

Critical analysis of Galaganda with special reference to Goitre

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In classical texts Galaganda mainly caused due to kapha dosha predominance. Vitiated Vata and Kapha are responsible for Abnormal functioning of thyroid gland. In Sutrasthana of Sushruta Samhitha[1] it explains that water from Himalayan ranges produce Galaganda. Galaganda Sthana will be Galapradesha which can be correlated to Goitre which will be manifested as large swelling in neck region. This Goitre, refers to the abnormal enlargement of the thyroid gland. Today endemic Goitre[2] is common due to iodine deficiency in water. various other factors such as autoimmune disorders, nodular growths, and thyroid malignancies contribute to its development. Treatment includes holistic approach like Shodana like Raktamokshana, Nasya, Anushastra like Agnikarma, Prachanna, Aushadi Prayoga Viddhakarma.[3] Some life style modifications like Yoga, Pranayama which helps in proper blood circulation which further helps in controlling hyper and hypo activities of gland. In the modern era, surgical interventions have significantly advanced, offering effective treatment options for patients with Symptomatic Goitre.[4] Concept of Pathya Apathya[5] has major role in treating disease. Some foods like cabbage, mustard, turnip contain Goitrins[6] which become reason for deteriorating condition. Main objective is to understand relation between Galaganda and Goitre as per classics wherever possible.

Keywords: Galaganda, Galapradesha, Kaphaja Nanatmaja Vikara, Goitre

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Introduction

In classical texts *Ati Sevana* of *Madhura Rasa*, *Mithya Ahara Vihara*, *Vishamasana*. Pathogenesis like *Kaphaja Nanatmaja Vikara*, increased *Vata* and *Kapha* leads to *Medho Dhatu* accumulation in *Gala Pradesha* leading to *Galaganda*. *Acharya Charaka* mentioned thyroid disorders under *Anukta Vyadhi*. [7] Endocrine glands secrete hormones directly into blood stream. *Agnivaishamya* may be the cause for thyroid dysfunction. So, it improves *Koshtagni* and *Dhatwagni* and it corrects metabolic disorders.

Nirukthi/Vyutpatti (Etiology)

Galaganda = Gala + Ganda

Gala: *Kantha* (*Amarakosha*) - It means the pathway of food.

(*Gala + Karane + Ap* (*Shabdakalpadruma*), is derived by union of '*Gal*' dhatu & '*Ap*' *Pratyaya* or by union of '*Gru*' *Dhatu* and '*Vyap*' *Pratyaya*).

Ganda: It is derived either by the union of '*Gadi*' *Dhatu* and '*Ach*' *Pratyaya* or '*Gata*' and '*Njantadda*' *Sutra* which means swelling in neck region or enlargement of gland of neck (*Shabdakalpadruma*).

Definition

गलस्य पार्श्वे गलगण्ड एकः स्याद्गण्डमाला बहुभिस्तुगण्डैः।[9]

Single swelling around throat is called *Galaganda*. When chain of swellings around the lower neck develops it is called as *Gandamala*.

Nidana (Aetiology)

No specific cause of *Galaganda* has been mentioned, but under different topics few references for *Galaganda Nidana* are available. *Himvatprabhava* rivers[10] might give rise to the occurrence of *Galaganda* predominance in hilly areas. Excessive use of *Madhura Rasa* can produce *Galaganda*[11] Aetiology for *Shotha Roga* (*Galaganda* describes under *Shotharoga*.[12] Aetiology for *Mukha Roga*. [13] *Bhela* dealt that *Sleepda* and *Galaganda* are more common in *Prachya Disha*. *Dushtambu Pana* (contaminated water) and *Krimi Dosha* lead to *Galaganda*. [14]

Samprapthi (Pathogenesis)

Due to intake of *Mithyavaraviharas*, *Kapha* gets vitiated reaches neck region causing swelling is known as *Galaganda*.

वातः कफश्चैव गले प्रवृद्धौ मन्ये तु संसृत्य तथैव मेदः । कुर्वन्ति गण्डं क्रमशः स्खलिङ्गः समन्वितं तं गलगण्डमाहुः ॥ (Su.Ni.11/22)

The vitiated *Vata* and *Kapha*, localising in neck region, in turn vitiate the *Medas*, produces large swelling which grows in course of time and hangs like scrotum (*Vagbhata*) is called as *Galaganda*. [15]

Sthana: *Rohini* layers of skin

Dosha: *Vata* and *Kaphaja*

Dushya: *Mamsa* and *Meda*

यस्य श्लेष्मा प्रकुपितो गलबाह्योऽवतिष्ठते शनैः संजनयेच्छोफं गलगण्डोऽस्य जायते । (C.Su.18/21)

According to *Charaka* only *Kapha Dosha* vitiated whereas *Sushruta*, *Madhava* etc. told about *Vata* and *Kapha Dosha* vitiation. [16]

Types of Galaganda [17]

1. Vataja Galaganda

तोदान्वितः कृष्णसिरावनद्धः कृष्णोऽरुणो वा पवनात्मकस्तु मेदोन्वितश्चोपचितच कालाद्भवेदतिस्निग्धतरोऽरुजश्च ॥ पारुष्ययुक्तश्चिरवृद्ध्यपाको यदृच्छया पाकमियात् कदाचित् वैरस्यमास्यस्य च तस्य जन्तोर्भवेत्तथा तालुगलप्रशोषः ॥

Swelling appears blackish/reddish, Covered by network of veins, Pricking pain, When associated with vitiation of *Medas*, it gradually grows in size, is painless and appears oily. Sometimes it appears rough, has pus discharge, and produces bad breath and dryness in throat and palate region.

2. Kaphaja Galaganda

स्थिरः सवर्णोऽल्परुगुग्रकण्डूः शीतो महांश्चापि कफात्मकस्तु । चिराभिवृद्धिं कुरुते चिराच्च प्रपच्यते मन्दरुजः कदाचित् ॥ माधुर्यमास्यस्य च तस्य जन्तोर्भवेत्तथा तालुगलप्रलेपः ।

Swelling is huge, has same colour as surrounding skin Swelling is fixed, grow slowly and cold to touch. Associated with slight pain but severe itching. Sometimes discharges pus, produces sweetness in mouth and coating over palate and throat.

3. Medoja Galaganda

स्निग्धो मृदुः पाण्डुरनिष्ठगन्धो मेदः कृतो नीरुगथातिकण्डूः ॥ प्रलम्बतेऽलाबुवदल्पमूलो देहानुरूपक्षयवृद्धियुक्तः । स्निग्धास्यता तस्य भवेच्च जन्तोर्गलेऽनुशब्दं कुरुते च नित्यम् ॥

Swelling appears oily, white and soft Swelling appears like pitcher gourd (with narrow base decrease or increase in size as amount *Medas* elsewhere in body decrease or increase associated with unpleasant smell, severe itching but painless.

It produces stickiness in mouth and as person speaks, an associated sound can be constantly heard

Asadhya Lakshana[18]

कृच्छ्राच्छसन्तं मृदुसर्वगात्रं संवत्सरातीतमरोचकार्त्तम् । झीणं च वैद्यो गलगण्डिनं तु भिन्नस्वरं चैव विवर्जयेत्

Dyspnoea, Flaccid body. Diseases are associated for more than a year, then patient suffers from thirst, emaciation and hoarseness of voice.

Treatment

Vataja Galaganda[19]

Nadi Sweda with decoction of leaves of *Vatahara Dravya* boiled in *Kanji* and various kinds of urines, milk, oils and meat juices.

Raktamokshana: *Siravyadha* done at dorsal part of tongue in two big *Siras* by *Kushapatra* later apply mixture of *Guda*. Once wound is clean, apply the paste prepared using *Shana*, *Atasi*, *Mulaka*, *Shigru*, *Kinva Tila* etc.

Oil processed with *Amritavalli*, *Hansalvaya* *Vrikshaka*, *Pippali*, *Bala* taken orally every day.

Kaphaja Galaganda[20]

Advise *Kulathya* *Yusha Pana*, *Swedana* followed by *Raktamokshana*, *Ajagandha*, *Ativisha*, *Vishalya*, *Vishanika*, *Kushtha*, *Shukahva*, *Gunja* - Pasted with *Palasha Bhasmodaka* (Alkaline water of *Palash*) - Hot application to the affected part. Medicated oil cooked with the drugs of *Pippalyadi Gana* and five types of *Lavanas* - *Prashanartha*, *Pracchardana*, *Murdha Virechana* by *Virechanika Dhuma* - beneficial.

In *Vataja* and *Kaphaja* types

Suppurating measures in partially suppurated *Galaganda*

Diet - *Rice*, *Yava*, *Mudga Yusa* with *Honey*, *Trikatu*, *Gomutra*, Fresh ginger, *Patola* and *Nimba*.

Medoja Galaganda

Snehana f/b *Siravyadha*, Hot plaster of *Shyama* (*Trivruttha*), *Sudha*, *Mandura* (*Loha Purisha*), *Danti* and *Rasanjana*-pasted together. Powders of *Sara* of *Sala* tree mixed with cow's urine can be given every morning.

As an alternate option-

Galaganda should be opened (*Patana Karma*) f/b complete removal of the fatty content from it, f/b closing the wound by *Seevana Karma* or Cauterizing the content with the application of hot bone marrow, ghee, muscle fat, or honey. Followed by apply Ghee with Honey paste prepared from *Kasisa*, *Tuttha* and *Gorochana*. After lubricating it with oil, it should be dusted with ashes of Cow dung and of *Shalasara*

Kashaya Yogas

- *Varunadi Kashaya*
- *Asanadi Kashayam*
- *Vatsakadi Kashayam*
- *Guggulutiktaka Kashyam*

Churna Kalpana

- *Shaddharana Churna*
- *Vyoshadi Churna*
- *Guggulu Panchapalam*

Rasa Yoga

- *Laghmalini Vasant Rasa*
- *Kanchara Guggulu*

Pathya Apathya

Pathya - *Rakta Shali*, *Rohita Matsya*, *Saindhava Lavana*, *Goksheera*, *Goghru*, *Varshambu*.

Apathya - *Yavaka*, *Masa*, *Mustard*, *Frog*, *Cilcima* fish, *Nikucha*, *Phanita*

Goitre[21]

A diffused enlargement of thyroid gland is called as Goitre.

Weights about 15-20 gms in adults, dimensions 4cm (H) x 2cm(w) x 2-2.5 cm (t), 2 lobes connected by isthmus: 1-2cm (H), 2cm (w), 0.5cm (t), Superior and inferior thyroid arteries (Branches of external Carotid and Subclavian artery respectively), Superior and Middle thyroid vein drains into Internal Jugular vein, Inferior thyroid vein into Brachiocephalic vein, Vagus & Superior Laryngeal nerve, Right lobe more vascular & larger than left lobe

Classification of Goitre[22]

Classification based on etiology

- Physiological Goitre: Goitre occurring due to increased metabolic demand of hormones (during pregnancy or puberty).

- Pathological Goitre: Goitre occurring as a result of the diseases affecting the thyroid gland e.g. neoplastic or inflammatory conditions.

Classification based on epidemiology

- Familial Goitres: Goitre occurring as an inherited defect of thyroid hormone synthesis.
- Endemic Goitres: Thyroid enlargement observed in a significant number of population locality

Classification based on anatomy

- Cervical Goitre: Goitre situated on the anterior aspect of the neck.
- Retrosternal Goitre: Goitre situated behind the sternum and extending downwards
- Intrathoracic Goitre: Goitre extending into thoracic cavity.

Classification based on function

- Toxic Goitre: Goitre associated with thyroid hyperfunction (hyperthyroidism)
- Non-toxic Goitre: Goitre associated with thyroid hypofunction (hypothyroidism) or normal thyroid function (Euthyroid)

Classification based on morphology: According to the texture of the thyroid gland:

- Diffuse Goitre: where the entire thyroid gland swells and feels smooth to the touch
- Nodular Goitre: Solitary nodular Goitre, Multinodular Goitre

Classification based on physical examination/palpation (WHO)

Toxic Goitre	Nontoxic Goitre
<ul style="list-style-type: none"> ■ Beta-blockers for symptomatic relief. ■ Antithyroid drugs (Carbimazole, methimazole, Propylthiouracil (PTU)) ■ Radio-iodine therapy ■ Surgery: Total thyroidectomy with life long thyroxinesupplementation 	<ul style="list-style-type: none"> ■ Thyroxine/Levot hyroxine (Brand name - Eltroxin) ■ Iodine replacement if needed ■ Surgery (total or near-total thyroidectomy)

- Grade 0 - No palpable or visible Goitre.
- Grade 1 - A Goitre that is palpable but not visible when the neck is in the normal position (i.e. the thyroid gland is not visibly enlarged). Nodules in a thyroid that is otherwise not enlarged fall into this category.

- Grade 2 - A swelling in the neck that is clearly visible when the neck is in a normal position and is consistent with an enlarged thyroid gland when the neck is palpated.

Investigation[23]

- Thyroid function tests: TSH followed by FT3/FT4
- Toxic Goitre: low TSH, ↑ T3/T4,
- Nontoxic Goitre: Normal TSH,
- Hypothyroid Goitre: Elevated TSH, Decreased FT3/FT4
- Thyroid Antibodies -Thyroid peroxidase (TPO) antibodies Suggests presence of autoimmune disorder.
- Thyrotropin receptor antibodies (TRAbs); measured in hyperthyroidism
- Ultrasound scan of neck - Thyroid asymmetry, firm consistency or tenderness, Rapid growth
- Nondiagnostic exam and lab findings - Radioactive iodine uptake (RAIU) scan
- Assessment of hyperthyroidism or subclinical hyperthyroidism can help differentiate hyperthyroid states

CT or MRI:

In patients with obstructive or substernal Goitre, suspicious for malignancy.

Treatment[24]

Conservative Management

Hypothyroidism: levothyroxine, liothyronine

Hyperthyroidism: Thioamides, iodide (Lugols solution), Betablockers(propranolol), Iodides of Na, K.

Surgery: Indicated in Large (80- 100 ml) Growing Goitre

1. Conventional Open Thyroidectomy

This is the most widely used surgical approach for treating Goitres. It involves making an incision at the base of the neck to remove part or all of the thyroid gland. The procedure can be categorized into:

Total Thyroidectomy - Complete removal of the thyroid, often performed in cases of malignancy or severe bilateral Goitre.

Subtotal or Partial Thyroidectomy - A portion of the thyroid is removed, preserving some function to avoid lifelong hormone replacement therapy.

Near - Total Thyroidectomy (Dun hill Procedure), Lobectomy.

2. Minimally Invasive Video-Assisted Thyroidectomy (MIVAT)

This technique involves smaller incisions and the use of endoscopic equipment to perform thyroid surgery. Benefits include reduced scarring, faster recovery, and minimal post-operative pain.

3. Robotic-Assisted Thyroid Surgery

Robotic thyroidectomy is an advanced technique using robotic arms controlled by a surgeon. This approach enables precision and eliminates the need for a visible neck incision by accessing the gland through the axilla (armpit) or behind the ear.

4. Transoral Endoscopic Thyroidectomy Vestibular Approach (TOETVA)

This is a scar-free technique where endoscopic instruments are inserted through the mouth. It offers excellent cosmetic outcomes and is gaining popularity for small to moderate-sized Goitres.

Postoperative Care and Recovery

Patients undergoing thyroid surgery require careful post-operative management to ensure optimal recovery.

Key considerations include

Monitoring for complications such as hypocalcemia (due to inadvertent damage to the parathyroid glands) and recurrent laryngeal nerve injury. Hormonal assessment to determine the need for thyroid hormone replacement therapy.

Discussion

Kapha Dosha along with vitiated *Medho Dhatu* causes *Galaganda*. Excessive TSH Stimulation due to *Medho Dhatu*. *Agni vaishamya* is root cause of thyroid dysfunction, *Teekshnagni* leading to hyperthyroidism,[25] *Mandagni* leading to hypothyroidism. Vitiated *Vata* and *Kapha* are responsible for Abnormal functioning of thyroid gland. Hyperthyroidism causes lipolysis, oxidation, weight loss. Hypothyroidism causes weight gain.

Kaphaja Vikara where *Mandagni*, *Alasya*, *Nidradhikya*, *Sthoulya* seen correlated with symptoms like reduced appetite, lassitude, excessive sleep, weight gain. *Kapha Dosha* causing swelling, *Agnimandya* along with vitiated *Medha Dhatu* gets lodged in *Greeva Pradesha* producing large swelling. *Varunadhi Kashaya* contain *Varuna*, *Shatavari*, *Saireyaka*, *Bhadra*, *Karanja*, *Brihati*, *Kusha* it has anti-lipidemic effect, also capable of regulating gene *tnf-alpha*. [26]

Effective in controlling chronic inflammation, related disorders. Treatment initiated with *Deepana*, *Pachana*, followed by *Srotoshodhana* associated with *Aushadhi Prayoga* can be done. Conventional Open Thyroidectomy, Total Thyroidectomy, Subtotal or Partial Thyroidectomy, Near - Total Thyroidectomy (Dun hill Procedure), Lobectomy are surgical approach for *Galaganda*.

Conclusion

Nidanas are broadly classified to both *Aharaja*, *Ati Sevana* of *Madhura Rasa*, *Mithya Ahara Vihara*, *Vishamasana* causing large swelling called as *Galaganda*. Treatment includes intake of medication, to follow principles of *Pathya Apathya*. *Yogaasanas* postulated in ancient Ayurveda reduce stress, maintain proper metabolism.functions of *Agni*, as thyroid hormone influences metabolic rate.

From here we can correlate with *Galaganda* to Goitre. So one should adopt conservative measures first to regress the symptoms as per classics. The modern era has revolutionized the surgical management of *Galaganda*, with innovative techniques ensuring greater precision, reduced complications, and better cosmetic results. While non-surgical treatments remain the first line of management for mild cases, surgery remains a crucial option for severe or complicated Goitres.

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