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Review Article

Volume 9 Issue 3

July-Sept 2020

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## ROLE OF LEECH THERAPY IN MANAGING VARIOUS TYPES OF TENOSYNOVITIS

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### Abstract

Tenosynovitis is the inflammation of the fluid filled sheath that surrounds the tendon. Typically presents with joint pain, swelling, stiffness and restricted movement of involved joint. Acharya Susruta mentioned inflammation as Sotha and dedicated a full chapter on Sotha named as Amapak waishnumadhyay in Sutrasthan.. Acharya Susruta described treatment of sotha via bloodletting by various methods like Siravedha, Prachhan, Alabu, Shrung and Jalauka application etc. Since a very long time Leech therapy is used in curing various types of local and systemic diseases. But most commonly used for local pathology rather than the systemic one. There are many different modalities available for the treatment of Tenosynovitis like anti-inflammatory, steroids, splint age and surgical intervention but with limited success. Recent studies shows that rather than the blood loss, there are many medicinal substances in the saliva of leech which acts as anti-inflammatory, anti-coagulant, anti-histaminic, increase the flow of blood at the site of bite etc. Since it is a local inflammatory disease so here we are spreading lights on how leech therapy will help in treating Tenosynovitis.

## INTRODUCTION

Tenosynovitis, an inflammation of synovial lining of tendon sheath and is different from bursitis, which is inflammation of outer fibrous sheath. Tenosynovitis leads to pricking type of joint pain, swelling, stiffness, painful movement of the joint. It is more abundant in females as compared to males, more prevalence in adults (average age 50 years) and has no racial predilection. The exact etiology of this condition is still under investigation. But can be classified as It can either be of infectious and non-infectious type. Infectious type of tenosynovitis is the infection or inflammation of closed synovial sheaths in the flexor tendons but can also affect the extensor tendons. It is usually caused by trauma, but bacteria can spread from other sites of the body and cause infection. It is clinically present as acute infection following trauma. The infection can be poly or mono-microbial depending on the nature of trauma. Most common pathogen involved is staphylococcus aureus, other involved are Pasteurellamultocida (by animal bite), Eikenella species (associated with IV drug use), Mycobacterium marnium (associated with wounds exposed to fresh water or salt water) and Neisseria gonorrhoea (in sexually active patients). Non-infectious type include de Quervainstendinopathy, stenosing tenosynovitis (also known as trigger finger), Intersection syndrome, extensor pollicislongus (EPL) tenosynovitis and fourth compartment tenosynovitis. Treatment of this condition ranges from conservative(anti-inflammatory, analgesics, steroids, spilntageetc) to surgical but with low success rate and chance of recurrence is common however out of these steroidal therapy is most successful if performed with great skills. However steroidal therapy may affect the adjacent tissues and can cause permanent contracture and create problem in movement of joint. Non-surgical treatment should be our first modality of any treatment. As tenosynovitis is mainly the inflammation or infection of the synovial lining of tendon sheath. Acharya Susruta described the treatment of sotha (inflammation) via raktmokshan (bloodletting). There are various measures to carryout bloodletting like Siravedha, Prachhan, Alabu, Shrung and jalauka etc. Acharya susruta devoted a whole chapter named as Jalaukavcharniye in sutrasthana for the purpose of bloodletting. Leechtherapy / Hirudotherapyis considered being most unique and very effective for the bloodletting. The most important advantage with this therapy is, it can be applied to those areas where other forms of bloodletting can't be applied easily. Leech does not only sucks the impure form of blood but also leaves the saliva behind, which contains hundreds of biologically active substances like Hirudin,

Hyaluronidase, Eglins, Calin, Tryptase inhibitors etc. These biologically active substances are responsible for the desired medical effect. There are above hundreds of species of leech that have been identified but only around 15-20 species are found to be beneficial in medical treatment.

**Pathogenesis of tenosynovitis:** Exact etiology is unknown but according to various studies pathogenesis of the disease can be understood as

1. Non-infectious:

Over use of the joint, repeated trauma



Friction btw tendon sheath and bone leads to thickening of tendon



Sheaths covering the tendons become inflamed and intrathecal lumen gets narrowed



Pressure on nearby nerves



Pain, numbness, stiffness and swelling etc

Infectious:

Infection directly or indirectly by Staphylococcus aureus etc



Infection enters the sheath causing reactive effusion



Gradually pus forms within the sheath, sheath gets swollen



Damage to the tendon's sheath of inner side



Stiffness of the finger, pricking pain etc

**Mode of action of Leech Therapy**

The salivary glands secretion's of leech contains hundreds of biologically active substances which helps in treating many diseases. The saliva contains enzymes that anaesthetize the affected area making bite of leech painless to the patient/ host and also increase the flow of blood there by dilating the blood vessels. The salivary secretions also contains anti-inflammatory, anti-coagulants, analgesic ,anti-histaminic actions etc. Some important constituents release in saliva of leech is given below:

S.No	Salivary Content	Properties/Action
1.	Hirudin	Anticoagulant action by preventing conversion of fibrinogen to fibrin
2.	Hyaluronidase	Provides pathway to other substances of saliva so that they can reach the deeper tissues.
3.	Destabilase	Thrombolytic action
4.	Eglins	Anti-inflammatory action, they are basically proteins
5.	Calin	Anticoagulant action by inhibiting platelet aggregation
6.	Tryptase inhibitors	Inhibits the action of tryptase, which has an important role in inflammation
7.	Hirustatin	Inhibits trypsin, chymotrypsin, kallikreinetc
8.	Bdellins	Anti-inflammatory action
9.	Factor Xa inhibitors	Inhibits the activity of coagulation factor Xa, this Xa factor help in conversion of prothrombin to thrombin
10.	Acetylcholine	Vasodilator
11.	Histamin like substance	Vasodilator
12.	Carboxypeptidase inhibitor	A Increase the gush of blood at the site of bite

## **CONTRAINDICATION OF LEECH THERAPY**

There are some of the limitations of this therapy and some medical conditions where leech can't be applied:

- Severe Anaemia
- Patient on anti-coagulant medication
- Gastrointestinal bleeding
- Tuberculosis
- Patient with viral markers like HIV, HBsAg, HCVAbetc
- Pregnancy
- Epilepsy
- Very fearful patient
- Hypotension
- Poisonous leech
- Allergic patient (allergic to foreign proteins)
- Immunosuppressive patients
- Generalised Anasarca
- Hemophilia
- Sickle cell anemia
- Bone marrow depression etc

## **Complications of Leech Therapy**

- Soreness after the bite but rarely happens
- The histamine released by leech may cause allergic reactions
- Biting scar may remains for weeks
- Poisonous leech can cause septicaemia, gastroenteritis etc
- Leech can be the carrier of infectious diseases

## **CONCLUSION**

Jalaukavacharana / Leech therapy is being used since ancient times in many of the blood disorders or other medical conditions. It is very popular due to its effects like painless therapy, safe, efficacy etc. Globally this therapy is used in various medical illnesses and also Leech therapy is very effective in treating

tenosynovitis and surpasses the modern treatment of tenosynovitis i.e. NSAIDS or steroidal therapy etc. This therapy breaks the pathogenesis of the tenosynovitis and help in resolving the pain, stiffness ,swelling like features.

This can't be wrong if we say LEECH THERAPY is best for treating Tenosynovitis.

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