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### RESEARCH ARTICLE

#### ASTHI- MAJJAGATAVIDRADHI (OSTEOMYELITIS) A LITERARY REVIEW

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MajjaVidradhi, Infection

#### Abstract

This review articles contains modern as well as ayurvedic perspective of the osteomyelitis. A better understanding of the literature towards this disease, One of the earliest diseases known is osteomyelitis. It took several years before medications could control the acute infection, and chronic osteomyelitis is still challenging to treat. Osteomyelitis is usually understood to be an infection-induced inflammatory process of bone and bone marrow that causes localised bone loss, necrosis, and the apposition of new bone. (1) Osteomyelitis refers to an infection of the bones or joints. Osteomyelitis is associated with Abhyantravidradhi in Ayurveda, specifically Asthi-majjaparipaka under Asthividradhi. Due to the problems that come along with this illness, it might also occasionally be correlated with Nadvrana or dushtavrana. Anywhere in the bone, AsthiVidradhi might develop due to ashti and majjadushti caused by perverted doshas. This article examines Ayurvedic pathogenesis, types, characteristics, and management of asthi-majjavidradhi with potential modern medical interpretation.

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#### Introduction:-

The term "osteomyelitis" refers to an inflammatory and disease that affects the bone and its bone marrow, which first affects the harversian systems by infecting the cavity of the medullary tissue. Osteomyelitis, in particular, places a significant strain on the patient, the attending physician, and the health care system as a whole. However, based on Ayurvedic concepts relating to pathophysiology, Ayurveda provides us with a successful therapeutic method that casts a ray of hope for these people. (2)

#### Materials and Methods:-

Ayurvedic text books, case studies, Review Articles and journals, Modern text books, Internet.

#### Ayurveda View :-

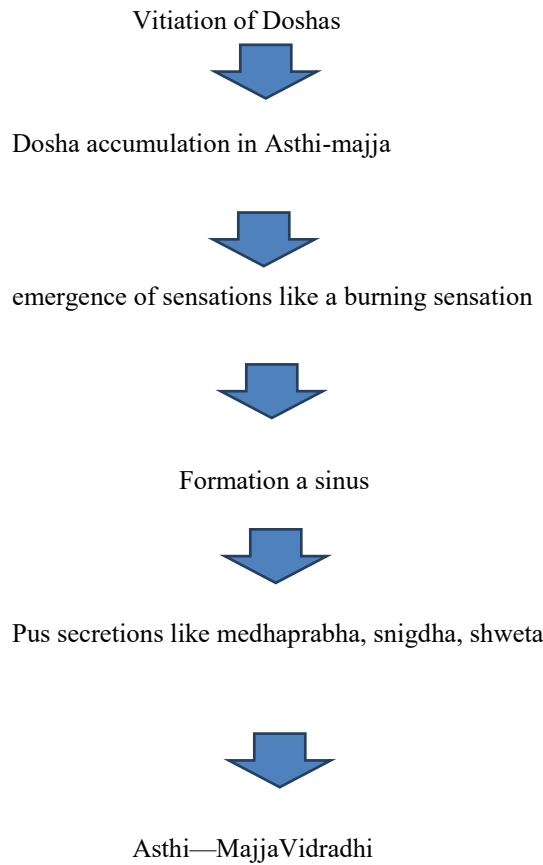
According to Ayurveda, the concept of Asthi-majjaVidradhi is classified as BahyaVidradhi (the exterior component of the body) and AntarVidradhi (the inner part of the body). In comparison to an abscess, vidradhi. Pus buildup that has penetrated tissue is an abscess. When pus collects in asthi or majja, it is called asthi-majjavidradhi.

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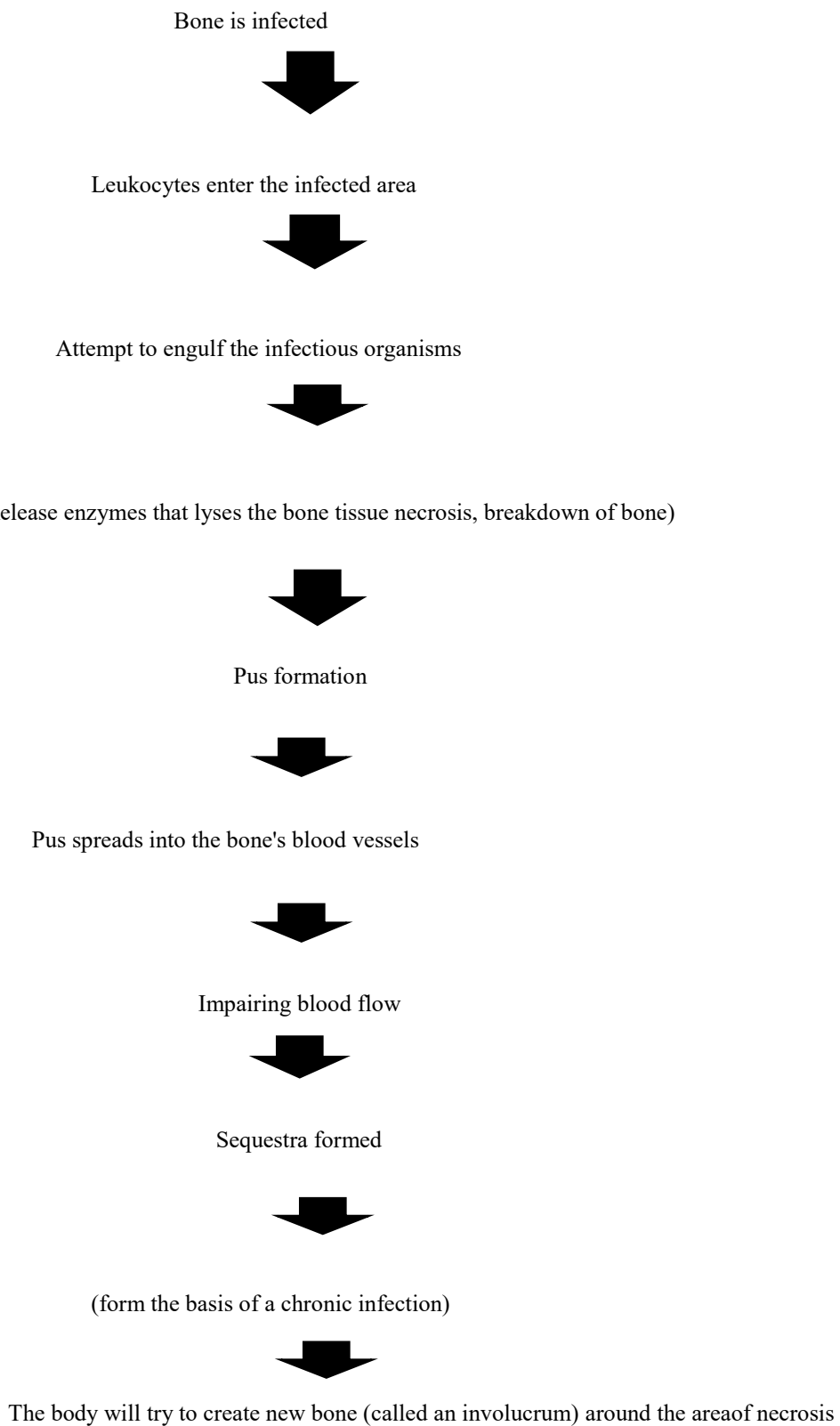
**SampraptiGhatak:-**

Dosha	Kapha –pitta PradhanaTridoshaja
Dushya	Rakta, Kandara, Asthi,Majja
Dosha Adhistan	Asthi
Agni	Jatharagnijanya, Dhatvagnijanya
Strotas	Rasa, Rakta, Asthi, Majjavaha,Purishavaha
Strotodusti	Sanga, Vimargamanam
Udbhavsthana	Amashaya (Kapha, Pitta), Pakvashaya (Vata)
Adhithana	The Adhithana was Asthi and Majja with Vata-Pitta-Kapha predominance.
Rogmarga	Madhyama
VyadhiSwabhav	Chirkala

**Samprapti(Pathophysiology)(3) –**

अथ मजपरीपाको घोरः समुपजायते  
सोअसथिमानसनिरोधेन द्ार न लभते यदा!  
ततः स व्याधिता तेन ज्वलनेनेव दह्यते  
अस्थिमज्जोष्मणा तेन शीर्यते दह्यमानवत्!!  
विकारः शल्यभुतोः कल्ेसयेदातुरम् चिरम्  
अथास्य कर्मणा व्याधिद्वारम् तु लभते यदा!!!  
ततो मेदः प्रभम् सन्निग्धम् शुक्लम् शीतमथोगुरु  
भिन्ने अस्थि निःस्त्रवेत पुयमेतदास्थिगतम् विदु  
विदर्धि शास्त्रकुशला सर्वदोषा रुजावहम्!!!! सु. नि. ०९/३६-४० (3)

Acc. To modern point of view.



**Bhed (Classification):-**

Asthi-MajjagatVidradhi can be split into 6 categories just like Acharaya Sushruta Vidradhi, which has 6 varieties.

1.Vataja 2. Pittaja3.Kaphaja

4. Tridoshaja 5. Kshatja (due to an accident) 6.Raktaja (due to contaminated blood) (3)

**Acc . to modern view:-****Traditional classification :-****1.Suppuration (pus formation):-**

Acute suppurative osteomyelitis

Chronic suppurative osteomyelitis

**2. Non suppurative/ sclerosis**

Diffuse sclerosing

Focal sclerosing

Proliferative periostitis

Osteo-radionecrosis

**classification based on duration:-**

1. **Acute-** within two weeks of bone infection.

2. **Sub acute-** less purulent more immune) Brodie abscess is an example of sub acuteo.m. may persists for years before progressing to a chronic.(5)

3. **Chronic osteomyelitis:-** six or more weeks after bone infection. Mainly presence of bone destrution and formation of sequestra.

**Classification based on Route , duration and anatomical location :-**

Duration acute, sub acute or chronic

Route of infection :- hematogenous or exogenous(6)

Host response :- pyogenic or granoulomatous

Area of skeleton:-OM of Jaws/OM of long bones /OM of vertebral Column

**Classification according to anatomic stage and the host health:-**

Cierny and mader scheme provides guidance in patient management (7)

Stage 1: Disease confined to the medullary of the bone

Stage 2: superficial disease

Stage 3 localized spread

Stage 4 diffuse disease

**Clinical characteristics:-**

When the Doshas surrounding or in the Asthi (bone tissue) get vitiated, they contaminate the skin, blood, muscles, and fat, which progressively grow larger and become harder in consistency. AsthiMajjaVidradhi is the name for this. According to exacerbated doshas, Asthi-majjaNirodhana has bdischarged as Medoprabha, Snigdha, Shukla, Shita, and Guru, among other clinical aspects.

ततो मेदः प्रभम् सन्निग्धम् शुक्लम् शीतमथोगुरु

भिन्ने अस्थि निःस्रवेत पयमेतदास्थिगतम्विदुसु. नि. ९/३९-४० (3)

1. Vataja- A thin, transparent discharge or flu that is painful, has a firm texture, and is black in colour.

2. Pittaja - A yellow secretion that causes a burning sensation.

3. Kaphaja: The secretions are white in colour and icy to the touch, and they are linked to minor pain.

4. Sannipataja—vitiatio of all three doshas—different colour of dosha secretion.

5.Kshataja – this is brought on by an injury. After an injury, there is vitiatio of the vata, pitta, and rakta, which is inflammatory and suppurative in character and accompanied with fever, thirst, and a burning sensation.

6. Raktaja - This dark-black discharge results from the vitiatio of Rakta (infected blood).

**Modern view :-** features may or may not be present( neonates )

Fever and chills

Malaise ( general discomfort uneasiness)

Local swelling redness , warmth)

The limb is held still ( pseudoparalysis )

May pus formation

Bone pain (vertebral osteomyelitis- severe back pain especially at night )

सत्राव केलक्षणः-अस्थिगतोऽस्थिन्यभिहते स्फुटिते भिन्ने दोषावदारिते वा दोषभक्षितत्वादस्थि निःसार शुक्तिधौतमिवाभाति!

आस्त्रावश्चात्र मज्जमिश्रः सरुधिरः सिनग्धश्च सन्धिगतः पीड्यमानो न प्रवतत्रे!! सु.सू. २२/८ ! (5)

Whenever there is injury to the bone due to vitiated doshas there is wound over the bone, it becomes निःसार (weightless) and there secretion fixed with blood and bone marrow.

#### Treatment protocol:-

AsthimajjaVidradhi, according to AcharayaSushrut, is difficult to treat. In the early stages of the abscess, Snehan, Swedan, and Raktavsechan are included in the therapy protocol.

पयार्गते विदग्धौ तु सिद्धिर्नैकान्ति किति स्मृता

पृत्याख्याय तु कुर्वीत मज्जाते तु विदग्धौ!

स्नेहस्वेदोपन्नानाम् कुर्यात् रक्तावसेचनम्

विदग्ध्युक्तम् क्रियाम् कुर्यात् पक्वेवास्थि तु भेदयेत्!! (6) सु.चि. १६/३८

After the removal of sequestrum the treatment is as follows

निःशल्यमथ विज्ञाय कतुव्य व्रणशोधनम्

धावेतिक्तकषायेण तिक्तम् सर्पिस्तथाहितम्!! सु.चि. १६/४१ (6)

Vrana shodhan



Vrana dhawan with tiktadravya



Grit Paan with tikta Dravya

If the serous and pus discharge does not stop then use

यदि मज्जपरिस्त्रावो न निवर्तेत देहिन

कुर्यात् सन्शोधनीयानि कषायदीनि बुधिमान!! सु.चि. १६/४२ (6)

#### Medication:-

For ropan karma following oil was used

प्रियन्गुधातकी रोध्र कटफलम् तिनि सैन्धवम्

एतैस्तलम् विपक्तव्यम् विदग्धि व्रण रोपणम्!! सु.चि. १६/४८ (6)

Oil made up of प्रियन्गु (Callicarpusmacrophylla )धातकी( woodfordiafruticosa )रोध्र(Symplocosracemosa )कटफलम्(Myrica esculenta) mixed with Sandhavlavana issued over vrana.

Rason(Allium sativum) is said to be Bhaganasthisandhankar

रसोन भग्नास्थिसनधानकर सु.सू. ४६/२४४

Medication used for internal use :-

निम्बादिकषाय

मुस्तादि कषाय

वरुणादि कषाय

व्याघर्ादि कषाय

प्रियन्वादि गण

अम्बष्ठादि गण

Sub acute / brodie abscess, prescription depends upon severity:-

1.Survarna vasantaamlati rasa 125mg

Guduchisatva -500mg

Praval panchamrita -62.5mg  
Rasamanikya-62.5

.....  
1 dose twice daily with L.W. W

## 2.Kshahra sutra packing

### Drainage and dressing with jatyadihrita

#### Management:-

1. General treatment
2. Antibiotic therapy
3. Surgical treatment
4. Immobilization

1.General treatment :-nutritional or general supporting treatment by taking enough calorie protein and vitamins In a compromised host, efforts should be taken to strengthen host defences, with a focus on the patient's nutrition, quitting smoking, and managing any specific abnormalities like diabetes.

2.Antibiotics:- If at all possible, the results of the culture and susceptibility tests should be used to choose the antibiotic medication. Broad-spectrum, empiric antibiotics should be used in the absence of this information. Patients who have started antibiotic therapy frequently experience false-negative blood or biopsy cultures. Antibiotics should be postponed if clinically feasible until results of microbial culture and sensitivity are known. (10)An drug targeted against S. aureus should be included in antibiotic regimens for the empiric treatment of acute osteomyelitis, particularly in youngsters. If MRSA is not suspected, betalactam antibiotics are the initial line of defence. Methicillin resistance among Staphylococcus community isolates should be taken into account in the initial antibiotic regimen if it exceeds 10%. The first-line treatment is vancomycin intravenously. Fluoroquinolones appear to be as effective as beta-lactams in treating staphylococcal infections in people with diabetic foot infections or penicillin allergies.(10)

Nade's principles :- (11)

1. Antibiotic is effective before pus forms.
2. Antibiotics cannot sterilise avascular tissue.
3. Antibiotic prevents reformation of pus once removed.
4. Pus removal restores periosteum restores blood flow.
5. Antibiotics should be continued after surgery.

Surgery:- Nade's indication of surgery (11)

1. Abscess formation
2. Severely ill and moribund child with features of acute osteomyelitis
3. Failure to respond to IV antibiotics for >48 hrs

Surgical Debridement:- Debridement aims to leave healthy, functional tissue behind. Debridement of the bone continues until the paprika sign, or punctate bleeding, is noticed. This is followed by extensive irrigation using 10–14 litres of normal saline and pulsatile lavage at fluid pressures of 50–70 pounds per square inch and 800 pulses per minute.

Debridement may need to be repeated.

Grafting :- Cancellous bone grafting after entire cavity is covered with granulation.

Best donor site is :- post. ilium

Cut into small pieces 3-4 mm thick and 4-6 cm

Antibiotic impregnated beads which are made up of

Cement 40gm + gentamycin 1-2 gm and vancomycin 1-2 gm to cover the dead spaces.

## Discussion:-

In the modern era, Asthi vidradhi are linked.

alongside osteomyelitis. Asthi-vidradhi must be treated

as they were DusthaVranas. When a Vrana lasts longer than a week, it is referred to as a Dushta Vrana and is considered chronic since Vata and Pitta Dosha predominate.

## SanshodhanaKarma:-

यदि मज्जपरिस्त्रावो न निवर्तेत देहिन्

कुर्यात् सन्शोधनीयानि कषायदीनि बुधिमान्!!सु.चि.१६/४२ (6)

As described in sushrutasamhita a Sanshodhana karma should be done with if pus and discharge is continues.

#### **Snehan And Swedan-**

Akanga(local) and Sarvanga(complete)-Snehan and Swedanincreases blood circulationof affected bone. It controls the vitiated the VataDoshaby removing Margaavarodhand reduces Vedana (throbbing pain) and Shotha(swelling).

The use of the Akanga (local), Sarvanga (total), Snehan, and Swedan improves blood flow to the injured bone. Margaavarodh is eliminated, Vedana (throbbing pain), and Shotha are decreased, with decreasesin the vitiated VataDosha (swelling).

#### **Local Application Of lep:-**

प्रियन्धुधातकीरोध्रकटफल तिनिसेन्धवम्!

यतैस्तैल विपक्व्यम् विद्रधिन्नरोपणम्! सु. चि.१६/४३ (6)

#### **Raktavsechan:-**

Bloodletting (raktavsechan) lowers the bacterial burden, eliminates dead, necrotic tissues, and increases the likelihood that the infection will be stopped and eliminated by the host immune system. Raktavsechan aids in the removal of Rakta Dhatu pollutants, reduces strotorodha, which improves blood flow and nutrient absorption for healthy granulation tissue production (resolving in the bone cavity with bone healing).

#### **Bhedhan:-**

भेद्या विद्रध्योान्यत्र सर्वजाद् ग्रन्थयस्त्रयः सु.सु २५/५(1)

The surgical debridement method is the therapy of choice for both Acharya Susruta and contemporary medicine.

The bacterial burden is reduced and necrotic dead tissues are removed when the Bhedan is adequate.

#### **Conclusion:-**

In the Sushruta Samhita, Acharya Sushruta explains the theory of Asthi-majjaVidradhi (Chronic osteomyelitis) definitive treatment, which can be effective in the modern period and Ayurvedic AntaVidradhiharakashayaand ganacan be the finest antibiotic therapy substitute. The management of Asthi-majjavidradhi is based on a defined idea and can provide us with a good supportive therapy plan.

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