Research Article

Clinical and Microbiological Evaluation of Kanadi Choorna Pratisarana in Sheetada vis-à-vis Gingivitis: A Single Case Study

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ABSTRACT

Background: Gingivitis, is a common inflammatory condition of the gingiva, It arises primarily from dental plaque accumulation, poor oral hygiene, and unhealthy lifestyle habits, and if left untreated, may progress to periodontitis, resulting in irreversible damage and tooth loss. In Ayurveda, this condition is described as Sheetada, a Kapha-Rakta Pradhana Vyadhi that closely resembles gingivitis in its aetiology, clinical features, and prognosis.

Case Presentation: This single case study reports on a 37-year-old male patient who presented with bleeding gums while brushing, accompanied by gingival swelling, halitosis, and blackish discoloration of the gums for two weeks. Clinical examination confirmed the diagnosis of Sheetada (gingivitis). The patient was managed with Dantamoola Shodhana (ultrasonic scaling) followed by Pratisarana (local application) using Kanadi Choorna twice daily for 21 days.

Results: Marked improvement was observed in both subjective and objective parameters, including resolution of gingival bleeding, reduction of swelling, normalization of gum color, and elimination of halitosis. Plaque culture findings demonstrated reduction of pathogenic organisms such as Moraxella, Cons (Coagulase-Negative Staphylococci)and Gram-negative bacilli, with selective preservation of commensal flora.This case highlights the therapeutic potential of Kanadi Choorna Pratisarana may have potential as an adjunctive local intervention in the management of Sheetada (gingivitis), offering a classical Ayurveda approach to prevent progression to irreversible periodontal disease.

Keywords: Gingivitis, Sheetada, Dantamoola shodhana, Pratisarana.

1. INTRODUCTION

The oral cavity is often regarded as the “mirror of the body” because several systemic diseases manifest through oral signs and symptoms. Among oral diseases, gingivitis is one of the most common inflammatory conditions affecting the gingival tissues. It is characterized by inflammation limited to the marginal gingiva surrounding the cervical portion of the teeth and the alveolar processes.[1] Gingivitis is primarily caused by bacterial infection resulting from the accumulation of dental plaque, debris, and calculus along the tooth margins due to inadequate oral hygiene. The Epidemiological studies conducted by American academy of periodontology shows that gingivitis of varying severities is nearly universal. A systematic review and meta- analysis reported a pooled prevalence of gingivitis of 46.6% amoung Indian adults.[2] Clinically, gingivitis presents with signs such as gingival redness, edema, bleeding on brushing or probing, and occasionally pain. If left untreated, the initially edematous gingival tissue may gradually undergo fibrotic changes and may progress to more severe periodontal conditions.

Periodontal diseases are correlated with Dantamulagata Roga, a category of disorders affecting the supporting structures of the teeth. Among these conditions, Sheetada is considered to resemble the clinical presentation of gingivitis. Sheetada is described as an early stage disorder affecting the Dantavestha (gums) and is mainly associated with the vitiation of Kapha and Rakta. Classical Ayurveda texts describe characteristic features of Sheetada such as Akasmat Raktasrava (spontaneous bleeding from gums), Mukhadaurgandhyata (halitosis), Dantha Mriduta (sponginess of gums), Krishnata (discoloration of gums), Dantha Prakledata (moistness), and Shiryamanata (gingival recession)[3,4]. These Clinical features closely resemble those observed in gingivitis.

In Ayurveda, several therapeutic approaches have been described for the management of Dantamulagata Roga. Acharya Sushruta, Vagbhata, Chakradutta, Madhava, and Yogaratnakara have recommended various treatment modalities including Raktamokshana (bloodletting), Nasya(Nasal instillation) Pratisarana (local application of medicinal powders or pastes), and Gandusha (medicated gargling)[4,5,6]. In contrast, modern dentistry primarily manages gingivitis through mechanical removal of dental plaque and calculus by professional scaling and oral prophylaxis. However, in certain cases, gingival inflammation may persist even after repeated scaling procedures. Frequent deep cleaning may also lead to

complications such as tooth sensitivity, nerve irritation, and gingival recession. Additionally, long-term use of chemical mouthwashes may be associated with adverse effects. [7]

Aims and Objective: To evaluate the effect of Kanadi Choorna Pratisarana in Sheetada (gingivitis)

2. MATERIALS AND METHODS

2.1 Case Report

A 37-year-old male patient presented to the Outpatient Department (OPD) of JSS Dental College and Hospital with the chief complaint of bleeding gums on brushing, associated with gingival swelling, halitosis, and blackish discoloration of the gums, of two weeks' duration. He had approached our hospital with the same complaint.

The patient's past medical history was non-contributory, with no known history of diabetes mellitus, hypertension, or thyroid dysfunction. There was no family history of a similar complaint among any of his family members.

On evaluation of personal history, the patient followed a mixed diet with good appetite. His micturition was regular, occurring 5–6 times a day, and his bowel habits were regular. He reported sound sleep and denied any deleterious habits.

2.2 Clinical Findings

On intraoral examination**,** gingival swelling and bleeding were present over left and right lower quadrant,hallitosis,discoloration and spongyness were present. Gradings for the symptoms are mentioned in table no 5.

2.3 Assessment as per Ayurveda

The signs & symptoms of Sheetada are assessed based on gradings of following symptoms:(Table no 1)

- Shotha
- Krishnata
- Mukhadaurgandhya
- Dantamamsa Mriduta
- Dantamamsa Prakledata

Table 1: Gradings of Subjective Parameters

SL NO	SYMPTOMS	0	1	2	3
1	Shotha	Absence of inflammation	Mild inflammation	Moderate inflammation	Severe inflammation
2	Krishnata	Normal	Mild discoloration	Moderate discoloration	Severe discoloration
3	Mukhadaurgandhya	Absence of bad odour	Mild odour	Moderate odour	Severe odour
4	Danthamamsa prakledata	Absence of moistness	Mild moistness	Moderate moistness	Severe moistness
5	Dantamamsa mridutha	Absence of spongy gums	Mild	Moderate	Severe

2.4 Assessment Criteria

Above mentioned symptoms are the subjective criteria and assessed on-

0th day (Before treatment),

07th day,14th day & 21st day (After treatment).

Follow-up on 28th and 35th day.

2.5 Objective Parameters

- Gingival Index (GI-S)
- Gingival bleeding index (GBI-S)
- Plaque index

Assessment was done on 0th day(before treatment), 7th day, 14th day, 21st day(after treatment), 28th day and 35th day of follow up.

Gradings of Objective Parameters

Table 2: Gingival Index

GRADE	FEATURES
0	Normal Gingiva
1	Mild inflammation, Mild colour change, Mild edema, No BOP
2	Moderate inflammation, Redness, Edema, Hypertrophy,BOP
3	Severe inflammation, Marked redness,Edema, Hypertrophy, Ulceration, Tendency to spontaneous bleed

Table 3: Gingival Papillary Bleeding Index

GRADE	FEATURE
0	No BOP
1	Bleeding point appears on Probing
2	Several isolated bleeding points/ single line of blood appears
3	Interdental triangle fills with blood shortly after probing
4	Profuse bleeding after probing, blood flows immediately into marginal sulcus

Table 4: Plaque Index

GRADE	FEATURE
0	Absence of microbial plaque
1	Thin film of microbial plaque along the free gingival margin
2	Moderate accumulation with plaque in sulcus
3	Large amount of plaque in sulcus or pocket along the free gingiva margin

2.6 Plaque Sample Culture

Sample culture done on 0^{th} day and 21^{st} day of treatment.

2.7 Treatment

Ultrasonic scaling (Lekhana) on 0^{th} day

Kanadi Choorna for Pratisarana twice daily for 21days.

2.8 Procedure of Pratisarana

1. The patient was made to be seated comfortably in upright position.
2. Kanadi choorna was gently rubbed all over the gingiva using the index finger.
3. The rubbing was continued until adequate salivation occurred.
4. After the procedure, the patient was instructed to expectorate the saliva and then rinse the mouth with lukewarm water.

3. RESULTS

3.1 Clinical Assessment

Observations seen on 0th day, 07^{th} day, 14^{th} day, 21^{st} day,28^{th} and 35^{th} day are recorded.

Table 5: Assessment of Subjective Parameters

SL NO	SYMPTOMS	DAY 0	DAY 7	DAY 14	DAY 21	DAY 28	DAY 35
1	Shotha	2	2	1	1	0	0
2	Krishnata	3	2	2	1	1	1

SL NO	SYMPTOMS	DAY 0	DAY 7	DAY 14	DAY 21	DAY 28	DAY 35
3	Mukhadaurgandhya	2	1	1	0	0	0
4	Danthamamsa Prakledata	2	1	1	1	0	0
5	Dantamamsa Mridutha	2	1	1	1	0	0

Table 6: Assessment of Objective Parameters

SL NO	SYMPTOMS	DAY 0	DAY 7	DAY 14	DAY 21	DAY 28	DAY 35
1	Gingival index	2	1	1	1	1	1
2	Gingival bleeding index	2	1	1	0	0	0
3	Plaque index	3	2	1	1	1	1



Figure 1: Clinical appearance of gingiva before intervention (22/12/25)



Figure 2: Clinical appearance of gingiva after 21 days of intervention (12/1/26)

3.2 Plaque Culture Sample

Sample was collected by plaque culture sample method for identification and quantification of bacteria (pathogens and commensals) both before and after the treatment (21days).

A lawn culture was prepared from the plaque sample in BHI broth onto 5% sheep blood agar plate. Then plate was incubated for 24-48 hours in CO_2 incubator at 37°C. The inoculated plate was observed for growth and the colony count was noted. Gram stain was performed to observe the morphology.

White opaque beta hemolytic colonies grown on 5% Sheep Blood agar and Gram's stain showing GPC in clusters, catalase positive and slide coagulase was identified as Staphylococcus species. Beta hemolytic/alpha hemolytic/non hemolytic colonies grown on blood agar gram's stain showing GPC in pairs and chains, catalase negative were identified as Streptococcus species. Pneumococcus and Streptococcus pyogenes was identified based sensitivity to optochin and bacitracin discs respectively. Streptococcus viridians showed no zone of inhibition to optochin. Enterococcus species was identified based on positive reaction to bile esculin test. Moist Translucent colonies on blood agar were identified as Gram negative bacilli and small dry colonies as Moraxella based on the Gram stain morphology.





Figure 3: Representative plaque culture findings before intervention (22/12/25)

Figure 4: Representative plaque culture findings after 21 days of intervention (12/1/26)

Table 7: Plaque Culture Findings Before and After Treatment

Before Treatment (22/12/2025)	After Treatment (12/1/2026)
Streptococcus viridans-10^{-5}	Streptococcus viridans-10^{-4}
Moraxella–10^{-2}	Moraxella- Absent
Cons – Coagulase-Negative Staphylococci- Absent	Cons – Coagulase-Negative Staphylococci-Absent
GNB- Gram Negative Bacteria-10^{-2}	GNB- Gram Negative Bacteria-Absent

4. DISCUSSION

Sheetada, described under Dantamoolagata Roga, is predominantly a Kapha-Rakta Pradhana Vyadhi which is characterized by Raktasrava, Shotha, Krishnata, Dantamamsa Mriduta, Dantamamsa Prakledatha, and Mukhadaurgandhya.[3] These clinical features closely resemble plaque-induced gingivitis, where bacterial biofilm initiates an inflammatory response resulting in gingival oedema, bleeding, discoloration, halitosis, and softening of the gingival tissues. [1] In the present case, the patient presented with classical features of Sheetada, which showed marked improvement following Dantamoola Shodhana followed by Kanadi Choorna Pratisarana for 21 days.

This significant reduction in gingival swelling observed in this case may be attributed to the Kapha-Shamaka, Shothahara, and Srotoshodhaka properties of Kanadi Choorna. Maricha and Pippali possess Katu Rasa, Ushna Veerya, Tikshna, and Laghu Gunas, which help remove Kapha, digest Ama, and clear obstruction within the local channels. Saindhava Lavana, which has the Sukshma property, facilitates deeper penetration of the formulation into the gingival tissues.[8] From a modern perspective, piperine present in Maricha and Pippali suppresses inflammatory mediators such as NF-κB, IL-1β, TNF-α, and prostaglandins, thereby reducing vascular permeability, inflammatory oedema, and gingival swelling.[9]

The observed Improvement in gingival colour may rerlect resolution of local inflammation and resoration of normal gingival tissue appearance.Chronic gingival inflammation is associated with vascular congestion, tissue hypoxia, and oxidative stress, leading to altered gingival colour. The antioxidant activity of piperine, piperlongumine, and other phenolic constituents reduces reactive oxygen species, improves microcirculation, and supports restoration of normal gingival colour. Mechanical stimulation during Pratisarana may further enhance local blood supply and tissue oxygenation.[10]

The complete resolution of halitosis may be due to the combined antimicrobial and cleansing effects of Kanadi Choorna. According to Ayurveda, Mukhadaurgandhya develops due to Kapha, Ama, and Rakta Dushti.[11] The Krimighna, Deepana, and Kleda-Vishoshana properties of the formulation help eliminate pathogenic factors responsible for oral malodour.[12] Modern pharmacological studies demonstrate that the improvement in halitosis may be related toreduction in plaque accumulation, local cleansing and improvement in gingival imflammation.[1] The mechanical action of Pratisarana also aids in plaque removal and improves oral hygiene.

Reduction in Dantamamsa Prakledatha and Dantamamsa Mriduta indicates restoration of gingival tissue integrity, Ayurveda attributes these features to excessive Kapha, Kleda accumulation, and impairment of Mamsa Dhatu. The Ruksha and Ushna properties of Maricha and Pippali reduce tissue moisture and improve gingival firmness, while the Rasayana property of Pippali promotes tissue repair.matrix metalloproteinases are involved in periodontal connective tissue degradation.[13] thereby preserving collagen architecture, whereas piperlongumine protects connective tissue from oxidative damage, resulting in gradual restoration of healthy gingival consistency.[14]

Objective clinical findings also supported the therapeutic efficacy of Kanadi Choorna. Improvement in the Gingival Index and Gingival Bleeding Index indicates reduction of gingival inflammation and vascular fragility.[15] The anti-inflammatory and antioxidant actions of piperine, together with improved local circulation produced by Pratisarana, may have contributed to decreased erythema, oedema, and bleeding. Similarly, the reduction in Plaque Index may be related to the mechanical cleansing associated with Pratisarana and the antimicrobial properties reported for some constituents of the formulation.[16] Piperine, chavicine, piperlongumine, and essential oil constituents interfere with bacterial adhesion, quorum sensing, and biofilm formation, thereby limiting plaque accumulation.[17]

The plaque culture findings further support the antimicrobial potential of Kanadi Choorna. Before treatment, the plaque sample showed the presence of Streptococcus viridans (10^{-5}), Moraxella (10^{-2}), and Gram-negative bacilli (10^{-2}). After 21 days of treatment, Moraxella and Gram-negative bacilli were absent, while Streptococcus viridans showed a reduction

from 10^{-5} to 10^{-4}. The elimination of Gram-negative bacteria is clinically important because these organisms produce lipopolysaccharides that stimulate inflammatory mediators responsible for gingival destruction.[17] The persistence of Streptococcus viridans in reduced numbers is considered beneficial, as it forms part of the normal oral commensal flora and contributes to maintenance of oral microbial balance.In this case,the observed reduction in moraxella and gram-negative bacilli, together with the persistence of streptococcus viridians, suggests a change in the cultured plaque microbiota following treatment.

Overall, the favourable clinical response observed in this patient appears to result from the combined effects of Dantamoola Shodhana and Kanadi Choorna Pratisarana. The formulation acts through Kaphahara, Raktashodhaka, Krimighna, Lekhana, Shothahara, and Rasayana properties described in Ayurveda,[9] while modern evidence supports its antimicrobial, anti-inflammatory, antioxidant, antibiofilm, and tissue-healing activities.[16] The improvement in both clinical parameters and plaque microbiology indicates that Kanadi Choorna Pratisarana may be an effective adjunctive therapy in the management of Sheetada.

5. CONCLUSION

Sheetada, which is correlated with gingivitis, is one of the Dantamoolagata Rogas described in Ayurvedic classics and is commonly observed in children and adolescents due to poor oral hygiene and age-related changes. Proper management of this condition is essential as it may adversely affect oral health and overall quality of life. In the present case, marked improvement was observed in clinical parameters such as gingival bleeding, inflammation, edema, discoloration, and halitosis following the application of Kanadi Choorna Pratisarana. The therapeutic effect may be attributed to the Kashaya, Tikta and Katu Rasa, along with Lekhana, Shodhana, and Krimighna properties of the formulation, which help in reducing inflammation, controlling microbial activity, and promoting gingival healing. The sustained improvement observed during follow-up indicates its potential efficacy. Hence, Kanadi Choorna Pratisarana may have potential as an adjunctive local intervention in the management of Sheetada (gingivitis).

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AUTHOR CONTRIBUTIONS

KAS- original draft, conceptualization, GS- Supervision, Methodology ,ABS- Editing , SGS- Investigation , GM- Investigation, RHS- Editing, writing, SS- Editing, BR- Technical help, SB- Editing

CONFLICTS OF INTEREST

None

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