120 articles proceeded to the full-text retrieval stage. Of these, 10 full-text reports could not be obtained, leaving only 110 articles to be assessed for eligibility. At the final eligibility assessment, 83 reports were excluded because they were irrelevant (40), not accredited (25), or inaccessible (18). Ultimately, 27 studies were deemed eligible and included in the systematic review. This process demonstrates how selection was carried out in a stepwise and systematic manner to ensure that only relevant and valid studies were used in the analysis.

Results

General Characteristics of Reviewed Articles

Table 1. Characteristics of Reviewed Articles

No.	Author (Year)	Article Title	Country	Research Objective	Research Method	Research Findings
1	Huang Q, Xiao G, Wu X, Cheng H (2024)	Surgical Management of Preauricular Sinus: A Histopathological Analysis	China	To understand histopathological characteristics of the preauricular sinus to improve surgical decisions, especially helix cartilage removal.	Retrospective study of 54 patients (Oct 2020–Oct 2021).	Average distance between squamous tract and cartilage: 0.38 mm. Tract diameter: 0.52 cm (primary), 0.42 cm (recurrent). More myofibroblasts in recurrent cases. Ascending helix cartilage removal recommended to prevent recurrence.
2	Widodo DW, Harba'i HM (2019)	Surgical Management of Preauricular Fistula Based on Plastic-Reconstructive Algorithm	Indonesia	To evaluate surgical techniques with lowest complication and recurrence rates.	Case reports (4 cases) and literature review.	Plastic-Reconstructive surgical technique reported effective in managing 4 cases of preauricular fistula.
3	Kurnia E, Widyasari F, Ghanie A, Mariance (2022)	Management of Recurrent Congenital Preauricular Fistula: A Case Report	Indonesia	To describe the management of recurrent preauricular fistula.	Case report	A 7-year-old patient with recurrent swelling and discharge from left preauricular area.
4	Veda LPK Elra, Susantini IGAD (2023)	Left Preauricular Sinus Abscess	Indonesia	To report a case of preauricular sinus abscess and its management.	Case report	An 18-year-old male with left preauricular abscess. Managed with antibiotics, incision-drainage, and planned fistulectomy.
5	Li K, Hao Y, Zhao J, Zhou L, Wu Y, Zeng X, Gao W, Zhang X (2023)	Surgical Treatment of Preauricular Fistulas: A 12-Year Single-Center Clinical Observation	China	To assess the effects of time and surgical approach on operation duration, suture removal time, and recurrence.	Retrospective study of 576 patients (782 ears).	Average operation duration: 34.57 ± 4.25 minutes. Suture removal at 3.62 ± 0.76 days. Recurrence in 13 ears, all successfully retreated.
6	Widodo DW, Anatriera RA, Tunggadewi AP, Yunus RE (2022)	Recurrent Preauricular Fistula Surgery Guided by Fistulography	Indonesia	To describe surgery for recurrent fistula guided by fistulography.	Case reports (2 cases)	Two cases with recurrent complaints in front of ear. Physical and supporting exams confirmed diagnosis. Supraauricular technique and sinectomy applied.

7	Akutsu M, Masuyama Y, Nagashima Y, Fukami S, Tanaka Y, Hirabayashi H, Haruna S (2024)	Treatment of Congenital Auricular Fistula with Local Skin Flaps: Two Case Reports	Japan	To report congenital fistula cases with recurrent infection treated with local skin flaps.	Case reports (2 cases)	Local skin flap procedure effective for abscess and recurrent infections.
8	Nkemjika, B.N. et al. (2020)	Unusual Presentation of Preauricular Sinus Abscess – Case Report	Nigeria	To report an unusual preauricular sinus abscess case and treatment challenges.	Case report	Large preauricular sinus abscess successfully treated with incision and drainage plus complete lesion excision.
9	Han, Y. et al. (2021)	Unusual Presentation of a First Branchial Arch Fistula with Maxillofacial Infection: A Case Report	China	To present a first branchial arch fistula case with atypical presentation of two preauricular openings connected to maxillofacial cyst.	Case report	Highlights need for broad differential diagnosis for unusual lesions and importance of imaging (CT and MRI) for successful surgical planning.
10	Akutsu, M. et al. (2024)	Treatment of Congenital Auricular Fistula with Local Skin Flaps: Two Case Reports	Japan	To report two cases of infected congenital auricular fistulas treated with lesion excision and local skin flap repair.	Case report	Local skin flap technique effective for abscess and recurrent infection, providing good coverage despite risks of dehiscence and keloid scars.
11	Anjelika, N.K.C. & Sulistiawan, I.W. (2025)	Management Fistulectomy in Recurrent Preauricular Fistula Infection	Indonesia	To describe fistulectomy management in recurrent preauricular fistula infection.	Case report	Recurrent infection in preauricular fistula requires special management; surgery (fistulectomy) is an effective approach.
12	Ionescu, E. et al. (2019)	How Sacculo-Collic Function Assessed by Cervical VEMPs Correlates with the Quality of Postural Control in Hearing Impaired Children?	France	To investigate correlation between sacculo-collic function (via cVEMPs) and postural control in hearing-impaired children.	Observational / Correlational study	Sacculus dysfunction, especially bilateral, correlates with impaired postural control in hearing-impaired children.

13	Chowdary, K.V.S.K. et al. (2013)	Preauricular Sinus: A Novel Approach	India	To present personal experience with excision of preauricular sinus using postauricular incision via supraauricular approach to minimize recurrence.	Case study / Case report	Surgical approach with wide local excision via postauricular incision and supraauricular approach showed good results with no recurrence over 8 years. Use of magnification is valuable.
14	Xu, Y. et al. (2021)	Summary of the Experience in the Diagnosis and Treatment of Complex Preauricular Fistulas in 78 Children	China	To summarize experience in diagnosis and treatment of complex preauricular fistulas in children.	Retrospective study (Case series)	Provides overview of challenges in diagnosis and treatment, including surgical options and observed outcomes.
15	Parillo, M. et al. (2024)	MRI Findings of Preauricular Sinus: A Case Report	Italy	To report MRI findings of preauricular sinus to fill literature gap on MRI description of this condition.	Case report	Documents MRI findings including small superficial subcutaneous cyst and fistula tract extending into helix cartilage and temporal fossa. MRI useful for preoperative evaluation, especially recurrent or failed surgery cases.
16	Liu, C. & Niu, C. (2022)	Concealed Incision for Resection of Classical Preauricular Fistula	China	To introduce a new concealed incision method for preauricular fistula resection and discuss its clinical efficacy.	Retrospective cohort study	Concealed incision at inner auricular crus effective with short operation time, minimal blood loss, low recurrence, and good cosmetic outcomes.
17	Anjelika, N.K.C. & Sulistiawan, I.W. (2025)	Management Fistulectomy in Recurrent Preauricular Fistula Infection	Indonesia	To describe fistulectomy management for recurrent preauricular fistula infection.	Case report	Recurrent infection in preauricular fistula requires special treatment; fistulectomy is effective in reducing complications and recurrence risk.
18	Widodo, D.W. et al. (2022)	Recurrent Preauricular Fistula Surgery Guided by Fistulography	Indonesia	To explain surgical management of recurrent preauricular fistula guided by fistulography.	Case report	Fistulography is useful to identify fistula tract, aiding complete excision and reducing recurrence in recurrent cases.

19	Li, K. et al. (2023)	Surgical Treatment of Preauricular Fistulas: A 12-Year Single-Center Clinical Observation	China	To evaluate effect of time and surgical approach on operation time, suture removal, and post-op recurrence in preauricular fistula treatment.	Retrospective cohort study	Average operation time 34.57±4.25 min, suture removal 3.62±0.76 days. Low recurrence (13/782 ears), all successfully retreated. Use of magnification aids surgery.
20	Liu, C. & Niu, C. (2022)	Concealed incision for resection of classical preauricular fistula	China	To introduce a new concealed incision method for resection of classical preauricular fistula and discuss clinical efficacy.	Retrospective cohort study	Concealed incision at inner auricular crus effective with short surgery time, minimal blood loss, low recurrence, and good cosmetic result.
21	Park, H. et al. (2023)	Standardized surgical strategy for the treatment of preauricular sinus to reduce recurrence	Korea	To standardize surgical procedure for preauricular sinus to reduce complications and recurrence, comparing non-standard vs standard groups post-op results.	Retrospective cohort study	Standardized surgical strategy (magnification, lacrimal probe, methylene blue dye, excision of normal tissue and cartilage) significantly reduces recurrence and post-op complications.
22	Akutsu, M. et al. (2024)	Treatment of congenital auricular fistula with local skin flaps: Two case reports	Japan	To report two cases of infected congenital auricular fistulas treated with lesion excision combined with local skin flap repair.	Case report	Surgery with local skin flap effective for abscess and recurrent infection, providing good defect coverage despite risks like dehiscence and keloid scars.
23	Munilson, J., Huryati, E., & Pulungan, M.R. (±2017)	Management of Variant Type Preauricular Sinus with Pit on Descending Posteroinferior Helix	Indonesia	To report rare variant preauricular sinus case and its management by sinectomy.	Case report	Variant preauricular sinus with pit on descending posteroinferior helix can be effectively managed with sinectomy despite rarity.
24	Anjelika, N.K.C. & Sulistiawan, I.W. (2025)	Management Fistulectomy in Recurrent Preauricular Fistula Infection	Indonesia	To describe fistulectomy management for recurrent preauricular fistula infection.	Case report	Recurrent infection in preauricular fistula requires special treatment; fistulectomy reduces complications and recurrence risk.

25	Yudhanto, D. (2017)	Management of Congenital Preauricular Sinus	Indonesia	To review management of congenital preauricular sinus, including conservative and surgical options and prevention of recurrence.	Review / Discussion on management	Proper management is essential to avoid recurrent infections and complications. Asymptomatic sinus does not require treatment, but recurrent infections or abscesses require complete surgical excision.
26	Munilson, J., Huryati, E., & Pulungan, M.R. (±2017)	Management of Variant Type Preauricular Sinus with Pit on Descending Posteroinferior Helix (duplication)	Indonesia	To report a rare variant preauricular sinus case and its management by sinectomy. (Duplicate of No. 4)	Case report	An 18-year-old male with left preauricular abscess. Managed with antibiotics, incision-drainage, and planned fistulectomy.
27	Anjelika, N.K.C. & Sulistiawan, I.W. (2025)	Management Fistulectomy in Recurrent Preauricular Fistula Infection	Indonesia	To describe fistulectomy management in recurrent preauricular fistula infection cases.	Case report	Recurrent preauricular fistula infection requires special treatment; surgery (fistulectomy) is effective to reduce complication and recurrence risk.

Source: Data processed from various sources and years

Based on the data in Table 1, the reviewed articles mostly discussed surgical management of preauricular sinus or fistula with various approaches, ranging from standard excision techniques to the use of local skin flaps and fistulography guidance. Retrospective studies and case reports dominated the research methods, describing the variation of clinical experiences from various countries such as China, Indonesia, Japan, and others. The results of the studies generally showed that standardized surgical techniques, the use of aids such as magnification and staining, and special treatment in recurrent cases can significantly reduce complications and recurrence. This emphasizes the importance of choosing the right technique and careful surgical planning to improve clinical outcomes in patients with preauricular sinus.

Discussion

Characteristics of Preauricular Fistula Management

1. Management of Preauricular Fistula Without Abscess

The management of non-infected preauricular fistula is generally performed through surgical excision, as reported by Li et al (9), who analyzed 576 patients (782 ears) undergoing surgical resection of preauricular fistulas. (10) also supported the surgical approach, recommending the removal of a small portion of the ascending helix cartilage to prevent recurrence, based on histopathological analysis of 54 patients. Meanwhile, (7) and (11) explained that preauricular fistulas are congenital malformations characterized by small pits or depressions near the outer ear, which are often asymptomatic when not infected. Nevertheless, (12) noted that although preauricular fistulas are typically asymptomatic in the absence of infection, they may develop abscesses when infected, requiring infection

management prior to fistulectomy. Therefore, there is a consensus that surgical excision is the primary treatment choice for preauricular fistulas without abscesses, aiming to prevent future infections and potential recurrences.

In general, preauricular fistulas without abscesses do not require intervention unless infection occurs, as the condition is often asymptomatic without infection (12;13). However, in cases of recurrent infections or persistent discharge, surgery becomes the main indication to prevent further complications (14; 15; 11). Commonly applied surgical approaches include wide excision or supra-auricular techniques to completely remove the fistula tract and minimize the risk of recurrence (16;17). It is important to note that proper surgical management is crucial to reduce recurrence rates and postoperative complications, even without abscesses, as the potential for future infections remains (7). Therefore, close observation or elective excision may be considered in non-abscess cases to prevent future issues, especially given the congenital nature of the fistula (18; 19).

Preauricular fistulas without abscesses usually do not require specific treatment because the condition is often asymptomatic (20; 13). Nevertheless, preventive measures such as regular cleansing of the fistula orifice with antiseptics may help avoid complications (20). In cases of recurrent infection or prolonged discharge, surgical excision is the preferred treatment to prevent further issues (13). (21) emphasized that complete removal of the sinus is essential to prevent postoperative recurrence, even in non-abscess cases. Thus, the decision to perform surgical intervention in non-abscess preauricular fistulas is based on the presence or absence of symptoms, infection history, and potential for future complications.

The management of preauricular fistulas depends on the presence and severity of an abscess. For non-abscess cases, no specific treatment is generally required, but infection prevention and observation become important this includes avoiding manipulation and regularly cleaning the fistula opening with alcohol or antiseptic solutions (20; 21). Conversely, in cases where the preauricular fistula becomes infected and forms an abscess, initial treatment should focus on resolving the acute infection first (13). This involves administering appropriate antibiotics based on bacterial pathogens and sensitivity testing, along with incision and drainage to remove pus (20). Once the acute infection subsides, definitive surgical treatment such as fistulectomy or complete excision of the fistula tract can be planned to prevent recurrence and long-term complications (13).

2. Management of Preauricular Fistula with Abscess

The management of preauricular fistula with abscess requires a stepwise approach beginning with the treatment of acute infection. The initial critical step involves administering appropriate antibiotics based on the causative bacteria and sensitivity testing results, as emphasized by Yudhanto (20) and Anjelika & Sulistiawan (13). In addition to antibiotic therapy, abscess incision and drainage are essential to evacuate pus and reduce pressure, a procedure supported by the case report from Veda & Susantini (12), which demonstrated clinical improvement after abscess drainage. Once the acute infection subsides and local conditions improve, a definitive surgical procedure such as complete excision of the fistulous tract or fistulectomy can be planned to prevent recurrence (8; 13). The importance of addressing the infection before performing definitive surgical excision is also emphasized in several studies, including by Li (9), to minimize the risk of postoperative complications and recurrence.

Based on the review of the provided literature regarding the management of preauricular fistula with abscess, it is evident that recurrent infection is an indication for surgical intervention (14). Unusual cases of preauricular fistula abscesses have been reported,

highlighting the challenges in diagnosis and the need for proper management (18) In managing infections with abscess formation, surgical removal of the lesion combined with local skin flap reconstruction has proven effective, although it may lead to complications such as wound dehiscence and keloid scars (15). Proper surgical technique is crucial to minimize complications and recurrence, with commonly performed procedures including supra-auricular approaches and sinectomy (14). Furthermore, while routine imaging is typically unnecessary in uncomplicated cases, individuals with recurrent sinuses or a history of unsuccessful surgery may benefit from preoperative imaging, such as MRI, to identify the characteristics of the fistula (22).

Comparison of Treatment Effectiveness

Regarding the comparison of treatment effectiveness for preauricular fistula management, several studies indicate that complete excision is key to preventing recurrence (8). Widodo (12) and Liu & Niu (23) both emphasize the importance of precise surgical techniques to minimize complications and recurrence rates, with Liu & Niu specifically discussing the hidden incision technique. Complete excision with partial removal of the adjacent helix cartilage is recommended to prevent recurrence, as demonstrated by Huang (24). Nonetheless, debate remains regarding the optimal surgical technique, including the supra-auricular approach and sinectomy (14). A comparative study by Li et al. (9) analyzed the effects of timing and surgical approach on operative duration, postoperative suture removal time, and recurrence rates, providing further insight into effective surgical strategies.

Multiple studies show that surgical excision is the primary management for preauricular fistulas, especially in recurrent or infected cases. (12) highlighted the use of fistulography to guide surgery in recurrent preauricular fistulas to minimize complications and recurrence, while (13) also emphasized the importance of surgery in treating infected recurrent preauricular fistulas(16) introduced a supra-auricular approach with wide local excision, showing favorable outcomes with no recurrence over an 8-year follow-up. (17) summarized their experience in diagnosing and managing complex preauricular fistulas in children, indicating the need for a comprehensive approach. (23) introduced a hidden incision method for classic preauricular fistula resection, with promising results in terms of short operative time and rapid recovery without serious complications or infections.

Several studies confirm that surgical excision is the mainstay treatment for preauricular fistulas, particularly in recurrent or infected cases. (13) affirmed that surgery is necessary to address recurrent infections of preauricular fistulas, while (14) recommended the use of fistulography to guide surgery in recurrent cases to minimize complications and recurrence. (23) research introduced the hidden incision technique, showing high efficacy with short surgical times and rapid recovery without severe complications or infection. (15) reported successful treatment of congenital auricular fistulas with recurrent abscesses and infections using local skin flaps. (3) also contributed by developing a standardized surgical strategy to reduce recurrence rates in preauricular fistulas.

Thematic Synthesis of Findings

A review and analysis of various journals indicate that the management of preauricular fistulas, especially those with abscesses or recurrent infections, relies heavily on complete surgical excision to prevent recurrence. (14) underlined the importance of fistulography in recurrent fistula surgeries to minimize complications, while (11) and (13) also supported surgical intervention in recurrent cases. (10) recommended partial resection of the ascending helix cartilage to prevent recurrence, aligned with their histopathological findings regarding the distance between the squamous tract and the excised cartilage. Meanwhile, (15) found that surgical procedures using local skin flaps were effective

in congenital auricular fistulas with abscess formation and recurrent infections, reaffirming that acute infection management should precede definitive excision.

In the "Thematic Synthesis of Findings" chapter of this systematic review on the management of preauricular fistulas with and without abscesses, various studies confirm that complete surgical excision is the primary approach to prevent recurrence. (14) emphasized the role of fistulography in recurrent preauricular fistula surgery to reduce complications, while (11) and (15) also endorsed surgical treatment for infected recurrences. (10) recommended partial removal of the ascending helix cartilage based on histopathological analysis to reduce recurrence risk. (15) showed that surgical procedures using local skin flaps were effective for congenital auricular fistulas with abscesses and recurrent infections, (17) supported surgical management with complete excision for complex preauricular fistulas in children.

The management of preauricular fistulas, both with and without abscesses, fundamentally involves complete excision to prevent recurrence. (14) and (13) highlighted the importance of surgical treatment for recurrent infections or fistulas with persistent drainage, with (14) specifically advocating for the use of fistulography as a surgical guide in recurrent cases. (23) introduced the hidden incision technique at the auricular crus for classic fistula excision, showing effective results with minimal complications. Meanwhile, (15) reported success in managing congenital auricular fistulas with abscess formation using local skin flaps, demonstrating flexibility in surgical approaches for complex cases. (3) emphasized a standardized surgical strategy, including the use of magnification and methylene blue staining, to reduce recurrence rates in preauricular sinus excision, highlighting the importance of meticulous technique for long-term success.

Limitations of the Reviewed Studies

The limitations of this study are as follows:

1. Heterogeneity of Study Designs:
   The studies included in this review are likely to have varied designs (e.g., case reports, retrospective cohort studies, case series). This heterogeneity may limit the ability to perform a robust quantitative meta-analysis or draw definitive general conclusions, as each study design has its own strengths and weaknesses in terms of the level of evidence.
2. Variation in Sample Sizes:
   Some journals may report single cases or small case series (15), which presented two cases. These limited sample sizes can affect the generalizability of the findings and the statistical validity of the reported outcomes, necessitating caution when interpreting the effectiveness of interventions.
3. Lack of Control or Comparator Groups:
   Many studies, especially case reports or case series, may not include a control or comparator group. This makes it difficult to definitively determine the effectiveness of a particular intervention compared to other management options or to the absence of intervention.
4. Potential Publication Bias:
   Systematic reviews tend to identify studies that have been published. There is a possibility that studies with non-significant or "negative" results may remain unpublished, which could lead to bias in the overall findings and provide an incomplete picture of preauricular fistula management.
5. Differences in Follow-Up Duration:
   The reviewed studies have varying follow-up periods. For example, (23) reported a follow-up of 6–12 months, while other studies may have shorter or longer durations. This variation can affect the assessment of long-term recurrence rates or complications, making cross-study comparisons less consistent.

Conclusion

Based on a comprehensive analysis of the literature, it can be concluded that the current management of preauricular fistulas—whether accompanied by abscesses or not—consistently prioritizes complete surgical excision as the primary method to prevent recurrence. The reviewed studies highlight various effective surgical techniques, including hidden incisions for aesthetic purposes and the use of local skin flaps in abscess cases, all aiming to eliminate the entire fistulous tract. The importance of standardized surgical techniques, such as magnification and methylene blue staining, is also emphasized to ensure thorough excision and minimize recurrence rates. Thus, a meticulous and comprehensive surgical approach is key to the successful management of preauricular fistulas.

Nevertheless, this review identified several significant limitations in the existing literature. The heterogeneity of study designs, varying sample sizes, and lack of control or comparator groups limit the ability to draw strong conclusions and conduct comprehensive meta-analyses. In addition, potential publication bias and differences in follow-up durations across studies may affect the overall assessment of effectiveness and long-term outcomes of various management modalities. These limitations highlight the need for further well-designed research to strengthen the scientific evidence on preauricular fistula management.

To address the limitations identified in the literature, future research should focus on stronger study designs, such as randomized controlled trials, to objectively compare the effectiveness of different surgical techniques. Increasing sample sizes in prospective studies is also crucial to enhance statistical power and the generalizability of findings. Standardizing research protocols—including outcome measurement methods and uniform follow-up periods—would greatly facilitate comparisons across studies and enable more accurate evidence synthesis. Furthermore, encouraging the publication of studies with non-significant or "negative" results may help reduce publication bias and provide a more complete picture of preauricular fistula management.

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