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EFFICACY OF "KANKSHI JAL GANDUSH" IN POST TONSILLECTOMY WOUND HEALING.

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INTRODUCTION

Ayurved is the most ancient science of the life which exists from creation & is a gift to mankind. Sushrutacharya was one of the greatest scholars of Ayurved and has been known to be the pioneer of Indian surgery. He developed a deep knowledge of wound and its healing.

As we are approaching towards 2I century, there has been a dramatic change in life style, eating habits and environment of mankind. These changes have a long term effect on the health of every individual which is becoming a big concern to everyone and is affecting the quality of life. These changes give rise to various diseases, out of which chronic tonsillitis is very common.

In chronic tonsillitis due to repeated attacks patient does not get total relief with medicines. In the ancient period also, Sushrutacharya has advised surgical intervention for Gilayu. Hence, tonsillectomy is the treatment of choice in chronic tonsillitis.

As the surgical procedures (having the basic concepts described by Sushrutacharya) changed as the demand of time and new techniques, the basic aim still remains the same i.e. faster and speedy recovery from any surgical procedure to promote better quality of life.

After tonsillectomy, secondary haemorrhage is a common complication due to improper wound healing. Mere surgical removal of the diseased organ is not only the major concern to a surgeon, but what is more worrying is the post surgical sepsis and healing of the wound. Prevention of the sepsis remains the mainstay of wound healing and from centuries together man has been trying to overcome sepsis. An uneventful surgery is equally important to an uneventful recovery.

In the earlier days post op tonsillectomy patients used to be hospitalized for a minimum period of ten days, due to which the patients used to be under a strict follow up. Now a days these procedures are done on a half day stay basis where the patients are discharged on the same day and hence a strict follow up and supervision is not done which may the cause of undesired wound healing.

In the modern medicine, patients are advised various different remedies for local wound healing like dil. KMnO4 gargles, dil. hydrogen peroxide gargles etc. since, ancient times there have been many drugs tried locally for a faster and healthier wound healing e.g. — Yashtimadhu ghruta, Madhu, Ropan taila etc.

Kankshi has the properties of vrana shodhan, ropan. It has haemostatic & anti inflammatory action. It is easily available, acceptable, cheaper and palatable by patients. These properties of wound healing encouraged me to select this project and gave me an opportunity to prove an old saying 'Old is gold' proving that even the old remedies still stand in a race of faster & healthier recovery.

Hence, I decided to select this topic. In my project efficacy of kankshi jal gandush is assessed, in post tonsillectomy wound healing. The study of this project was totally based on the clinical observations and patient's narration. Patients, taken for this drug trial were

treated systemically with Sookshma triphala and Gandhak rasayan.

AIMS AND OBJECTIVES

1. To study the efficacy of 'Kankshi]al' gandush in post tonsillectomy wound healing.
2. To conduct a comparative study of Kankshi jal gandush and Hydrogen peroxide gargles in post tonsillectomy wound healing.

MATERIALS AND METHODS

Materials — Drug Information
-kankshi
- Sookshma Triphala
- Gandhak Rasayana
- Hydrogen Peroxide (H_20_2)
- Study the role of Gandush Chikitsa

Method — Plan of study
Case Registration Form

DRUG REVIEW

Kankshi

Ayurvedic review- The soil found in Saurashtra Desh is called as `Tuwari or Fatkari' or
surastraja, saurashtri mruttika.

Fitakari separated from Saurashtrimruttika is called as Sfutikarika.

Types: Second type Fullika or Fullatuwari is light weight white colored, snigdha and having`Amlarasa' is Alum-Potash used now days.

Shodhan

Sphatika when heated, crystals get liquefied. If the heating is continued, the water of crystallization is driven off, the salt froths and swells called Fullika and at last amorphous powder remains; which should be stored in clean and dry glass bottle.
Crystalline (ashudha) — [K_2SO_4, $Al_2(SO_4)_3$, 24 H_2O]

When Tuvari is kept in Kanji solution for 3 days and washed with water gives pure sphatika.

Sphatika: Saurashtri is well known as `Kantha Rogahari' having
Rasa - Kashaya, Katu
Vipak — Madhur
Virya — Ushna
Doshaghnata – Tridoshaghna

Kankshi Jal Preparation

Proportion — 600 mg of shodhit Kankshi in 50 ml water. Kankshi Jal was prepared as per standard method mentioned in Rasataringini. After adding shuddha Kankshi in water in above proportion, water was stirred till Kankshi get dissolved completely. Then it was used for Gandush.

MODERN REVIEW OF KANKSHI

Potassium Aluminium Sulphate
Synonyms- Potassium alum
Potash alum
Double sulphate of Aluminium & Potassium
Identifiers- CAS number-7784-24-9
Characteristics

Form	**Crystals or powder (white)**
Odour	Odourless
Taste	Astringent
Molecular formula	[K2SO4 , Al2(SO4)3 , 24H20
Molar mass	258.207 g / mol
Density	1.76 g / cm
Melting point	92-93 C
Boiling point	200 C
Solubility in other solvents	36.80 gins of alum / 100 gms of water at $50^0$7C-

Effect on heating: When heated to nearly a red heat it gives a porous, friable mass which is known as 'burnt alum'. It fuses at 92°C in its own water of crystallization. Neutral alum is obtained by the addition of as much sodium bicarbonate to a solution of alum as will begin to cause separation of alumina.

Chemical properties

Chemically unreactive unless heated to decomposition can be corrosive to metals and moist needs to be avoided in the storage situation.

Mineral form and occurance

Potash alum is a naturally occurring sulphate mineral which typically occurs as encrustations on rocks in areas of weathering and oxidation of sulfide minerals and potassium bearing minerals.

Alunite- is an associate and likely potassium and aluminium source.

Occurance- in Italy, East of Springsure, Guensland, Alumcave, Arizona in U.S.

Handling and storage

Keep in a tightly spaled plastic or glass container, stored in a dry, cool, ventilated area. Potash alum is stable under ordinary conditions of use and storage.

Uses

Commonly used in

- water purification
- leather tanning
- fireproof textiles
- baking powder

Cosmetic use as
- deodorant
- after shave

Also used as
- mordant in preparing handmade papers
- to clearity turbid liquids

Toxicological information
Low order of acute toxicity LD 50.30 gm oral in human.
General health hazards -may cause irritation to eyes, skin and mucous membrane
Ingestion - will cause gastric irritation and Vomiting.
Eyes - may cause imitation to eyes.

First aid measures
Inhalation- Move the affected person to fresh air immediately
Ingestion- Do not induces vomit because of danger of suftivation. When conscious, rinse the mouth with plenty of water and give plenty of water to drink (approx 500 ml).
Skin- Remove contaminated clothing, wash affected area with Plenty of soap and water.
Eyes- Wash eyes with plenty of water for at least 5 minutes.

SOOKSHMA TR1PHALA
This is an "Anubhoot Yog" & a proprietary Ayurvedic medicine which is manufactured by a standard company Ayurved Rasashala, Pune.
Contents — 250mg tablet contains
Triphala - 200mg
Samagandhak kajjali — 10mg
It contains Haritaki, Bibhitaka, Amalaki. These are useful in Shotha (Saaoqa). It is tridoshanashak. So I have used Sookshma Triphala systemically after tonsillectomy.

Preparation — Haritaki, Amalaki, Bibhitaka are taken in equal amounts i.e. Triphala Churna 16 parts + 1 part Samagandhak Kajjali with Triphala Kwath bhavanas. 250mg tablets are prepared.
Quantity — 120mg to lgm.
Anupan — Water
Sevan Kala — after meal three times a day.
Uses - Shotha (oedema), Kotha, Skin diseases, Raktadosh & Galarog.

This drug is used as alternate medicine to modern antibiotics. It is having antibacterial & anti inflammatory action. It increases the immunity of the body by the Rasayan property.

Triphala is very effective compound made by mixing equal parts of powder ***Emblica officinalis, Terminalia belerica & Terminalia chebula***. Each of the ingredients having antiviral action. Triphala rejuvenates cells of the body, tissues of body, prevents cancer. It helps to improve the general absorption of all nutrients & vitamins contained in our body.

Traditional Ayurvedic Qualities & Uses of Triphala
Taste — sweet, sour, pungent, astringent, bitter.
Veerya —Ushna.
Vipaka — sweet (**maQaur**)
Guna — Laghu, Ruksha.

Doshaghnta — Tridoshaghna meaning it balances all the constituents. Pharmacology — Adaptogenic, antibacterial, anti-viral, anti-fungal, anti-yeast, anti-histaminic, anti-inflammatory, anti-oxidant, blood pressure lowering, cholesterol lowering, digestive, diuretic, laxative.

Indications — Anaemia, bowel-toxicity, irregularity of bowel, chronic lung diseases constipation, diarrhoea, eye diseases, high cholesterol, hypertension, skin disorders, yeast infection.

Terminalia chebula — Haritaki (Hirda)
Gana — Triphala, Amalakyadi, Parushak, Trivrutta, Prajasthapan, Jwarghna, Kushthaghna, Kasaghna, Arshoghna.
Kul — Combrataceae.
Latin name — ***Terminalia chebula.***
Guna — Laghu, Ruksha.
Rasa — Panchrasa (Lavana rasa varjit, Kashaya rasa pradhan).
Veerya — Ushna.
Vipak — Madhur.
Prabhav — Tridoshhar.
Upayuktanga — Fruit (Pakwafal)
Karma — External use — Shothahar, Vednasthapan, Vranaropan, Vranashodhan.

Systemic use
I) Nadisansthan Balya, Medhya, Indriya balya.
II) Pachansansthan — Deepaniya, Pachaniya, Yakrut uttejak, Anuloman, Mrudurechan, Krumighna, Vibhandhanashak.
III) Raktawahasansthan — Hridya, Shonitasthapan, Shothahar, Rasashudhikarak.
IV) Shwasansansthan - Kasghana
- Shothaghana
- Prajasthapana, Mutrala, Jwaraghna, Rasayan

Haritaki is a drug, which is also advised to be used a routine dietary product as it improves the immunity of body Modern science has found that ***Terminalia chebula*** has a strong effect against Herpes Simplex Virus (HSV) having antibacterial activity & exhibits strong cardiotonic properties.

Emblica officinalis (Amalaki)
Gana — Vayasthapan, Virechanopaga, Triphala, Parushakadi.
Kula — Euphorbiaceae (Erandakula).
Latin name — ***Emblica officinalis***.
English name — Emblica myrobalan.
Guna — Laghu, Ruksha, sheet.
Rasa — Pancharasa (lavan varjit, amla rasa pradhan).
Veerya — Sheet.
Vipak — Madhur.
Karma — Tridoshhar.
External use — Dahashamak, Keshya, Twachya.

Systemic use
1) Pachan Sansthan — Deepan, Ruchikar, Sransan, Amlatanashak, Yakrutotejak.
2) Shwasansansthan — Kaphaghna
3) Prajanansansthan - Vrushya, Garbhasthapak
4) Mutravahasansthan — Mutrala, Twacha, Kushthaghna, Jwarghna, Dahaghna, Rasayan

It is useful agent in wound healing process & also acts as haemostatic agent by its sheet guna. Its amlata (Vitamin C content) is useful in reducing inflammation of the tonsillar fossa & also acts as haemostatic agent avoiding any oozing from the wound.

Terminalia belerica (Bibhitak)
Gana - iwarhar, Virechanopaga. Triphala. Mustadi
Family - Combretaceae
Latin name - ***Terminalia belerica***
Gunn -- Rooksha, Laghu
Rasa -- Kashaya
Veerya - Ushna
Vipak - Madhura
Karma — Kaphapittaghna
External use — Shothahar, Vedanahar, Rakta Stambhak.
SYSTEMIC USE
I) Nadisansthan — Majjamadak, Vedna Sthapak
2) Pachansansthan — Deepan, Anulomna, Krumighna, Chardinigrahak
3) Raktawahsansthan — Raktastambhak
4) Shwasanasansthan — Kasashwasghna, reduces the mucosal oedema of the upper respiratory tract.
5) Tapkarma — Jwarghna
6) Satmikaran — Dhatuwardhak

Usefulness in Sookshma Triphala Yog
- The Shothahar, Vednahar qualities reduces the inflammation, pain & helps in wound healing.
- The Raktastambhak guna & the Kashaya rasa acts as haemostatic agent & reduces the oozing from post operative wound.
- The Krumighna quality acts as bactericidal drug.
- Bibhitak reduces mucosal oedema of upper respiratory tract & hence heals the tonsillar fossa faster.
- The Dhatuwardhak quality improves immunity of patient.
- The Swarya quality improves the voice of the patient & reduces the Kanthashotha. Tatlut
- The Triphalas are mainly Kashayrasatmak which act as shothanashak & haemostatic agents which helps in wound healing process.
- They enhance dhathushodan prakriya & remove dhatumala which reduce the slough Ibimalion & enhance the granulation tissue formation.
- Kajjali & Triphala kwath hhavanas increases the action of the drug & increases sookshma strotogamitwa of the drug. These qualities reduce the amount of drug required & prolong the action of drug.
- Sookshma triphala is a best raktashodhaka which helps in faster wound healing.

GANDHAK RASAYANA
This is an -Anubhoot Yog" and a proprietary Ayurvedic medicine which is manufactured by Ayurved Rasashala, Pune and is proved to be effective as anti-intlammatory and also having rasayan effect which improves immunity of patient. There are total seven references of Gandhak Rasayana out of which two are composed of bhasma and choorna and in the remaining five gandhak is mixed with choornas. The reference that is taken in this project is the one that has been given bhavnas.

Contents - Shudha Gandhak I part
Bhavana - Godugdha
Dravyas - Guduchi Kwath, Sunthi Kwath, Ardraka Swarasa, Chaturjat Phant Triphala Kwath, Maka Swaras.
Method - Shudh Gandhak is given eight bhavans of cow milk, then dalchini, tamolpatra, vcldoda, nagkeshar phant, each 8-8 bhavanas are given. Then guduchi kwath, triphala kwath, makaswaras each 8-8 bhavana are given. Lastly 8 bhavans of ardraka swaras are given. Total 96 bhavans are given to gandhaka and its khal is made. The formed drug is Sanskarit with bhavanas and inardan prakriyas. Then khalit product is dried in an airtight jar and tablets are made. Whenever it has to be used it should be taken with equal amounts of Khadisakhar Churna.
Quantity - 120mg to lgm.
Anupan - sugar & water.
Sevankal - morning, on empty stomach.
Kalmoryada - 7 days to 6 months.
Pathya - Sugar, ghee bhavana, rock salt, mango, bettle nut, pan, khadir, dugdha.
Apathya - Physical exercises, exertion, maithun, oily, hot, salty foods.
Uses-
Diseases — Urakshata, pama, skin disorders, jeemajwara, prameha, shukrakshaya, atisar, grahani, pradar, dhatukshaya, arsha, vata-pitta-kapha vikar, mandagni.
Gunn - Budhivardhak, Ayushyavardhak, Rasayana.
Doshaghnata — Tridoshghna.
Rogmarga Karyasthan — All the three Rogmargas, seven dhatus, Mastishka
Action — Deepan, Pachan, Rasayan

CONTENTS & THEIR ACTION

1) GANDHAK
Rasa - Tikta, Katu
Vipak - Katu
Veerya - Ushna
Qualities - Ushna, sar
Doshaghnata - Vata, Kapha
Action - Deepan, pachan, yogwahi

2) Godughdha
Rasa - Madhur
Veerya - Sheet
Qualities - Snigdha, Guru
Doshghnata - Vatapittahar, Shleshmakar
Action - Balya, Jeevaniya, Rasayan, Medhya, Deepan.
It reduces the adverse action of gandhaka & makes it easily digestible.

3) Dalchini
Rasa - Katu, Tikta, Madhur
Vipak - Madhur
Veerya - Ushna
Doshghnata - Kapha, Vataghna
Qualities - Deepan, pachak, shoolghana, raktastambhak, kasaghna, hrudya.

4) Velchi

Rasa	-	Katu
Veerya	-	Ushna
Doshghnata	-	Vatakaphaghna
Qualities	-	Kandughna
Vyadhipratyanikta	-	Shwas, Kasa, Arsha

5) Tamalpatra
Rasa - Madhur
Veerya - Ushna
Qualities - Teekshna, Laghu, Picchila, Deepak, pachak.
Vyadhipratyanikta - Vatarog, Arsha, Peenas, Hrullas, Aruchi

6) Nagakeshar

Rasa	-	Kashaya, Katu
Vipak	-	Katu
Veerya	-	Ushna
Doshpratyanikta	-	Kaphapittaghuna

Vyadhipratyanikta - Deepak, Panchan, Hrudya, Vishaghna, Kandughna, Raktastambhak

7) Guduchi

Rasa	-	Katu, Tikta
Vipak	-	Madhur
Doshpratyanikta	-	Tridoshghna
Qualities	-	Vrushya, Deepak, Pachak,
Vyadhipratyanikta	-	Kushta, Meha, Raktadosh

8) Triahala
Rasa - Pancharasa
Veerya - Ushna
Vipak - Madhur
Guna - Laghu, Ruksha
Qualities - Ruksha, Laghu
Doshpratyanikta - Tridoshghanta
Prabhav -Rasayan, which means it builds ojas.
Pharmacology - Adaptogenic, anti-bacterial, anti-viral, anti-fungal, anti-histaminic, anti-inflammatory, anti-oxidant, blood-pressure lowering, cholesterol lowering, digestive.

Indication — Anaemia, bowel toxicity, bowel irregularity, chronic lung disease, constipation, diarrhea, eye disease, hypertension, skin disorders, yeast infection.

9) Maka
Rasa - Tikta
Vipak - Katu
Qualities - Ampachak, Vishaghna

10) Ardraka — (Sunthi)
Rasa - Tikta
Vipak - Katu
Qualities - Deepak, Pachak, Sugandhi, Hrudya

GANDHAK RASAYAN
Bhavana dravyas reduces bad qualities of Gandhak & make it Rasayan, hence it activates all physiological activities. It increases the appetite & improves the metabolism of the digestive system.

Qualities — Veeryavardhak, Ayuvardhak, Kandunashak, Kushtaghna, Keshya, Vishdosimashak.
Vyadhipratyanikta — Atisar, Grahani, Vatarakta, Jeerna jwar, Prameha, Vatavikar.

The main action of Gandhak Rasayan is deepan-pachan which improves digestion. Gandhak rasayan avoids infections & destroies process of pus formation.

HYDROG EN PEROXIDE
Hydrogen –peroxide was was first isolated in 1818 by Louis Jacques Thenard by reacting barium peroxide with nitric acid. 100% pure Hydrogen peroxide was first obtained through vaccum distillation by Richard Wohrrensten in 1894.

Hydrogen peroxide (H_20_2) is a very pale blue, liquid which appears coloriess in a dilute solution, slightly more viscous than water. It has strong oxidizing properties, disinfectant, oxidizer.

Hydrogen peroxide is naturally produced as a by product of oxygen membolism, and virtually all organism possess enzyme known as peroxidases, which harmlessly catalytically decompose low concentrations of hydrogen peroxide to water and oxygen.

Hydrogen peroxide is a simple chemical compound. Its water with an extra atom of oxygen attached to it. H_20_2 Hydrogen peroxide is valuable as an oxidizing agent.

Other names — Dioxidodihydrogen, Dihydrogen dioxide

PROERTIES

Molecular formula	**H_2O_2**
Appearnance	very pale blue color and colorless in solution.
Density	- 1.44 gm / cm^3
Melting point	-0.46 °C for 99.6% water solution
Boiling point	150.2°C
Solubility in water	Miscible
Acidity	11.65
Viscosity	1.245 cP at 20°C
Dipole moment	2.26 D

Most of the microbes that cause infections (and are associated with Cancerous Tumors) don't like an oxygen rich environment. Some types of bacteria (anaerobic) can't survive at all if oxygen ispresent, while other bacteria can tolerate in low concentrations. Newer research indicates we need hydrogen peroxide for a multitude of other chemical reactions that takeplace throughout the body. For e.g., we now know that Vitamin C helps in fighting infections by producing hydrogen Peroxide, which in turn stimulates the production of prostaglandins. Also lactobacillus found in the Colon and Vagina produce hydrogen peroxide. This destroys harmful bacteria and viruses, preventing colon disease, virginities, bladder infections and a host of other common ailments. Father Richard Willhelm is the pioneer in promoting peroxide use.

HYDROGEN PEROXIDE

Hydrogen Perxide

Grade of Hydrogen Perxide - Hydrogen Perxide is available in various strength and grades.

A. 3.5% Pharmaceutical Grade - This product is not recommended for internal use.

B. 6% Beautician Grade - This is used in beauty shops to color hair and is not recommended for internal use.

C. 30% Reagent Grade - This is used for various scientific experimentation and also contains stabilizers. It is also not for internal use.

D. 30% to 32% Electronic Grade - This is used to clean electronic parts and not for internal use.

E. 35% Technical Grade - This is more concentrated product than the Reagent Grade and differs slightly in that phosphorus is added to help neutralize any chlorine from the water used to dilute it.

F. 35% Food Grade - This is used in the production of foods like cheese, eggs and whey containing products. It is also sprayed on the foil lining of aseptic packages containing fruit juices and milk products. This is the only grade recommended for internal use. It is available in pints, quarts, willow, or even drums.

G) 90% - This is used as an oxygen source for rocket fuel. Only 35% Food Grade hydrogen peroxide is recommended for internal use. At this concentration however, hydrogen Peroxide is a very strong oxidizer and if not diluted, it can be extremely dangerous or even fatal.

20 volume of Hydrogen peroxide in much diluted form is used for gargles purpose. One volume of 20 volume H202 solution releases 20 - volume of nascent oxygen.

Properties

- It is a cleansing agent.
- It destroys anaerobic organism and therefore used for cleaning the infected and contaminated wounds.
- It produces frothing and brings out the debris from the depth of wound.
- It produces heat when it comes in contact with tissue so it prevents capillary oozing and hence it is used as haemostatic solution.
- As Hydrogen peroxide is having oxidizing, haemostatic, antiseptic, antibacterial properties. It is used for gargles purpose after tonsillectomy.
- It also removes slough and debris and helps in granulation.
- Thus it is helpful in wound healing

GANDUSH

In all mukha roga local treatment plays a vital role.
The important types of local treatments given are –

1. Pratisaran - (p`itsaarNa)
2. Kawal - (kvala)
3. Gandush - (gaNDUYa)
4. Nasya - (nasya)

Gandush is a procedure in which medicinal liquid is kept in a mouth for a certain period of time without movement inside, whereas Kawal is that which allows movements of the liquid. Gandush is usually done kith liquids & kavala done with Kaika (paste of drug mixed with little water) For Gandusha One Kola of either a liquid or a powder is taken while for “Kawala" kalka is taken one Karsh. Gandush & Kavala are advocated after the age of 5 years. The person to lie given this therapy should be seated comfortably his forehead, neck & shoulder given mild fomentation, asked to take liquid in mouth hold it till his mouth get cleared of accumulated Kapha or other doshas or till he get secretion inside his nostrils or tears in eyes.

At a stretch 3, 5 or 7 gargles can be done to get rid of doshas. Vagbhata has described same four types.

i) **Snedi** - containing Snigdha (isnagQa) & Ushna drugs used for Vatavikars (vaativakar).
ii) **Shaman** — containing Tikta (it>), Kashay (kYaaya), Madhur (maQaur) drugs used for Pittavikaras (ip<aivakar).
iii) **Shodhan** — containing Katu (kTU), Tikta (kYaaya), Amla (Amla), Lavan (lavaNa) & Ushna (]YNa) drugs used for Kaphavikaras.
iv) **Ropan** – Containing Kashay (kYaaya), Tilta (it>), Katu (kTU), drugs are used for healing purpose.

Kankshi jal is used as Shodan & Ropan Gandush because Kankshi is having kashaya, Katu, Tikta rasa, i.e. having Shodhan & Ropan property. It is also having haemostatic property & Shothaghna property therefore can be used for Gandush helping in wound healing.

Samyaka Lakshanas - A proper therapy of gandusha, brings about alleviation of diseases, deans mouth & stimulates sense organs.

Gandush Ayoga - Inadequate gargling therapy causes profuse salivation loss of taste perception & anorexia whereas excessive therapy produces ulcers, dryness, thirst & exhaustion.

KANKSHI JAL GANDUSH

The study of this project was totally based on clinical observations and the patient's narration.

Place of Work – Ayurvedic Hospital of the College (Institute).

Selection criteria for patients

Total 60 patients undergoing Tonsillectomy surgery were selected.

Inclusion criteria – All the patients undergoing Tonsillectomy operation Patients willing for trial project of Kankslii Jai Gandush.

Exclusion criteria – Patients not willing for Gandush Trial.

The study was performed as randomized single blind standard controlled trial on patients undergoing Tonsillectomy surgery. The study was performed in two groups:-

I) Group A — Trial Group

Total 30 patients were selected in this group. Treatment was given as follows:-

Systemic Treatment

Drug	Dosage	Duration
Tab Sookshma Triphala	250mg for 6-12yrs age group 500mg above 12yrs age group	3 times a day for 10 days
Tab Gandhak RasaYana	250mg for 6-12yrs age group 500mg above 12yrs age group	3 times a day for 10 days
Anupan	Jal	
Local Treatment		
Kankshi Jal Gandush	100ml – 3-4 times a day	10 days

Kankshi Jal was prepared as per standard method mentioned in Rasa Tarangini. Being a post operative wound in oral cavity, we preferred that drug should move inside the oral cavity for better action.

2) Group B- Control Group: In this group 30 patients were selected undergoing Tonsillectomy surgery. Treatment received by this group was as follows:-

Systemic Treatment

Drug	Dosage	Duration
Tab Sooksluna Triphala	250mg for 6-12 yrs age group 500mg for above 12 yrs age group	3 times a day for 10 days 10 days
Tab Gandhak Rasayana	250mg for 6-12 yrs age group 500mg for above 12 yrs age group	3 times a day for 10 days 10 days
Anupana	Jal	
Local Treatment		
Hydrogen Peroxide 20— volume weak solution (5ml in 100ml)	100ml 3-4 times day	for 10 days

Preparation: - 5ml Hydrogen Peroxide in 100 ml water.

Follow up was done on alternate till 10th day and Clinical observations were recorded in tabular form. The subjective gradation of symptoms was done Intensity of each sign was calculated and was compared with control group. A special case paper formal was prepared for the study project. The subjective gradation of symptoms was done as follows:-

EFFICACY PARAMETER EVALUATION

Congestion	**0**	**0**	**No congestion**
	+	1	Pinkish red (Colour of fossae after tonsillectomy)
	++	2	Normal red
	+++	3	Angry red or cherry red
Slough	+	1	Whitish yellow colour (Starting of slough formation)
	++	2	Yellow- slough formation
Bleeding /Clot	0	0	No bleeding
	+	1	Present, with size as compared to the size of the fossae.
Pain at operated site			By visual analog scale
Dysphagia	0	0	No difficulty in swallowing any type of food
	+	1	Difficulty in swallowing in solid food only
	++	2	Difficulty in swallowing in solid & liquid food only
	+++	3	No difficulty in swallowing any type of food
Speech	0	0	Normal
	+	1	Muffled
	++	2	Mild painful
	+++	3	Severe painful
Otalgia	0	0	No Pain
	+	1	Present(right or left ear)
	++	2	Increases during swallowing
Halitosis	0	0	No foul smell
	+	1	Foul Smell

Visual analogue scale

0 cm----------10cm.

All the clinical observations made were recorded in the tabular form as Follows:

Sr.No		**Shastrak arma**	**Shastrakarmottar (Post Operative)**				
	Signs	Day 1	Day 2	Day 4	Day 6	Day 8	Day 10
1	Wound						
a)	Congestion						
b)	Slough						
c)	Bleeding /clot						
	Symtoms						
1	Pain at operated site						
2	Dysphagia						
3	Otalgia						
4	Speech						
5	halitosis						

OBSERVATIONS AND RESULTS

Group A- Trial Group

Group B- Control Group

Sex	**Group A**	**Group A**
Male	18	19
Female	12	11
Total	30	30
Sex(%)	**Group A(%)**	**Group A(%)**
Male	60	63.33
Female	40	36.67
Total	100	100

Table shows maximum number of male patients in both groups.

Age	**Group A**	**Group B**
5- 10 yr	17	12
Upto 15 yr	9	9
Upto 20yrs	3	7
Upto 26 yrs	1	2

Total	30	30
Age (%)	Group A (%)	Group B(%)
5- 10 yr	56.67	40
Upto 15 yr	30	30
Upto 20yrs	10	23.33
Upto 26 yrs	3.33	6.67
Total	100	100

In group A & B maximum patients are from 5 — 10 years age group, as chronic tonsillitis is common in this age group.

Religion	**Group A**	**Group B**
Hindu	20	24
Muslim	10	6
Total	30	30

Religion(%)	**Group A(%)**	**Group B(%)**
Hindu	20	24
Muslim	10	6
Total	30	30

In trial group A there were 20 Hindu patients while 10 Muslim patients.
In control group B there were 24 Hindu patients while 6 Muslim patients.

Occupation	**Group A**	**Group B**
Student	29	27
Housewife	0	2
Service	1	1
Total	30	30

Occupation	**Group A (%)**	**Group B(%)**
Student	96.67	90
Housewife	0	6.67
Service	3.33	3.33
Total	100	100

Prakruti	**Group A**	**Group B**
VP	5	5
VK	4	4
PV	5	1
PK	4	3
KV	3	8
KP	9	9
Total	30	30
Prakruti	Group A(%)	Group B(%)
VP	16.67	16.67
VK	13.33	13.33
PV	16.67	3.33
PK	13.33	10
KV	10	26.67
KP	30	30
Total	100	100

In both groups maximum number of patients i.e. 9 having Kapha – Pittaj prakruti were observed.

Above table shows that maximum number of patients is students in both groups.
Tonsillectomy wound healing
H_o: There is no signifiacant difference of improvemat in Tonsillectomy wound Healing in both groups
i.e. H_o : Null hypothesis: $P_T = P_C$
H_1: Symptom relief in Tonsillectomy wound healing is more in Trial groups (Kankshi Jal Gandush) than control group (H_2O_2 Gargles).
i.e. H_1: Alternate hypothesis: $P_T < P_C$.

1. Congestion

Day wise comparison of congestion in group A

In group A on 1st day 27 patients were having 2 i.e. ++ congestion & on 8th day 30 patient were having 0 congestion which shows faster wound healing in group.

Day wise comparison of congestion in group B

In group B on 1st day 25 patients were having 2 i.e. ++ congestion & on 10th day 30 patient were having 0 congestion.
Following table shows the the statistical analysis. After the assessment of Congestion, the significance of cure in congestion is found out.

Cure in Congestion	2nd day	4th Day	6th Day	8th Day	10th Day
Trial	0	12	20	30	30
Control	0	0	8	19	30

2. **Slough:** Day wise comparison of slough in group A.

Gradation- ⇨	Slough (A)		
	0	1	2
Day 1	5	25	0
Day 2	0	1	29
Day 4	0	0	30
Day 6	0	26	4
Day 8	21	9	0
Day 10	30	0	0

In group A, 29 patients were having 2 i.e. ++ slough & formation on day 2 & on 10th day it was reduced to 0 in 30 patient.

Day wise comparison of slough in group B.

Gradation- ⇨	Slough (B)		
	0	1	2
Day 1	29	1	0
Day 2	0	24	6
Day 4	0	1	29
Day 6	0	2	28
Day 8	0	21	9
Day 10	4	26	0

In group B, only 6 patients were having 2 i.e. ++ slough & formation. This shows late slough formation. Slough was present in 26 patients till 10th day which shows late replacement of slough by granulation tissue.

3. **Bleeding / Clot:** Day wise comparison of bleeding/clot in group A.

Gradation - ⇨	Bleeding/Clot (A)	
	0	1
Day 1	29	1
Day 2	29	1
Day 6	30	0
Day 8	30	0
Day 10	30	0

In group A, 1 patients was having clot on day 1 & day 2 which was reduced dislodged on 3rd day without complications.

Day wise comparison of Bleeding / Clot in group B.

Gradation - ⇨	Bleeding/Clot (B)	
	0	1
Day 1	28	2
Day 2	29	1
Day 4	29	1
Day 6	30	0
Day 8	30	0
Day 10	30	0

In group B, there were were 2 patients having clot on day 1st day. Clot of 1 patient was reduced on 2nd day while 1 patient was having clot till 4th day.

Bleeding/Clot in post operative patient is one of the major complications. The above graph shows the reduction in Bleeding/Clot of the patients in two different groups. It is observed that there is only one patient in each group had bleed/clot at operated site. So that the significance could not be found out. But it can be said that patient in trail group cured earlier i.e. at 4th day than control group.

4. Pain at operated site: Day wise comparison of pain at operated site in group A.

VAS score -	pain at operated site (A)										
	0	1	2	3	4	5	6	7	8	9	10
Day 1	0	0	0	0	1	4	11	9	4	0	0
Day 2	0	0	1	3	9	6	10	1	0	0	0
Day 4	0	3	7	8	9	2	0	0	0	0	0
Day 6	5	9	15	2	0	0	0	0	0	0	0
Day 8	14	16	0	0	0	0	0	0	0	0	0
Day 10	30	0	0	0	0	0	0	0	0	0	0

In group A, all patients were relived from pain on 10th day.

Daywise comparison of pain at operated site in group B.

VAS score -	Pain (B)										
		1	2	3	4	5	6	7	8	9	10
Day 1	0	0	0	0	0	3	11	11	4	0	0
Day 2	0	0	0	0	4	11	11	4	0	0	0
Day 4	0	0	0	13	10	4	3	0	0	0	0
Day 6	0	0	17	9	4	0	0	0	0	0	0
Day 8	0	17	11	1	0	0	0	0	0	0	0
Day 10	19	11	0	0	0	0	0	0	0	0	0

In group B, 11 patients were having from pain on 10th day.

Dysphagia: Daywise comparison of dysphagia in group A.

Gradation	Dysphagia (A)			
	0	1	2	3
Day 1	0	0	4	26
Day 2	0	3	27	0
Day 4	0	15	15	0
Day 6	8	22	0	0
Day 8	23	6	0	0
Day 10	30	0	0	0

In group A, 26 patients were having 3 i.e. +++ dysphagia on 1st day & all patients were relieved from dysphagia on 10th day.

Daywise comparison of dysphagia in group B.

Gradation	Dysphagia (B)			
	0	1	2	3
Day 1	0	0	0	30
Day 2	0	0	26	4
Day 4	0	16	14	0
Day 6	1	26	14	0
Day 8	5	25	0	0
Day 10	22	8	0	0

In group B, 30 patients were having 3 i.e. +++ dysphagia on 1st day & on 10th day 8 patients were having dysphagia. The above graph shows the recovery in dysphagia of the patients in two different groups. It is observed that more patients are improved in trial group.

Following table shows the statistical analysis. After the assessment of dysphagia, the significance of cure in dysphagia is found out.

6. Otalgia: Daywise comparison of Otalgia in group A.

Gradation -	Otalgia (A)		
	0	1	2
Day 1	26	4	0
Day 2	26	1	3
Day 4	25	5	0
Day 6	28	2	0
Day 8	30	0	0
Day 10	30	0	0

In group A, 5 patients were having otalgia on 4th day & it was reduced to 0 on 8th day.

Daywise comparison of otalgia in group B.

Gradation - ⇨	Otalgia (A)		
	0	1	2
Day 1	25	5	0
Day 4	20	10	0
Day 6	17	13	0
Day 8	23	7	0
Day 10	29	1	0

In group B, 10 patients were having otalgia on 4th day, 13 patients on 6th day & 1 patient on 10th day. The above graph shows the recovery in Otalgia of the patients in two different groups. It is observed that more patients are improved in trial group while otalgia was present in control group till 10th day.

Following table shows the statistical analysis. After the assessment of otalgia, the significance of cure in otalgia is found out.

7. **Speech:** Daywise comparison of Speech in group A.

Gradation - ⇨	Speech (A)			
	0	1	2	3
Day 1	0	16	11	3
Day 2	2	24	4	0
Day 4	11	19	0	0
Day 6	26	4	0	0
Day 8	30	0	0	0
Day 10	30	0	0	0

In group A, 16 patients were having muffled speech on day 1 & on 8th day all patients were having normal speech.

Daywise comparison of Speech in group B.

Gradation - ⇨	Speech (B)			
	0	1	2	3
Day 1	0	5	21	4
Day 2	0	15	15	0
Day 4	1	27	2	0
Day 6	9	20	1	0
Day 8	24	6	0	0
Day 10	29	1	0	0

Halitosis	2nd day	4th Day	6th Day	8th Day	10th Day
Trial	30	30	30	30	30
Control	30	29	29	30	30

In group B, 6 patients were having muffled speech till 8th day.
Following table shows the statistical analysis. After the assessment of speech pattern , the significance of it is found out.

6. **Halitosis:** Daywise comparison of Halitosis in group A.

Gradation - ⇨	Halitosis (A)	
	0	1
Day 1	30	0
Day 2	30	0
Day 4	30	0
Day 6	30	0
Day 8	30	0
Day 10	30	0

No any patient from trial group suffered from halitosis.

Daywise comparison of Halitosis in group B.
In group B, 1 patient suffered from halitosis on 4th & 6th Day.
Comparison of halitosis in both groups.
It is observed that there are no patients with this symptom in trial group, But control group this symptom was present in 1 patient while there is not a single patient in trial group who developed halitosis. The data is not sufficient to apply test for significance.

DISCUSSION

Present study includes data of 60 patients. The discussion is done considering all the signs & symptoms recorded in the clinical trial.

Discussion On demographic data

1) **Age:** In 60 cases of study highest numbers of patients were from 5 — 10 years age group.

2) **Sex:** In this study incidence is higher in male patients. (Out of 30 patients 18 were male patients in group A, while in group B 19 patients were male out of 30.).

3) **Religion**: Incidence is higher in Hindu religion in both groups. It is just because of Hindu religion is more in specific zone where study was conducted. (In group A, there were 20 Hindu patients out of 30 & in group B there were 24 Hindu patients out of 30.).

4) **Prakruti**: Maximum numbers of patients were from Kapha — Pittaj prakruti in both groups in this study.

5) **Occupation**: Highest numbers of patients were students as Tonsillitis is common in children & tonsillectomy is preferred in children.

Discussion on signs & symptoms

Congestion: Any surgical wound develops a certain amount of congestion in response to the tissue damage done by surgical procedure. The amount of Inflammation reflects on the amount of congestion seen in the surface of the Wound.

Being an oral surgery faster the wound heals the lesser is the congestion. It was observed that the patients from trial coup had a less contested fossa than the control group. 20 patients from the trial group had no congestion on the 6th day where as only 8 patients from the control group had no congestion on the 6th day.

Kankshi has the property of vrana shodhan & ropan. Thus it enhances the process of wound healing & acts as an anti — inflammatory agent as Kankshi has hygroscopic property.

1) Slough

A healthy wound is examined from its slough formation. It was observed that in patients where Kankshi Jal was used debriedment of wound occurred rapidly & slough was replaced by a healthy granulation tissue. Patients from trial group showed a normal slough formation & a healthy granulation tissue formation which accelerated the process of wound healing. 21patients from trial group had a normal healed tonsillar fossa on the 8th day where as no any patient from the control group had a normal healed in tonsillar fossa on the 8th day.

2) Bleeding /Clot

The bleeding in post operative period occurs mainly due to primary hemorrhage immediate to operation & secondary hemorrhage due to infection. In trial group A only 1 patient was having clot 1st day. Kankshi has haemostatic property. In control group 2 patients were having clot on 1st day.

3) Pain

On day 1 the pain threshold of both the groups was same. It was higher in VP prakruti in both groups. But as the clinical trial proceeded the patients from trial group were relived from pain faster than the control group. 14 patients were totally relived from pain on the 8th day from trial group. No any patient was completely relived from pain on the 8th day from control group.

4) Dysphagia

The surgery being in the oral cavity dysphagia was the main complaint which caused discomfort to the patient & inability to start on the routine diet. 24 patients from the trial group had relief from dysphagia on 8th day while in control group only 5 patients had relief from dysphagia on 8th day. Kankshi releaves dysphagia earlier by reducing inflammation, pain & thereby reducing impeded movements of palate due to inflammation.

5) Otalgia

Routinely most of the patients operated for Tonsillectomy complain of otalgia on the post operative 4th or 5th day. This is a referred pain from the Glossopharyngeal nerve which runs along the bed of tonsillar fossa. As the tonsillar fossa starts healing the nerve sheath of glossopharyngeal nerve is stretched which causes a referred pain in the ears. It was observed that 6 patients suffered from otalgia on 4th day from trial group while 10 patients from control group suffered from otalgia. No any patient from trial group had otalgia on 8th day while 7 patients from control group had otalgia on 8th day.

7) Speech

Kankshi is kashaya rasa pradhana dravya. Kleda shoshan & hygroscopic action of Kankshi absorbs the unnecessary increased saliva which keeps the wound of the oral cavity clean & moist. Patients from control group complained of excessive salivation which gave a muffled & painful speech. 24 patients had normal speech on the 6th day from trial group where as the only 9 patients from control group had normal speech on the 6th day.

8) Halitosis

A healthy wound never has a bad odour but an unclean wound always has a bad odour which is because of unhealthy slough formation. No any patient from trial group suffered from halitosis while 1 patient from controlled group suffered from halitosis.

CONCLUSION

From all observations & discussion made it can be concluded that –

1) Tonsillitis is common in age goup 6 - 16 years.

2) Kankshi jal gandush in post operative tonsillectomy found to be very effective in wound healing. Wound healing is faster, healthier & with any complications.

3) The pain threshold was definitely less in the trial group as compared control group.

4) The patients from the trial group came to a normal speech & swallowing was faster as compared to the control group.

5) Systemic treatment with Sookshama Triphala & Gandhaka Rasayana also helped in faster recovery without complications. Local treatment with systemic treatment enhances the procedure of wound healing.

6) Kankshi is simple to obtain, cheaper to use, efficient in the process of wound healing. Relief of pain, lower incidence of infection, improving the dysphagia & speech, low cost, easy availability make Kankshi jal gandush an ideal treatment in post operative Tonsillectomy wound.

7) So results are definitely encouraging & Kankshi jal should be in post operative Tonsillectomy routinely in everyday practice for faster & safe recovery.

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