

EFFECT OF NEEM DECOCTION IN PIT & FISSURE DENTAL CARIES- A SINGLE CASE STUDY

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ABSTRACT

Dental caries is the most prevalent chronic disease worldwide and there are practically no geographic areas in the world whose inhabitants do not exhibit some evidence of dental caries. Dental caries is a post eruptive bacterial infectious disease characterised by progressive demineralization process that affects the mineralised dental tissue. In *Ayurveda* it can be correlated to *Krimi Dant* and it is defined as discolouration of tooth caused by vitiated *Vata Dosha*. Dental caries is steadily increasing and treatment is expensive and not a realistic option for the poor. Hence, an *Ayurvedic* measure that is acceptable, easily available, and cost effective is to be used. A case study of Dental Caries was taken and managed with *Neem Bark Decoction Gandush* which yields excellent results. From the findings of our study it appears that it may be possible to maximize the antimicrobial effect of the *Neem Bark Decoction Gandush* in Dental Caries.

KEYWORDS: *Krimi Dant, Gandush, Ayurveda.*

INTRODUCTION

Dental caries is the most prevalent chronic disease worldwide and there are practically no geographic areas in the world whose inhabitants do not exhibit some evidence of dental caries and virtually has become a universal disease. Dental caries are responsible for a high rate of morbidity among the population and are associated with a reduced quality of life. It is known that the prevalence of dental caries among the general population has been linked to socio-economic and demographic conditions, as well as behavioural aspects. Worldwide, approximately 2.43 billion people (36% of the population) have dental caries in their permanent teeth^[1]. In baby teeth it affects about 620 million people or 9% of the population.^[1] In the United States, dental caries is the most common chronic childhood disease, being at least five times more common than asthma.^[1] Between 29% and 59% of adults over the age of 50 experience caries.^[1] Dental diseases are a significant public health burden in India, with dental caries affecting 60 to 65% and periodontal diseases affecting an estimated 50 to 90% of the general population.^[2] The prevalence of dental caries in the age group 21 to 40 years in the India was found to be 44.3%, which is lower than that reported in the WHO Oral Health Country Profile (94%).^[3] *Krimi Danta* is characterized by black discoloration, cavity formation, swelling, pus and blood oozing and severe pain. It occurs due to vitiation of *Vata* followed by *Pitta* and *Kapha Dosha*.^[5] As the biological and medicinal properties of *Neem* is widely accepted and recorded. Here in case study *Neem Bark Decoction Gandush*, this has been used to cure the disease.

CASE REPORT

A 21 years old male patient reported to *Kaya Chikitsa* OPD of Shri Babu Singh Jai Singh Ayurvedic Medical College & Hospital, Farrukhabad, U.P on 22nd Jan'2018 with the chief complaint of sensitivity and discolouration of tooth.

HISTORY OF PRESENT ILLNESS

Patient complained of sensitivity and discolouration of tooth in lower right posterior region since one month. He complains of sensitivity on drinking cold water.

PERSONAL AND SOCIO-ECONOMIC HISTORY

He works as a sales boy in a grocery shop and belongs to a lower middle class family. Socioeconomic history revealed poor ventilation and hygienic standards of living. He was brushing his teeth only once in a day and doesn't gargles after every meal and was addicted

to tobacco chewing since 3 years. There was no history of any major surgery or disease in past years.

EXAMINATION

On examination it was seen, he had poor oral hygiene with plaque and tartar on all teeth, with pit & fissure carries on 46. Pain on percussion was negative. Intra oral periapical radiograph was taken that shows no periapical radiolucency of 46 and it was concluded as chronic reversible Pulpitis with 46. Had pulse rate of 72/minute, regular with good volume and blood pressure of 108/70 mm of Hg.

MATERIAL AND METHODS

Centre of study: SJSBS Ayurvedic College and Hospital Farrukhabad, U.P, India.

Method of sampling and study design: A single case study.

Table no. 1 Materials.

| Drug | Dose | Time |
|----------------------------|-----------------------------|------------------------|
| <i>Neem Bark Decoction</i> | <i>Gandush</i> (mouth full) | 20 minutes two sitting |

Assessment Criteria and Observations

Pain

| | |
|----------------------|---|
| Absence of pain | 0 |
| Occasional mild pain | 1 |
| Moderate pain | 2 |
| Severe pain | 3 |

Inflammation

| | |
|---|---|
| No inflammation | 0 |
| Mild inflammation over gums in 1 or 2 region with slight tenderness | 1 |
| Moderate inflammation | 2 |
| Sever inflammation causing difficulty in chewing food | 3 |

Pit & Fissure carries

| | |
|---|---|
| Sound tooth surface | 0 |
| First visual change in enamel | 1 |
| Distinct visual change in enamel | 2 |
| Localised enamel breakdown without visible dentin | 3 |

| | |
|---|---|
| Dark shadow from dentine without enamel breakdown | 4 |
| Distinct cavity with visible dentin | 5 |

Discoloration

| | |
|--------------------------|---|
| Absence of discoloration | 0 |
| Mild discoloration | 1 |
| Half discoloration | 2 |
| Full discoloration | 3 |

Mobility

| | |
|---|---|
| Absence of mobility | 0 |
| Noticeable movement in its socket within 1mm range | 1 |
| Noticeable movement in its socket within 2mm range | 2 |
| Noticeable movement in its socket more than 3mm range | 3 |

Sensitivity

| | |
|---------------------------|---|
| Absence of sensitivity | 0 |
| Mild hypersensitivity | 1 |
| Moderate hypersensitivity | 2 |
| Severe hypersensitivity | 3 |

Plaque

| | |
|--|---|
| No plaque | 0 |
| A film of plaque adhering to the free gingival margin and adjacent area of the tooth, which cannot be seen with the naked eye, but only by using disclosing solution or by using probe | 1 |
| Moderate accumulation of deposits within the gingival pocket, on the gingival margin and/ or adjacent tooth surface, which can be seen with the naked eye | 2 |
| Abundance of soft matter within the gingival pocket and/or on the tooth and gingival margin | 3 |

MANAGEMENT

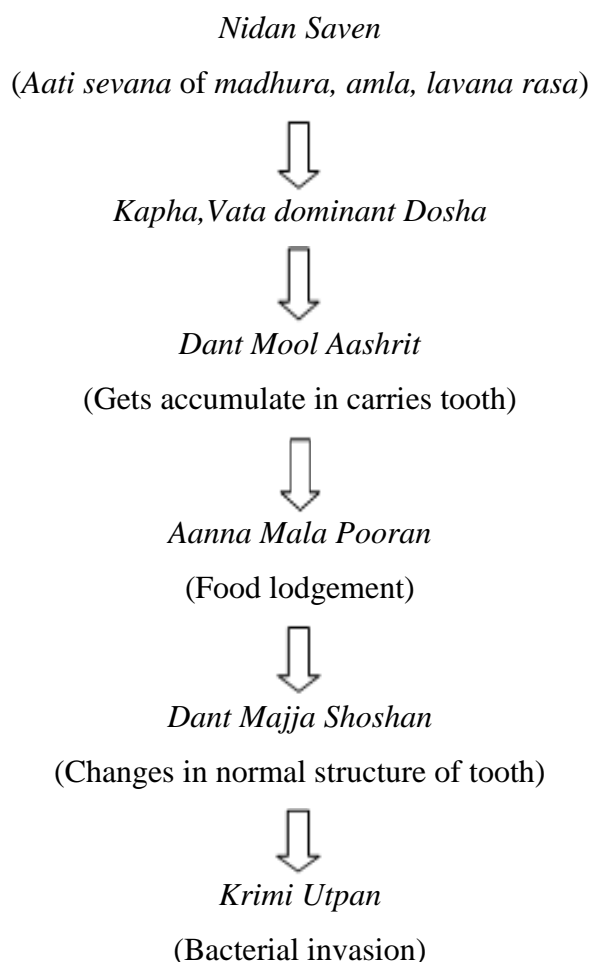
In *Ayurvedic* texts, a good number of medicaments are explained for strengthening the teeth and gums. These remedies are made from various plants and applied to the gums and tooth in

the form of powders, oils, etc. In addition to this, bloodletting is also described in classics. In the management of *Krimidanta*, the drugs having *Krimighna* (antimicrobial), *Vranaghna* and *Ushna Veerya* are to be used which can relieve the toothache and *Krimi*. So here we advised *Gandush dharan* of *Neem Bark decoction*, 20 minutes two sitting with 10 minutes gap in between in a day for 1 month empty stomach in the morning, along with maintenance of proper oral hygiene. *Gandush* is a very beneficial *Ayurvedic* procedure told by *Acharyas*, is a process of taking sufficient amount of medicated fluid inside the mouth such that it can't be moved. After 1 month a remarkable improvement was seen in the complains of the patient.

DISCUSSION

Ayurveda refers Dental Carries as *Krimi Dant* in which there is growth of *Krimi* (bacteria) in the teeth and is characterised by severe pain, discolouration and movement of the effected tooth^[4]. Pain and discoloration is the main characteristic of the *Krimi dant* "*Krishan chidari chalah sraavi – maha ruja*^[5]", it can be correlated with *Krimi Dant*.

Samprapti^[5] (Pathogenesis in Ayurveda)





Tivar Ruja

(Sever pain, discolouration and movement in tooth)

Table No. 3 Properties of Drug Used.^[6]

| Properties | <i>Neem Bark (Azadirachta indica)</i> |
|---------------|---------------------------------------|
| <i>Rasa</i> | <i>Tikta, Kashaya</i> |
| <i>Guna</i> | <i>Laghu</i> |
| <i>Virya</i> | <i>Sheeth</i> |
| <i>Vipaka</i> | <i>Katu</i> |
| <i>Karma</i> | <i>Kapha Pitta Shamak</i> |

Table no. 2 Effect of Treatment.

| S.no. | Symptoms | Before Treatment | After Treatment |
|-------|----------------------|------------------|-----------------|
| 1 | Pain | 0 | 0 |
| 2 | Inflammation | 1 | 0 |
| 3 | Pit & Fissure caries | 3 | 1 |
| 4 | Discoloration | 2 | 1 |
| 5 | Mobility | 0 | 0 |
| 6 | Sensitivity | 2 | 0 |
| 7 | Plaque | 2 | 0 |

The main aim of *Chikitsa*, in *Ayurveda* is aimed towards *Vighatana* of *Vyadhi Samprapti* or *Dosha Dushya Sammurchhana*. General principle of treatment of *Krimi Gat Rog*^[7] in *Ayurveda* is

- *Apkarshan* (extraction)
- *Prakriti Vighat* (creating unfavourable conditions opposite to habitat of krimi)
- *Nidan Parivarjana*(prevention of cause)

Pit and fissure dental caries can be treated on line of treatment of *Krimi Rog*. Here in management our main focus will be on *Prakriti Vighat* and *Nidan Parivarjana* in dental caries. We have prepared *Neem* bark Decoction and that was give to the patient mouth full(*Gandush*) without any movement of fluid inside the mouth for two setting for 20 minutes each, with gap of 15 minutes in between each sitting, empty stomach in the morning for period of 1 month. The drug used yielded very brilliant results in the case of pit & fissure dental carries due to its *Tikta, Kashaya rasa; Laghu guna; Katu Vipaka; Kapha pitta Shamak karma*.^[6] As the *Samprapti* of *Krimi Dant* it is *kapha vata pardhan dosha rog* which get sited in the *mool* of the *dant* leading to pathological changes in the tooth, the drug used is having the opposite properties as per the *Samprapti* of the carries, *laghu ruksha guna* are *kapha*

shamak and *ushan virya* also helps in the *kapah shaman*. On the other hand properties of *Neem* Bark are anti bacterial, anti plaque, antiseptic and insecticidal which will leads to *Prakriti vighat* of the *Krimi* in the *Dant*. *Neem bark* decoction acts by destroying the bacterial call wall and inhibiting the growth of bacteria via the breakdown of cell wall distributiion of osmotic pressure which leads to cell death.^[8] *Neem bark* has Nimbolinin, Nimbin, Nimbidin as alkaloids which all are having anti-oxidant, anti-inflammatory and fungicidal activity which leads to *PrakritiVighat* of *Krimi Dant*.^[9] With all this treatment patient was advised for *Nidana Praivrjana*, not to take sweet food, should gargle after every meal, maintain oral hygiene and brush regularly.

CONCLUSION

It can be concluded from the case that the formulations exhibited marked therapeutic effect on sensitivity, plaque, inflammation and discoloration of pit and fissure carries patient along with other associated symptoms. No side effects were seen during the course. But further study is needed to observe the effect of above formulation in secondary caries; the study should be done on more no. of patients and for longer duration to remark other benefits.

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