AYUSHDHARA
ISSN: 2393-9583 (P)/ 2393-9591 (O)
An International Journal of Research in AYUSH and Allied Systems

Review Article

REVISITING *KARNASRAVA*: A COMPREHENSIVE REVIEW WITH AYURVEDIC CLINICAL INSIGHTS AND MODERN ENT CORRELATION

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Article info
Article History:
Received: 01-05-2026
Accepted: 06-06-2026
Published: 08-07-2026

KEYWORDS:
Karnasrava, Karnasula, Karnapippali, Dushta Vrana, Karnaroga Chikitsa, Taila, Panchavalkala, Shodhana, Ropana.

ABSTRACT

Karnasrava describe in classical Ayurvedic texts as pathological ear discharge, has significant overlap with otorrhoea in modern otology. A comprehensive review unifying Ayurvedic concepts of *Karnasrava* with modern ENT perspectives is currently lacking. **Objectives:** To critically review *Karnasrava* from Ayurvedic and contemporary ENT viewpoints, highlight *dosha*-specific clinical insights, correlate Ayurvedic pathogenesis with modern otorrhoeal mechanisms, and propose an evidence-based integrative management. **Methods:** Classical Ayurvedic references from *Brihattrayi* and *Laghutrayi* were analysed along with contemporary research from PubMed, Scopus, and ENT textbooks. Literature was categorized under etiopathogenesis, clinical features, diagnostic criteria, and treatment strategies. Correlations were drawn between Ayurvedic descriptions and modern classifications of CSOM. **Results:** Ayurveda describes *Karnasrava* as a *Dosha*-driven disorder with specific discharge patterns, arising from vitiation of *Vata-pitta-kapha* and *Srotodushti.* Management includes *Shodhana, Panchavalkala* decoctions, *Dhoopana, Nasya,* and *Karna-purana*. Modern ENT focuses on infection www control, aural cleaning, antibiotics, and surgery for chronic disease. Comparison shows shared emphasis on cleansing, infection reduction, and tissue repair. **Conclusion:** *Karnasrava* is a complex condition where Ayurvedic principles and modern ENT approaches complement each other. Integrative protocols combining Ayurveda cleansing and healing with evidence-based biomedical care may enhance outcomes future clinical trial and pharmacological evaluation are recommended to this traditional intervention.

INTRODUCTION

Acharya Charaka has mentioned *Karnasrava* as a symptom occurring in the four types of *Karnarogas* caused by the vitiation of various *Doshas*. *Acharya Vagbhata,* however, does not describe *Karnasrava* as a separate entity[1]. The term *Karnasrava* refers to any form of ear discharge- such as oozing, flow, or exudation. According to *Sushruta,* it is the discharge of pus from an ear affected by *Vata,* which may arise after head injury, immersion in water, or due to the suppuration and rupture of an abscess.[2] He also includes additional causes like exposure to dew (*Avasyaaya)*, common cold (*Pratishyaya)*, improper use of surgical instruments (*Mithyayoga* of *Shastra*), and inappropriate exposure to loud sounds (*Mithyayoga* of *Shabda*).

Karnasrava can be correlated in modern medicine with Chronic Suppurative Otitis Media (CSOM). CSOM is a long-standing inflammatory condition of the middle ear that usually develops following an episode of acute otitis media. It is marked by repeated ear discharge passing through a perforated tympanic membrane. India has one of the highest CSOM burdens, with prevalence ranging from 6% to 7.8% in rural pediatric populations. [3]

Ear discharge (otorrhoea) is a major clinical issue globally, especially in lower - and middle-income regions where chronic ear infections are a leading contributor to avoidable hearing loss. Chronic suppurative otitis media (CSOM)- the most common cause of persistent otorrhoea- affects an estimated 65

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https://doi.org/10.47070/ayushdhara.v13i3.2809

to 330 million people worldwide, and nearly 60% of them develop notable hearing impairment. [4]

Ayurvedic texts offer comprehensive diagnostic perspectives through *Dosha-lakshana, Vrana-dushti*, and *Nadi-pariksha*, helping to assess both the local pathology and the overall systemic involvement. The treatment approach is based on *Shodhana, Shamana*, Additionally, *Ropana t*herapies are employed to support and enhance local tissue healing. [5]

Herbs such as *Nimba, Guduchi, Haridra, Yashtimadhu, Bilva,* and *Dashamula* possess documented antimicrobial, anti-inflammatory, and wound-healing activities that may complement modern ENT management. [6,7]

Although Ayurvedic literature provides rich descriptions and global interest in integrative otology is growing, there is still a shortage of comprehensive, evidence-based reviews aligning *Karnasrava* with modern concepts of otorrhoea. Most Ayurvedic research consists of small observational studies or case reports, while contemporary biomedical studies emphasize microbiology and surgical approaches. Therefore, a unified comparative framework integrating the pathogenesis, clinical presentation, and therapeutic approaches of both systems is essential to advance integrative ENT practice.

This review attempts to bridge this gap by synthesizing classical Ayurvedic descriptions, clinical insights, and modern ENT understanding of csom. By correlating *Karnasrava* with contemporary ear discharge classifications- acute otitis media (AOM), CSOM, traumatic otorrhoea, and fungal infections- it aims to highlight potential areas for integrative diagnosis and treatment

Methodology of review

This review followed an integrative review framework, allowing systematic synthesis of classical Ayurvedic literature and contemporary ENT evidence relevant to *Karnasrava* and csom. The methodology included structured literature identification, critical evaluation, thematic categorization, and integrative correlation across both medical systems.[8]

Classical Ayurvedic literature

Including *Charaka Samhita, Sushruta Samhita*, and *Ashtanga Hridaya*- was examined for descriptions related to *Karnasrava, Karnasula, Dushta Vrana,* and ear-related disorders. Authoritative commentaries such as *Chakrapani* on *Charaka* and *Dalhana* on *Sushruta* were included to confirm accurate interpretation of terminology and pathological concepts[9]. These classical texts form the foundation for understanding etiopathogenesis, *Dosha* involvement, and therapeutic principles of *Karnasrava.*

Modern ENT literature

Modern ENT literature was sourced from PubMed, Scopus, Google Scholar, and ScienceDirect using targeted search strategies. Standard otology references like Scott-Brown's Otolaryngology and Logan Turner's Diseases of the Ear were consulted for contemporary insights on otorrhoea, CSOM, tympanic membrane perforation, microbiology, and therapeutic guidelines. [10]

Search Strategy

Electronic searches (2010–2024) were conducted using the following keywords:

Ayurveda: *Karnasrava, Karnasula, Karnapippali, Dushta Vrana, Karnaroga Chikitsa, Taila, Panchavalkala, Shodhana, Ropana.*

Modern ENT: Otorrhoea, chronic suppurative otitis media, CSOM, acute otitis media, fungal otorrhoea, antimicrobial therapy, ear infection, eustachian tube dysfunction.[11]

Inclusion Criteria

1. Ayurvedic *Shlokas* and their explanations that discuss ear discharge.
2. Clinical trials, observational studies, case reports, or lab studies related to Ayurvedic ENT treatments.
3. Articles written in English, Sanskrit, or Hindi.
4. Studies that provide full-text access.

Exclusion Criteria

1. Ayurvedic texts not related to the topic.
2. Studies with poor or unclear research methods.
3. Duplicate or repeated publications.
4. Editorials or opinion articles without data.
5. Animal studies not connected to otorrhoea or ear diseases.

Ayurvedic understanding of *Karnasrava*

***Nidana* (etiological factors)**

In ancient texts, various causes (diagnosis) of *Karnasrava* have been described by different *Acharyas*, especially those that aggravate *Vata* and *Pitta*.

No.	*Acharyas*	*Nidan*
1	*Aacharya Charka*	No separate *Nidana* is described
2	*Acharya Vagbhatta [12]* *(Samanya Karna Roga Nidana)*	*Pratishyaya* (common cold) *Jalakrida* (immersion in water) *Karnakandu* (itching in ear)

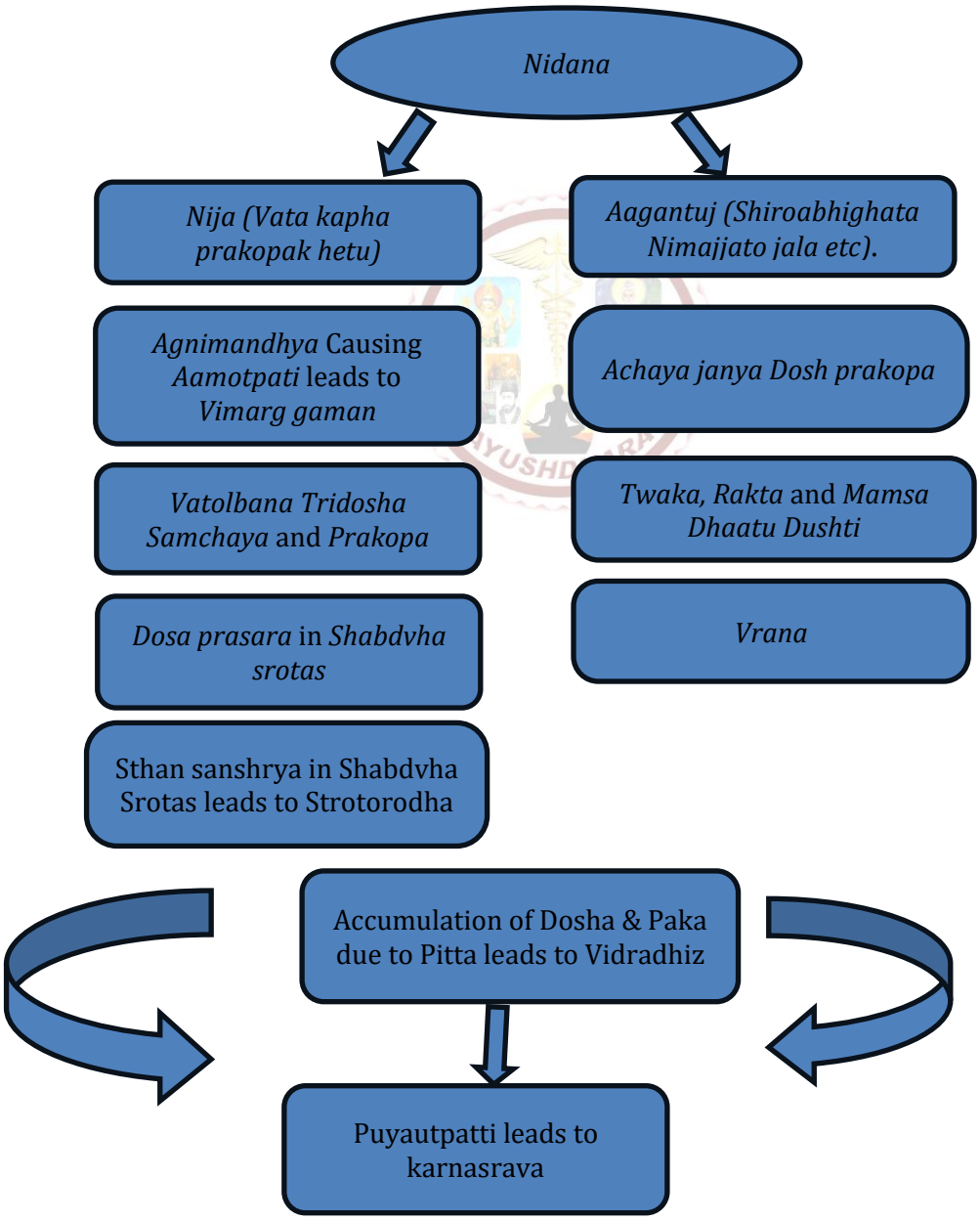
		Mithyayogena Shabdasya
3	*Yogaratnakara* [13] *(Samanya Karna Roga Nidana)*	*Avshyaya* (humid climate) *Jalakrida (*immersion in water) *Karnakandu* (itching in ear) *Mihyayogena Shastrasyasya*
4	*Aacharya Sushruta* (14)	*Shiroabhighata* (head injury) (*Visistha Karna Srava Nidana)* 1. *Nimajjato jala* (immersion in water) 2. *Prapakada Vidridhi* (bursting of abscess in ear)

Meticulous knowledge of *Nidana* is required for understanding the disease precisely. As *Nidana parivarjana* is first step for making treatment of any disease.

Many of these *Nidanas* correlate directly with modern ENT risk factors- such as contaminated water exposure, eustachian tube dysfunction, ottorhea, itching, following URTI, and trauma-induced tympanic membrane perforation.

***Samprapti* (pathogenesis)**

Sampraapti is the process of manifestation of the diseases by the morbid *Dosha* which are circulating all over the body. *Jaati* and *Aagati* are synonyms of *Sampraapti*[15].



Dose: *Vata pradhana tridosh*

***Dushya*:** *Rasa, Rakta, mansa* and *Srotas* This involvement explains acute pain (*Vata)*, burning discharge (*Pitta)*, and chronic thick mucoid discharge (*Kapha).* Chronicity corresponds to modern concepts of mucosal thickening, granulation tissue, and persistent epithelial inflammation.

***Upadrava* (Complications)**

Texts mention complications such as hearing loss *(badhirya*), tinnitus (*karnanada*), giddiness, facial pain, foul-smelling discharge, and chronic inflammation- closely correlating with modern CSOM complications such as conductive hearing loss, ossicular erosion, tympanosclerosis, and rarely intracranial spread. [16]

Morden ENT perspective on CSOM

Chronic suppurative otitis media is a long-standing middle-ear infection marked by persistent ear discharge and a permanent tympanic membrane perforation. The edges of the perforation become lined with squamous epithelium, forming an epithelial tract that does not heal on its own.[17]

Aetiology: A permanent perforation is a benign form of CSOM that usually develops after a large central perforation from childhood AOM, often following exanthematous fever. This opening allows repeated infections through the external ear canal, leading to otorrhoea. The exposed middle-ear mucosa becomes easily irritated by dust, pollen, and other airborne allergens**.**

Further: Infection, genetic, UTRI, autoimmune, allergic, genetic, eustachian tube dysfunction **(18,19)**

Type

Tubotympanic (Safe)T

Inactive mucosal: Permanent perforation but no discharge.

Active mucosal: Permanent perforation with ongoing discharge.

Healed: Tympanosclerosis or a closed, healed perforation.

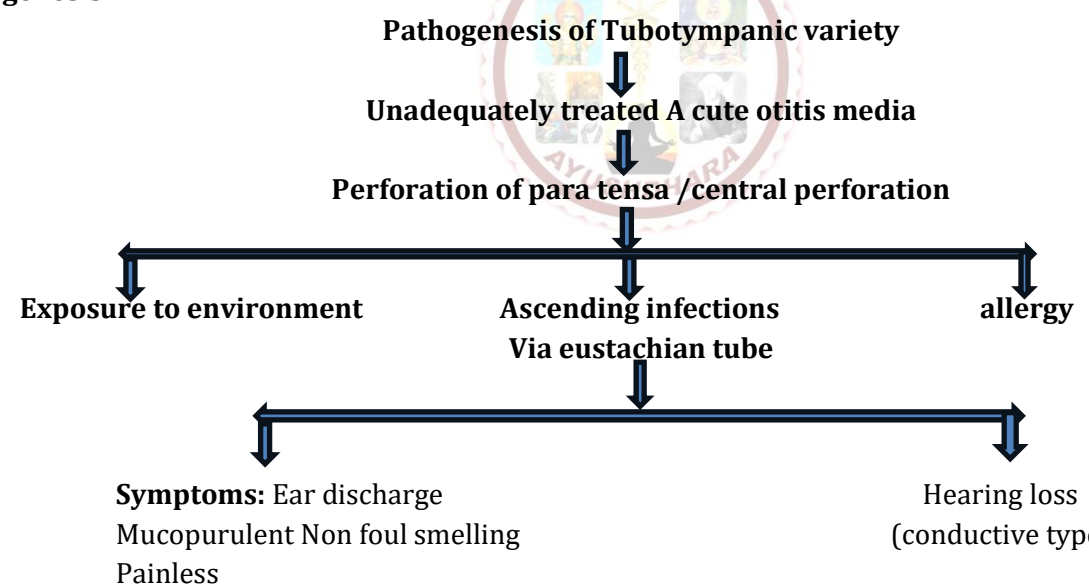
2. Atticoantral (Dangerous) Type

Inactive squamous: Retraction without cholesteatoma.

Active squamous: Retraction pocket with cholesteatoma.

Secondary acquired cholesteatoma: Cholesteatoma developing later due to other causes.**(20)**

Pathogenesis [21]



Microbiology

Both types of CSOM show similar causative microbes, often with mixed aerobic and anaerobic growth.

Aerobes: Pseudomonas aeruginosa (most common), Proteus, E. coli, Staphylococcus aureus.

Anaerobes: Bacteroides fragilis (most common) and anaerobic streptococci.[22]

Diagnostic approach

Culture and sensitivity test– The discharge helps in selection of proper antibiotics.

X-ray mastoid or HRCT Imaging (HRCT temporal bone) is reserved for complicated, recurrent, or cholesteatomatous cases.[23]

Pure-tone audiometry: is recommended to assess the degree and type of hearing loss (conductive, mixed, or sensorineural) associated with middle-ear disease, particularly in CSOM where early intervention can prevent long-term auditory disability.[24]

Comparative analysis *Karnasrava* vs modern CSOM

Ayurvedic texts attribute *Karnasrava* to *Nidanas* such as *Jala pravesh* (water entry), *Sheeta pravritti* (cold exposure), inappropriate ear cleaning, trauma (*Abhigata*), and systemic upper respiratory tract disease leading to *Dosha* vitiation.[14] Modern otology lists similar risk factors: URTI, Eustachian tube dysfunction, contaminated water/foreign bodies, trauma, infection, allergy, auto immune and poor hygiene- all of which predispose to AOM, otitis externa, or CSOM **[34]**.

Evidence–based Ayurvedic management of *Karnasrava*

General treatment of *Karnaroga, Acharya Charaka* states that in *Karnaśula, Vatahara and Pinasavata Chikitsa* should be administered. When symptoms like *Paka* or *Srava* are present, the condition should be managed similarly to a *Vrana* (wound).[25]

Acharya Suśhruta*:* provides a broader treatment approach for ear diseases, which includes *Ghrita pana, Rasayana* therapy, and avoiding excessive physical work, head bathing, sexual activity, and too much talking.[26,27]

***Visesha Chikitsa* (Specific Treatment)**

It is beneficial to take general treatment and special yoga in case of *Karnasrava, Putikarna* and, *Krimikarna*. Ayurveda describes several methods to keep the ear clean and free from infection in cases of *Karnasrava.* These include *Karna Purana* (instilling medicine into the ear), *Karna Dhoopana* (ear fumigation), *Pramarjana* (cleaning), *Shirovirechana,* and *Dhvana/Prakshalana* (ear washing). Some oral medicines are also recommended for managing *Karnasrava*.[30]

Shirovirechana

Nasya is an Ayurvedic therapy in which medicines are given through the nasal route for treating diseases of the head and neck. Ayurveda considers the nose as a gateway to the organs of the head, so medicines given through the nostrils reach these areas and help remove harmful factors.[28]

Shirovirechana Nasya is one type of *Nasya*. Before giving it, the nose, forehead, cheeks, and neck are gently massaged with oil and mild steam is applied. The patient lies in the supine position, and the medicine is then instilled into the nostrils, followed by deep inhalation so the drug spreads throughout the nasal cavity. *Acharya Sharngadhara* describes two types of *Shirovirechana Nasya: Pradhamana-Avapidana.* Both methods are useful for diseases of the eye, ear, nose, and head.[29]

Dhupana

It is a method of fumigating the ear using the smoke of medicinal, anti-infective substances. *Acharya Sushruta* recommends *Guggulu* for this purpose, as it is a well-known agent with strong anti-infective and anti-inflammatory properties.[30]

Purana

Karnapurna refers to the procedure of putting medicinal drops into the ear. It is used both for treating and preventing ear disorders. When oil is filled in the ear for nourishment and protection, it is known as *Karnatarpana.*[31]

Pramarjana

Pramarjana means wiping or cleaning. It helps remove bad smell, itching, and unwanted dirt or discomfort caused by sweat.[32]

Dhavana/ Prakshalana

Dhavana means washing and cleansing. *Prakshalana* is a synonym of *Dhavana*. Sushruta has mentioned *Raajavrukshadigana* and *Surasaadigana* for *Karnaprakshaalana.*[33]

Panchvalkal kwath

Panchavalkala decoction *(Kwatha*) is traditionally used for this purpose. Modern studies have shown that *Panchavalkala* has antimicrobial and wound-healing effects, making it suitable for cleaning infected tissue.[37]

Panchkshiri Kwath

In a clinical study on patients of *Karnasrava,* Shukla et al registered 60 patients and divided them randomly into two groups as experimental group and control group in the experimental group, patients received *Arogyavardhini Vati* (a herbo-mineral Ayurvedic medicine) 500mg three times daily along with *Sharkarayukta* water and *Pramarjana* (ear cleaning) using *Panchkshiri Kwatha*. The control group was treated with Amoxicillin 500mg three times daily and aural toilet with a dry cotton swab.

Both groups were evaluated using subjective and objective clinical indicators, and both showed similar and effective improvement in all clinical parameters.[38]

Local topical therapy *(Taila-Pooran/Pichu)*

Gandhaka Tail

A clinical study on the patients of CSOM used *Gandhaka tail* as study drug in 23 cases. s of CSOM used *Gandhaka tail* as study drug in 23 cases. *Gandhaka tail,* a herbo-mineral preparation, is a type of medicated oil prepared from *Katu tail* (mustard oil) by oil preparation method. In the preparation of this drug (oil) *Haridra* (Curcuma longa Linn.), *Sudha Manhashila* (purified Arsenic disulphide) and *Sudha Gandhaka* (purified sulphur) are taken as *Kalka dravyas* (paste

form of drug) while *Dhatura swarasa* (juice from Datura metal L. leaves) is taken as *Drava dravya* (liquid drug). Patients received 2 drops of the oil in the affected ear at night for 7 days, after proper ear cleaning. The results showed significant improvement in key symptoms such as ear discharge, pain, tympanic membrane perforation, tinnitus, and hearing loss.[39]

Ark Tail

Palmer et al treated 28 patients of *Karnasrava* in a clinical study. Patients were grouped into two groups with 14 patients in each group.

One group was treated with *Arka Taila,* a type of medicated oil prepared from *Katu tail* (mustard oil) by oil preparation method by using paste of *Haridra* (Curcuma longa Linn.) and *Arkapatra* (Calotropis gigantea Linn.), the other group was treated with Clotrimazole ear drops (standard control). *Arka Taila* was given as *Karna Purana,* 10–15 drops for the duration of 100 *Matra*, repeated for 15 days with 5-day intervals. Clotrimazole was used as 2 drops, three times a day for 15 days.

The findings showed that *Arka Taila* was equally effective as Clotrimazole in relieving all major symptoms of *Karnasrava.[40]*

Madhukadi Tail (Pichu)

In a clinical study on CSOM Gupta et al registered 40 patients and randomly divided them into two groups.

Group 1 received *Madhukadi Taila Karnapichu*. Group 2 received the same treatment plus oral *Rasanadi Guggulu* (2 tablets twice daily) for one month.

The assessment was done on clinical parameters like *Karnasrava*, amount of *Karnasrava, Karna- shula, Karnakandu, Karna badhirya, Karnanad.* Results show statistically significant overall improvement in both groups with slightly higher improvement in *Rasnadi guggulu* group.[41]

Mixed Treatment Protocols

Karnapurna* and *Nasya

In a study on CSOM by *Prakashbhai* et al., 28 patients were divided into two groups of 14 each.

Group 1 received *Nasya* with *Shadbindu Taila* (6 drops in each nostril for 5 days before starting treatment). After that, both groups received the same therapy:

Karnapurna with *Gandhakadi Taila* (1ml in the ear once daily in the evening) *Saptanga Guggulu* (1gm three times a day) for 45 days.

Patients were followed for one month with check-ups every 15 days. Both groups showed similar improvement in symptoms, but the objective results were not statistically significant in either group.[42]

Oral Ayurvedic drugs described in the management of *Karnasrava*

Name *Rasnadi Guggulu*

Contents *Rasna, Amrita, Eranda, Devdaru, Saunth, Guggulu.*[43]

Name *Sarivadi vati*

Contents: *Sariva, Madhuka, Kushtha, Chaturjata, Priyangu, Nilotpala, Guduchi, Lavanga, Triphala, Lauha Bhasma, Abhraka Bhasma,* and *Swaras* of *Bhringraj, Kakmachi, Gunja,* decoction of *Arjun*.[44]

When to Refer to ENT/Surgical Management

Ayurveda texts and modern ENT guidelines agree that certain red flags need medical or surgical attention: Persistent discharge despite proper Ayurvedic + medical therapy Attico-antral disease/ Cholesteatoma severe hearing loss Suspected complications (mastoiditis, intracranial spread)

In such cases, modern ENT procedures like tympanoplasty or mastoidectomy may be required.[45,46]

Antimicrobial Herbs for CSOM: Recent invitro studies show high potential of herbs acting as antibacterial and antifungal agents. Here Ayurvedic herbs which possess antimicrobial properties against main causative bacteria and fungi are compiled.[36]

Morden management of CSOM

The main goal of treatment is to control infection, address the root cause, keep the ear dry, and restore hearing.

Modern Management

1. Treat underlying causes: Any issues of the nose, sinuses, or nasopharynx are identified and corrected.
2. Aural toilet: Daily cleaning of the ear (dry mopping) to keep it dry, preferably under a microscope for better accuracy.
3. Culture & antibiotics: Ear discharge is tested to choose the right antibiotic. Both oral and topical antibiotics (neomycin, gentamicin, quinolones, chloramphenicol ± hydrocortisone) are used.
4. Surgery (Tubotympanic type): Procedures like adenoidectomy, aural polypectomy, and myringoplasty help achieve a safe, dry, and functional ear.[35]

Ayurvedic Management

Ayurveda focuses on cleaning the ear, reducing infection, and supporting healing using:

Karna Purana: Instilling medicated oil/drops in the ear.

Karna Dhoopana: Fumigation of the ear

***Pramarjana*:** Regular cleaning

Shirovirechana & Dhvana/Prakshalana: *Nasya* and washing procedures.[30]

Oral medicines: For systemic support and healing.

Comparison analysis of Ayurvedic and modern management

Both systems aim to control infection and keep the ear dry. Modern medicine uses antibiotics, microscopic cleaning, and surgery. Ayurveda uses herbal oils, fumigation, cleansing techniques, and supportive oral medicines. Both approaches focus on restoring ear health but use different methods- modern is antibiotic/surgical, while Ayurveda is herbal /procedural.

DISCUSSION

The correlation of *Karnasrava* with Chronic Suppurative Otitis Media (CSOM) provides an important platform for integrating Ayurvedic and modern otological perspectives. Both systems describe remarkably similar etiological factors, including water entry into the ear, post-infectious inflammation, trauma, poor hygiene, and recurrent upper respiratory tract infections. Classical Ayurvedic *Nidanas* described by Suśruta- such as *Nimajjato jala*, *Prapakada vidridhi*, and *Śirobhighata*- align closely with modern ENT risk factors including contaminated water exposure, tympanic membrane perforation, and persistent mucosal inflammation. This overlap highlights the relevance of Ayurvedic frameworks even in the context of contemporary disease understanding.

The pathogenesis of CSOM in modern medicine emphasizes long-standing middle-ear infection, persistent tympanic membrane perforation, and epithelialization of the perforation margins leading to non-healing chronic otorrhoea. Ayurveda similarly explains *Karnasrava* through *Dosha* vitiation, particularly involving *Vata* and *Pitta*, resulting in localized inflammation, infection, and abnormal secretions. These parallels indicate that concepts such as *Vrana-Dushti*, *Dosha-lakshana*, and *Shotha* may offer complementary interpretations of middle-ear pathology.

Management principles in both systems also share common goals: controlling infection, maintaining a dry ear, and promoting tissue healing. Modern ENT practice relies on aural toilet, culture-based antibiotic therapy, and surgical procedures such as myringoplasty to achieve a safe, dry ear and restore hearing. Ayurveda, on the other hand, employs a combination of local procedures- *Karna Purana*, *Karna Dhupana*, *Pramarjana*, *Dhavana/Prakshalana*- and systemic therapies including *Rasayana*, *Ghrita pana*, and *Dosha*-specific interventions such as *Śirovirechana Nasya*. The emphasis on wound-healing (*Ropana*) and purification (*Śodhana*) corresponds conceptually with modern goals of infection control and tissue repair.

Herbs such as *Nimba, Guduchi, Haridra, Yashṭimadhu, Bilva*, and *Daśamula* have been shown in in-vitro studies to possess antimicrobial and anti-inflammatory activity against common CSOM pathogens. These findings support their potential use as integrative or adjunct therapeutic options. However, much of the current Ayurvedic evidence base comprises small observational studies or case reports, underscoring the need for larger, standardized clinical trials to validate efficacy and safety when used alongside modern ENT treatments.

Overall, the review highlights that Ayurveda offers a broader systemic perspective, while modern otology provides microbiological precision and surgical advancements. An integrative approach that includes Ayurvedic cleansing procedures, herbal formulations, and systemic support- combined with modern diagnostic and surgical techniques- could potentially improve outcomes, particularly in resource-limited settings where CSOM remains highly prevalent.

CONCLUSION

This review establishes a meaningful correlation between *Karnasrava* and Chronic Suppurative Otitis Media, demonstrating substantial overlap in etiological factors, clinical features, and therapeutic goals across Ayurveda and modern medicine. Classical Ayurvedic texts describe mechanisms of ear discharge and inflammation that parallel contemporary understanding of chronic middle-ear infections. Similarly, both systems emphasize the need to control infection, maintain a dry ear, and promote tissue healing.

While modern ENT management provides evidence-based antibiotic therapy, microscopic aural cleaning, and surgical reconstruction, Ayurveda contributes holistic, non-invasive procedures and herbal interventions with antimicrobial, anti-inflammatory, and wound-healing potential. Integrating these approaches could offer a more comprehensive framework for managing chronic otorrhoea, especially in countries like India where CSOM remains a significant public health issue.

However, further research- particularly controlled clinical trials and mechanistic studies- is essential to create robust, evidence-based integrative protocols. By synthesizing classical Ayurvedic wisdom with modern scientific insights, practitioners can advance a more effective and patient-centered approach to the management of *Karnasrava* and CSOM.

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Cite this article as:
Pooja Chouhan, Aparna Sharma. Revisiting Karnasrava: A Comprehensive Review with Ayurvedic Clinical Insights and Modern ENT Correlation. AYUSHDHARA, 2026;13(3):563-571.
https://doi.org/10.47070/ayushdhara.v13i3.2809
Source of support: Nil, Conflict of interest: None Declared

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