



Evidence-Based Ayurvedic Management of a Thyroid Lobe Colloid Cyst: A CARE-Compliant Clinical Case Report

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ABSTRACT

Background:

Thyroid colloid cysts are common benign endocrine lesions frequently identified through high-resolution ultrasonography, predominantly affecting young adult females. While the majority of these lesions remain asymptomatic, progressive cystic enlargement can cause cosmetic distress, dysphagia, and local compressive discomfort. Conventional management standardly relies on clinical observation, fine-needle aspiration, ethanol ablation, or surgical thyroidectomy. However, interest in non-surgical, minimally invasive, and organ-preserving strategies has escalated. Traditional Ayurveda describes similar glandular pathologies under Granthi and Galaganda, attributing them to localized Dosha-Dhatu imbalances.

Case Summary:

A 27-year-old euthyroid female presented with a progressive, painless anterior neck swelling (29 x 16 x 23 mm) enduring for six months, accompanied by mild deglutition discomfort. High-resolution ultrasonography (USG) confirmed bilateral thyroid lobe colloid cysts with right-sided dominance. The patient was treated with an integrated, evidence-based Ayurvedic protocol spanning 10 months (May 2025 to March 2026). The regimen comprised weekly sessions of Jalaukavacharan (medicinal leech therapy), oral herbal-mineral formulations (Tablet TFN-34 and Gandamalakandan Rasa), topical Kukkutnakhi Lepa application, and structured Nidana Parivarjana (lifestyle and dietary modifications).

Key Findings:

Serial follow-up evaluations and objective USG tracking demonstrated a profound reduction in the primary right-sided cyst dimensions from 29 x 16 x 23 mm (Volume: 5.58 mL to 17 x 14 x 12 mm (Volume: 1.50 mL), representing a 73.1 % volumetric reduction. Complete resolution of swallowing discomfort and significant cosmetic improvement were achieved. Serum thyroid function tests (T3, T4, TSH) and hepato-renal biochemical markers remained stable within normal physiological limits throughout the study, confirming safety. Erythrocyte sedimentation rate (ESR) decreased from 17 mm/hr to 7 mm/hr, signaling diminished localized inflammatory activity.

Conclusion:

This case report indicates that specialized Jalaukavacharan combined with standardized internal Ayurvedic medications can provide safe, effective, and non-surgical downsizing of benign thyroid colloid cysts. Larger, randomized controlled trials are justified to establish standardized clinical protocols. nigundo Linn extract.

KEYWORDS: Thyroid Colloid Cyst; Leech Therapy; Jalaukavacharan; Integrative Endocrinology; Clinical Pharmacy; Case Report; Granthi.

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INTRODUCTION

Thyroid nodules and cystic lesions constitute a widespread clinical challenge in modern endocrine practice. With the advent and routine deployment of high-resolution diagnostic ultrasonography (USG), the detection rate of asymptomatic or subclinical thyroid abnormalities has risen sharply, identifying structural lesions in up to 60–70% of random adult cohorts, with a marked predilection for female individuals. Among these, thyroid colloid cysts are highly prevalent benign entities characterized by the over-accumulation of colloid material within expanded thyroid follicles. Although devoid of malignant potential, mechanical expansion of these cysts frequently leads to visible anterior neck disfigurement, localized compressive symptoms such as dysphagia or globus pharyngeus, and significant patient anxiety.

Modern clinical guidelines from institutions such as the American Thyroid Association (ATA) reserve surgery or thermal/ethanol ablation for macroeconomic, symptomatic, or progressively enlarging nodules. However, invasive options carry inherent procedural risks, including recurrent laryngeal nerve damage, permanent hypoparathyroidism, cosmetic scarring, financial burdens, and the subsequent mandate for lifelong levothyroxine substitution. Consequently, there is an unmet clinical demand for conservative, targeted, and organ-preserving therapeutic interventions.

Ayurveda conceptualizes localized nodular and glandular hyperplasias under the nosological frameworks of Granthi (benign cysts/neoplasms) and Galaganda (struma/goiter). Pathophysiologically, these conditions stem from the

synchronized vitiation of Kapha and Vata Doshas, which cross-contaminate fluid-rich tissues (Rakta, Mamsa, and Meda Dhatus), producing microchannel blockade (Srotorodha) and localized cystic stasis. Treatment aims to clear these channels (Srotoshodhana) via systemic pacification (Shamana) and bio-cleansing (Shodhana) models.

Jalaukavacharan (medicinal leech therapy) represents a localized bio-purificatory approach traditionally reserved for deeply seated, congested, or inflammatory structural swellings. Modern hematological and pharmacological research validates that the salivary glands of *Hirudo medicinalis* secrete a potent cocktail of bioactive proteins, including direct thrombin inhibitors (hirudin), platelet aggregation inhibitors (calin), spreading factors (hyaluronidase), and elastase inhibitors (bdellins and eglins). These agents collectively optimize locoregional microcirculation, lower interstitial fluid tension, resolve venous stasis, and exert anti-inflammatory properties. When combined with systemic Lekhana (scavenging/scarifying) and Shothahara (anti-edematous) formulations such as Kanchanar Guggulu variations, this protocol offers a plausible chemical and mechanical pathway toward cyst involution.

Currently, published literature evaluating rigorous, radiologically tracked Ayurvedic interventions for benign thyroid cysts remains scarce. This clinical case report aims to fill this gap by detailing the clinical execution, safety outcomes, and objective ultrasonographic involution of a bilateral thyroid colloid cyst managed through a standardized 10-month Ayurvedic protocol.

SCASE PRESENTATION

Patient History and Clinical Presentation

A 27-year-old female academic professional residing in Mumbai, India, presented to the outpatient department of Shalakyatantra at R.A. Podar Medical College (Ayurveda) with a primary complaint of a visible, slowly enlarging swelling in the anterior neck region over the preceding six months. The swelling was associated with an intermittent sensation of fullness and mild discomfort during deglutition. She denied any history of localized pain, tremors, palpitations, heat/cold intolerance, menstrual irregularities, unexplained weight fluctuations, or dysphonia. Her medical, family, and surgical histories were unremarkable.

Lifestyle and Dietary Analysis

Occupational mapping revealed a sedentary lifestyle, involving prolonged computer-based research work extending 8–10 hours daily with suboptimal ergonomic support. Dietary evaluation revealed a habit of irregular meal timings (Vishamashana), high intake of refined carbohydrates, processed bakery items, and excessive caffeinated beverages (>4 cups daily). From an Ayurvedic perspective, these habits cause Agnimandya (impaired metabolic fire) and promote the accumulation of Ama (toxic metabolic by-products) and Kapha-Meda stagnation.

Physical and Clinical Examination

General systemic examination was normal. Localized physical examination of the neck revealed a distinct, soft, non-tender, smooth-surfaced mass measuring approximately 30 x 20 mm in the anterior neck region, moving vertically upon deglutition.



Figure 1. Baseline Clinical Appearance of Thyroid Colloid Cyst Before Treatment.

Visible anterior neck swelling over the thyroid region prior to initiation of Ayurvedic intervention, demonstrating the cosmetic prominence of the right thyroid lobe colloid cyst. The swelling was lateralized predominantly to the right thyroid lobe. There was no associated localized hyperthermia, erythema, venous engorgement, or cervical lymphadenopathy.

Diagnostic and Laboratory Assessment

Baseline biochemical profile confirmed a distinct euthyroid state with intact organ function. High-resolution ultrasonography (USG) of the thyroid gland was deployed to capture baseline structural metrics, confirming bilateral thyroid lobe colloid cysts with marked right-sided dominance.

$\text{Ellipsoid Cyst Volume} = \text{Length} \times \text{Width} \times \text{Thickness} \times 0.524$

- **Right Thyroid Lobe Cyst:** 29 x 16 x 23 mm (Calculated Baseline Volume: approx 5.58 mL).
- **Left Thyroid Lobe Cyst:** 3.4 x 4.6 x 3.0 mm (Calculated Baseline Volume: approx 0.02 mL).

Table 2: Diagnostic and Laboratory Assessment

Parameter	Baseline Value (May 2025)	Reference Range	Clinical Interpretation
Serum Triiodothyronine (T ₃)	97.50 ng/dL	80–200 ng/dL	Euthyroid Status
Serum Thyroxine (T ₄)	10.50 µg/dL	4.5–12.0 µg/dL	Euthyroid Status
Serum Thyroid-Stimulating Hormone (TSH)	1.20 µIU/dL	0.4–4.5 µIU/dL	Normal Pituitary-Thyroid Axis
Erythrocyte Sedimentation Rate (ESR)	17 mm/hr	0–20 mm/hr	Mild Low-grade Inflammation
Hemoglobin (Hb)	12.4 g/dL	12.0–15.0 g/dL	Normal Hematology
Serum Glutamic Pyruvic Transaminase (SGPT)	41 U/L	<45 U/L	Intact Hepatic Function
Serum Creatinine	0.72 mg/dL	0.6–1.2 mg/dL	Intact Renal Function

Ayurvedic Anthropometric Assessment (Ashtavidha Pariksha)

- **Nadi (Pulse):** 78 beats/min (Kapha-Vata dominance)
- **Mala (Stool):** Prakrit (Normal, regular)
- **Mutra (Urine):** Prakrit (Clear, normal frequency)
- **Jihva (Tongue):** Eshat Sama (Mildly coated, reflecting low-grade metabolic sludge)
- **Shabda (Speech):** Spashta (Clear, no hoarseness)
- **Sparsha (Touch):** Samashitoshna (Normal body temperature)
- **Drik (Eyes):** Spashta (Normal vision)
- **Aakruti (Body Build):** Madhyama (Mesomorphic)
- **BMI:** 23.83 kg/m² (Overweight threshold for South Asian cohorts)

Therapeutic Intervention

The patient underwent a multi-modal Ayurvedic treatment protocol lasting 10 consecutive months (Commenced: May 2025; Concluded: March 2026).

[May 2025: Baseline Diagnosis]



[Initiation of Therapy]

- Weekly Jalaukavacharan (Local)
- Oral Formulations: TFN-34 & Gandamalakandan Rasa
- Topical Kukkutnakhi Lepa + Nidana Parivarjana



[16 Longitudinal Follow-Ups & Serial USG Monitoring]



[March 2026: 73.1% Cyst Volumetric Reduction & Euthyroid Maintenance]

1. Hirudotherapy (Jalaukavacharan)

- **Frequency:** Once weekly for 40 weeks (excluding menstrual cycles).
- **Leech Species:** *Hirudo medicinalis* (sourced and kept under strict laboratory hygiene protocols).
- **Procedure:** The anterior neck region was thoroughly cleansed with sterile water. Two medium-sized, active, non-venomous leeches (2.5–3.0 cm) were placed directly over the right thyroid lobe cystic projection. Upon successful attachment and initiation of rhythmic blood suction, they were left undisturbed until spontaneous detachment (average duration: 25–40 minutes). The puncture sites were cleansed with Haridra (*Curcuma longa*) powder acting as a natural styptic and antimicrobial agent, followed by sterile compressive bandaging.

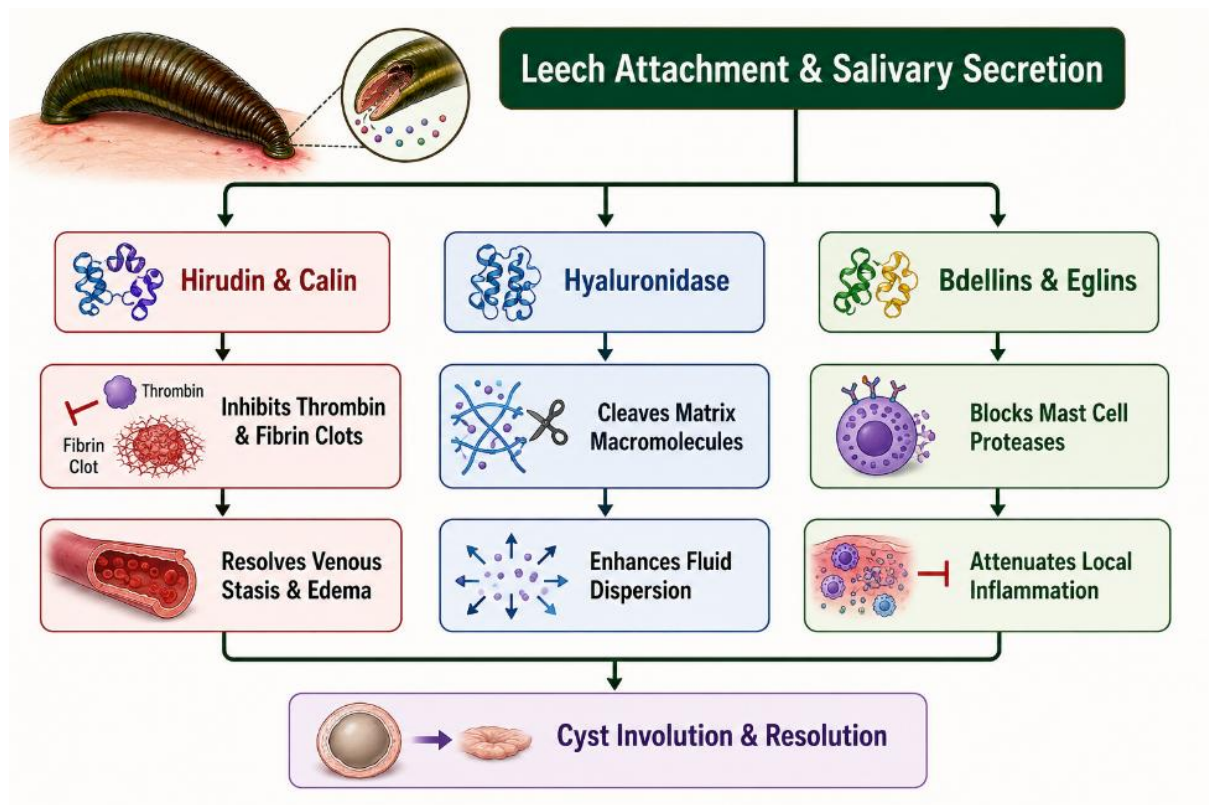


Figure 2. Jalaukavacharan (Medicinal Leech Therapy) Applied During Treatment.

2. Oral Pharmacotherapy Regimen

- **Tablet TFN-34:** 1 tablet (500 mg) administered twice daily, 30 minutes post-meals with warm water. Composition: Standardized extracts of Kancharan (*Bauhinia variegata*), Guggulu (*Commiphora mukul*), Triphala, Ashwagandha (*Withania somnifera*), and Dashamoola.
- **Gandamalakandan Rasa:** 2 tablets (250 mgeach) administered twice daily, co-timed with TFN-34. Composition: Herbo-mineral matrix incorporating Shuddha Parada (purified mercury), Shuddha Gandhaka (purified sulfur), Tamra Bhasma (calcinated copper nanocrystals), Kancharan, and Trikatu bio-enhancers.

3. Topical Application (Lepa)

- **Kukkutnakhi Lepa:** The patient was instructed to apply a uniform, thin layer of Kukkutnakhi paste (2–3 mm thickness) over the anterior neck swelling once daily at night. It was washed off with lukewarm water the following morning.

4. Structured Lifestyle Modifications (Nidana Parivarjana)

Dietary plans excluded processed bakery foods, stale items, and high-fat dairy. Caffeinated inputs were restricted to <1 cup daily. The patient incorporated mandatory 10-minute movement breaks for every 60 minutes of sedentary computer work. She practiced daily Pranayama (Ujjayi and Anuloma-Viloma breathing exercises) for 15 minutes to regulate autonomic tone, alongside maintaining a strict sleep window (sleep by 10:30 PM, avoiding daytime napping).

Follow-Up and Outcomes

Clinical tracking spanning 16 systematic follow-up visits demonstrated an uneventful recovery with high patient compliance.



Figure 3. Post-Treatment Clinical Appearance Following Ayurvedic Management.

Objective tracking via serialized high-resolution USG scanning mapped a progressive, multi-axial regression of the colloid cysts.

Serial Ultrasonographic Progress Tracking

Table 2: The table below tracks structural change over time. Dimensions are reformatted to millimeters (mm) for longitudinal consistency.

Timeline Milestone	Right Thyroid Lobe Cyst Dimensions	Calculated Right Cyst Volume	Left Thyroid Lobe Cyst Dimensions	Clinical Interpretation & Status
Baseline (15/05/2025)	29.0 x 16.0 x 23.0 mm	5.58 mL	3.4 x 4.6 x 3.0 mm	Prominent mass, localized compressive swallowing distress.
Interim Follow-Up I (10/08/2025)	26.2 x 15.1 x 20.4 mm	4.22 mL	3.1 x 4.0 x 2.8 mm	Initial reduction in cyst wall tension; deglutition ease initiated.
Interim Follow-Up II (05/11/2025)	24.0 x 14.2 x 18.1 mm	3.23 mL	2.5 x 3.1 x 2.2 mm	Marked reduction in visible profile; complete resolution of dysphagia.
Final Follow-Up (04/04/2026)	17.0 x 12.0 x 14.0 mm	1.50 mL	Minimal trace scar residual	73.1% total volumetric reduction; absolute cosmetic satisfaction.

Safety, Tolerability, and Biomarker Monitoring

- **Thyroid Axis Balance:** Post-treatment thyroid profile (March 2026) read T₃: 94.2 ng/dL, T₄: 9.8 µg/dL, and TSH: 1.45 µg/dL, proving that the intervention successfully downsized the cyst mass without disrupting the functional integrity of the thyroid tissue.
- **Inflammatory Attenuation:** Serum ESR dropped from 17 mm/hr to 7 mm/hr, verifying systemic and localized anti-inflammatory activity.

Toxicity Verification: Post-therapy hepatic (SGPT: 35 U/L) and renal (Creatinine: 0.69 mg/dL) profiles confirmed the complete absence of hepato-renal toxicity from the long-term herbo-mineral drug ingestion. No local skin necrosis, secondary bacterial infections, or systemic allergic responses were reported at the leech application sites.

DISCUSSION:

This clinical case study highlights the successful management of a symptomatic benign thyroid lobe colloid cyst using a structured Ayurvedic framework. It demonstrates a substantial 73.1% reduction in cyst volume over a 10-month period, verified by high-resolution ultrasonography. Crucially, this treatment avoided surgical trauma and preserved normal thyroid function.

Mechanisms of Action of Jalaukavacharan (Hirudotherapy)

The significant regression of the colloid cyst is largely due to the pharmacological actions of the bioactive components in leech saliva. From an Ayurvedic perspective, Jalaukavacharan serves as a localized form of Raktamokshana (bloodletting). It directly targets Srotorodha (microchannel blockage) and clears localized deposits of Kapha-Kleda. From a modern biomedical perspective, these clinical results match known mechanisms of hirudotherapy:

- **Resolution of Venous Stasis:** **Hirudin** binds directly to thrombin, preventing fibrin clot formation and localized microthrombosis. Working together with **calin**, which inhibits collagen-mediated platelet aggregation, it promotes sustained micro-drainage at the puncture site. This process relieves venous congestion and decreases pericyclic interstitial pressure around the thyroid follicle.
- **Enhanced Fluid Dispersion:** **Hyaluronidase** breaks down extracellular hyaluronic acid matrix barriers. This action

lowers interstitial viscosity, accelerating the reabsorption and clearance of static colloid fluid within the cyst.

- **Anti-Inflammatory Action: Bdeellins and eglins** act as potent plasmin, chymotrypsin, and granulocyte elastase inhibitors. They suppress local mast cell degranulation, reduce inflammatory edema, and alleviate discomfort during swallowing.

Synergistic Oral Pharmacotherapy

The systemic herbal-mineral formulations provided essential metabolic and structural support that complemented the localized treatment:

- **Tablet TFN-34:** Contains Kanchanar (*Bauhinia variegata*) and Guggulu (*Commiphora mukul*). These plants are rich in specific phytochemicals, including sterols (guggulsterones Z and E), flavonoids, and triterpenoids. These compounds exhibit documented anti-proliferative, anti-inflammatory, and thyroid-stimulating activities. They help regulate basal cellular metabolism and possess Lekhana (scavenging) properties that break down abnormal tissue growths (Granthi).
- **Gandamalakandan Rasa:** Formulated with a Tamra Bhasma (calcinated copper nanocrystal) base. It acts as a potent metabolic stimulant, helping to reduce Kapha-Meda accumulations and clear deep-seated glandular enlargements.
- **Topical Kukktunakhi Lepa:** Provided continuous transdermal stimulation, supporting the reduction of localized swelling.

Importance of Lifestyle Management

The incorporation of Nidana Parivarjana helped address underlying systemic issues. Correcting a sedentary routine, reducing caffeine intake, and lowering stress levels through Pranayama helps balance the autonomic nervous system. This support improves metabolic function and prevents the recurrence of cystic deposits.

Clinical Limitations

While these results are encouraging, certain limitations must be noted. As a single-case clinical report, these findings cannot be generalized to all benign thyroid nodules. Additionally, the lack of an untreated control group limits definitive causal conclusions, and longer post-treatment follow-up is required to monitor for potential recurrence. Nevertheless, this study provides clear, radiologically confirmed evidence that a non-surgical approach can effectively manage benign thyroid cystic lesions.

CONCLUSION

This case report demonstrates that a comprehensive Ayurvedic approach, combining Jalaukavacharan (medicinal leech therapy) with standardized internal medications and lifestyle modifications, can safely and effectively reduce the size of benign thyroid lobe colloid cysts. Over a 10-month treatment period, the patient achieved a 73.1% volumetric reduction in the primary cyst, alongside complete relief from swallowing discomfort and high cosmetic satisfaction. Importantly, these results were achieved without causing structural damage or disrupting thyroid hormone production.

These findings suggest that integrative Ayurvedic management can serve as an effective, non-surgical option for patients with benign thyroid cysts who prefer to avoid surgery or are poor candidates for surgical intervention. To build on these preliminary results, further interdisciplinary research and randomized controlled trials with larger patient cohorts are highly recommended. Such studies will help validate these outcomes and establish standardized, evidence-based treatment protocols.

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