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**STRUCTURAL DETERIORATION AND MOVEMENT LIMITATIONS
IN THE WRIST JOINT (MANIBANDHA SANDHI) W.S.R AMAVATA
(RHEUMATOID ARTHRITIS): A CASE SERIES**

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ABSTRACT

Chronic inflammation of the joints stands as a defining hallmark of rheumatoid arthritis (RA), an autoimmune malady. Its progressive nature threatens joint integrity and functional ability, often symmetrically inflaming multiple joints. Not content with confining its impact solely to the joint's surrounding tissues, this relentless condition extends its reach, inflicting inflammation and havoc upon various organs throughout the body. *Amavata*, nestled within the realm of *Vatavyadhi*, where its primary target lies within the Sandhi, inducing waves of pain and swelling. Echoing the ancient wisdom of Ayurveda, Rheumatoid arthritis finds its counterpart in the enigmatic entity of "*Amavata*."

This study embarks on an observational exploration, sourcing data on *Manibandh Sandhi* and *Amavata* from diverse authoritative channels. Through scrutinizing radiological evidence, it uncovers the structural shifts and persistent mobility challenges within the *Manibandh Sandhi* among 30 diagnosed *Amavata* patients. These individuals, bearing the brunt of *Amavata*'s impact on *Manibandh Sandhi*, are methodically categorized into three groups—Group A, Group B, and Group C—reflecting the varying durations of their condition. The objective of this research is to perform a literature review focusing on the relationship between *Manibandh Sandhi* and rheumatoid arthritis (*Amavata*), and to examine the structural alterations in *Manibandh Sandhi* through both clinical assessment and radiographic

observations in *Amavata* cases. This endeavor seeks to provide a thorough exploration of the clinical anatomy of *Manibandh Sandhi*.

This case series explores the intricate interplay between RA, known as *Amavata* in Ayurveda, and its impact on wrist joint health. Through a comprehensive examination of clinical manifestations, radiological findings, and functional assessments, this study elucidates the progressive nature of *Amavata*-induced wrist joint complications. Findings reveal a spectrum of structural changes, from subtle alterations to severe degeneration, alongside varied degrees of movement limitations. Highlighting the multifaceted nature of *Amavata*, this series underscores the importance of early detection and tailored interventions to mitigate disease progression and enhance patient quality of life.

Keywords: *Manibandh Sandhi, Amavata, structural changes of wrist joint*

INTRODUCTION

Rheumatoid arthritis (RA) is a worldwide chronic inflammatory disease; it causes progressive joint damage and even leads to disability [1]. Its onset is closely related to environmental and genetic factors [2, 3, 4]. Beyond its hallmark joint tissue infection and inflammatory arthritis, RA extends its reach to afflict other organs. In the West, the prevalence of RA is believed to be 1–2% [5, 6] and 1% worldwide [7]. In India it is estimated to be around 0.7% to 1% of the adult population. Its onset is subtle, creeping in with weariness, prolonged morning stiffness, intense muscle soreness, diminished appetite, and fatigue, culminating in joint pain. It typically starts in small peripheral joints, is usually symmetric, and progresses to involve proximal joints if left untreated [8, 9, 10]. Patients also may demonstrate extra-articular manifestations at the time of presentation, most commonly rheumatoid nodules, secondary Sjögren syndrome, and

pulmonary fibrosis [11, 12, 13]. Patients also are at increased risk of premature immunosenescence, leading to early cognitive impairment, malignancies, accelerated atherosclerosis, and cardiovascular disease.⁹ Its progressive nature threatens joint integrity and functional ability, often symmetrically inflaming multiple joints. Early warning signs may manifest subtly, with mild joint discomfort, stiffness, and fatigue, predominantly affecting wrists, fingers, knees, toes, and ankles.

Amavata is a disease in which vitiation of *Vata Dosh*a and accumulation of *Ama* take place in joints, which simulate rheumatoid arthritis (RA) in modern parlance [14]. *Ama* is a maldigested product, which is not homogeneous for the body. Whenever that *Ama* gets localized in the body tissue or joints, it can lead to production of pain, stiffness, swelling, tenderness, etc., in the related joints [15].

The word Amavata comprises of two meaningful terms Ama and Vata which form the pathogenic basis of the disease [16]. This derivation highlights the propulsion of Ama by Vata to produce Amavata [17]. Amavata is a condition where Stabdhatu of the body occurs due to lodging of vitiated Ama and Vata in the Trika Sandhi [18]. The features of Amavata are much identical to RA, an autoimmune disorder which causes chronic inflammatory and symmetrical polyarthritis [19]. The disease is initiated by the consumption of *Viruddha Ahara* and simultaneous indulgences in *Viruddha Ahara* in the pre-existence of *Mandagni* [20, 21]. Although *Ama* and *Vata* are chiefly pathogenic factors, *Kapha* and *Pitta* are also invariably involved in its *Samprapti*²². Derangement of the *Kapha dosha*, especially *Shleshak kapha* in the *Amavata*, which produces joint pain and swelling with tenderness, can be correlated with rheumatoid arthritis and derangement of the *Pitta dosha* along with *Ama* taking shelter in the *Avalambak Kapha sthana*, which can be correlated with rheumatic fever because of the cardiac involvement, due to repeated fever, resulting in rheumatic heart diseases [23].

Sandhis are responsible for transmission of weight and also for movement. Charakacharya has defined *Sandhi* as joining of two bones [24]. Sushruta has defined term *Sandhi* as a point where any

similar type of two structures meets each other like *Asthisandhi* (bony joint), *Sira Sandhi* (venous joint) or *Pesi Sandhi* (muscular joint) [25]. *Sleshmadhara Kala* is present in all joints [26]. According to Sushruta acharya joints are of eight types -- *Kora sandhi*, *Ulukhala sandhi*, *Samudga sandhi*, *Pratara sandhi*, *Ttunna sevani sandhi*, *Vayas-tunda sandhi*, *Mandal sandhi*, *Shankha varta sandhi* [27]. *Manibandh Sandhi* is a type of *Kora Sandhi* composed of *Manibandh Marma* with *Rujakara* character. *Kora sandhi* is found in *anguli* (finger), *manibandha* (wrist), *gulpha* (ankle), *janu* (knee), *kurpara* (elbow) [28]. The synovial joint known as the wrist joint is formed by the head of the ulna and the ulnar notch of the radius. The examination of the wrist joint involves the examination of three carpal bones: the scaphoid, lunate, and triquetral. These bones, along with the radius and styloid process of the ulna, are separated from the radio-carpal joint by an articular disc. It is important to examine these bones in order to assess the condition of the wrist joint.

AIM AND OBJECTIVES

The aim of this study is to conduct a literature review on *Manibandh Sandhi Shareera* and rheumatoid arthritis (*Amavata*) and to analyze the structural changes in *Manibandh Sandhi* through clinical examination and radiological findings in cases of *Amavata*, in order to

gain a comprehensive understanding of the clinical anatomy of *Manibandh Sandhi*.

MATERIALS AND METHODS

SOURCE OF DATA

Patients who were attending the OPD and IPD of Parul Ayurveda Hospital and fulfilling the criteria were selected for this study.

STUDY DESIGN

- In the study, a special case performa was prepared based on the signs and symptoms of Amavata and after complete examination and investigation, 30 diagnosed patients of Amavata were selected.
- Prepared consent form and case record form.
- Structural changes in Manibandh Sandhi in relation to its chronicity were observed clinically and radiologically.
- Among the 30 diagnosed patient of Amavata, 3 groups were made, i.e. group A, group B and Group C respectively.
- Group A consist of 10 patients of Amavata affected the Manibandh Sandhi with a duration of 0-3yrs
- Group B consist of 10 diagnosed patients of Amavata affecting the Manibandh Sandhi with a duration of 4-5yrs

- Group C consist of 10 diagnosed patients of Amavata affecting the Manibandh Sandhi with a duration of above 5 yrs

INCLUSION CRITERIA

- Diagnosed patients of Amavata (R.A.) in which wrist joint defect can observed easily.
- Age - 15 to 55 years irrespective of sex.

EXCLUSION CRITERIA

- Fracture of bones of wrist joint
- History of surgery or accident or trauma effecting wrist joint
- Patient suffering from diabetes and tuberculosis
- Osteoporosis
- HIV patient

DURATION

60 days

CRITERIA FOR ASSESSMENT

❖ OBJECTIVE CRITERIA

- Radiological assessments were conducted to observe structural changes in the Manibandh Sandhi.
- X-ray imaging was performed from both anteroposterior and lateral perspectives to evaluate these changes.
- The extent of restricted movement in the wrist joint was assessed using a goniometer.

❖ SUBJECTIVE CRITERIA

- Patients exhibiting symptoms such as pain (Ruja), inflammation

(Shoth), stiffness (Stabdata), and discoloration (Vivarnata) in the wrist joint, indicative of Amavata, were clinically examined.

- A comparison was made with individuals of similar age who did not exhibit Amavata, to gauge the degree of movement impairment.

❖ **DIAGNOSTIC CRITERIA:**

In 2010, the American College of Rheumatology (ACR)/European League Against Rheumatism (EULAR) updated the criteria for diagnosis of RA.¹⁴ That update specifies that patients must have at least one

joint involved with definitive synovitis, no other explanation for the symptoms, and a minimum of six points out of a possible 10 to confer a diagnosis of RA. Points are calculated based on the type and number of joints affected, serology, duration of symptoms, and presence of acute phase reactants (Table 1) [30, 29]. The patient described in clinical scenario meets the ACR/EULAR criteria with more than 10 small joints involved (5 points) and symptoms for longer than 6 weeks (1 point) [30, 29].

Table 1
2010 ACR/EULAR criteria
 A score of 6 or more is consistent with a definitive diagnosis of RA.

Affected joints	Points
1 large joint	0
2-10 large joints	1
1-3 small joints (large joints not counted)	2
4-10 small joints (large joints not counted)	3
>10 joints (at least one small joint)	5
Serology	Points
Negative rheumatoid factor AND negative anti-CCP	0
Low positive rheumatoid factor OR low positive anti-CCP	2
High positive rheumatoid factor OR high positive anti-CCP	3
Duration of symptoms	Points
<6 weeks	0
≥6 weeks	1
Acute phase reactants	Points
Normal CRP and ESR	0
Abnormal CRP or ESR	1

OBSERVATIONS AND RESULTS

Both clinical examination and radiological study of 30 diagnosed patient of Ama vata were carried out and data available from those observations are being discussed here forth.

AGE:

1. Age Group 46-55 Years: The highest incidence was observed in this age group, with 12 patients (40%) exhibiting the condition.
2. Age Group 36-45 Years: Following closely, 9 patients (30%) were recorded in this age bracket.

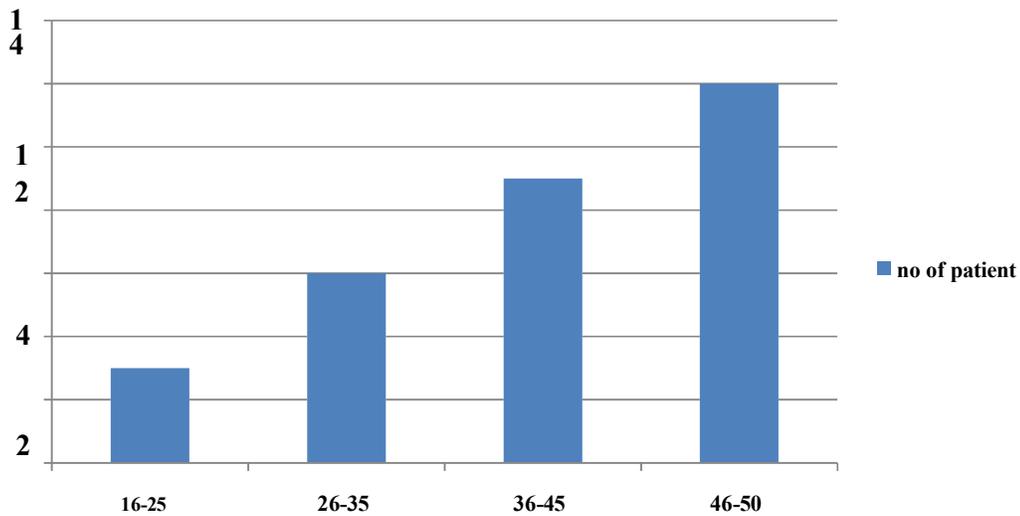
- 3. Age Group 26-35 Years: Six patients (20%) were identified in this age range.
- 4. Age Group 16-25 Years: Three patients (10%) were found in the youngest age group.

Significant Observation: The age group between 35-50 years demonstrated the highest incidence, suggesting that this demographic is particularly susceptible to the condition. Notably, this age range is characterized by a stage where structural changes in bones are more prominent, contributing to the observed trend.

Table 2

S. No.	AGE	NO OF PATIENT	%
1	15-25	3	10%
2	26-35	6	20%
3	36-45	9	30%
4	46-55	12	40%

AGE



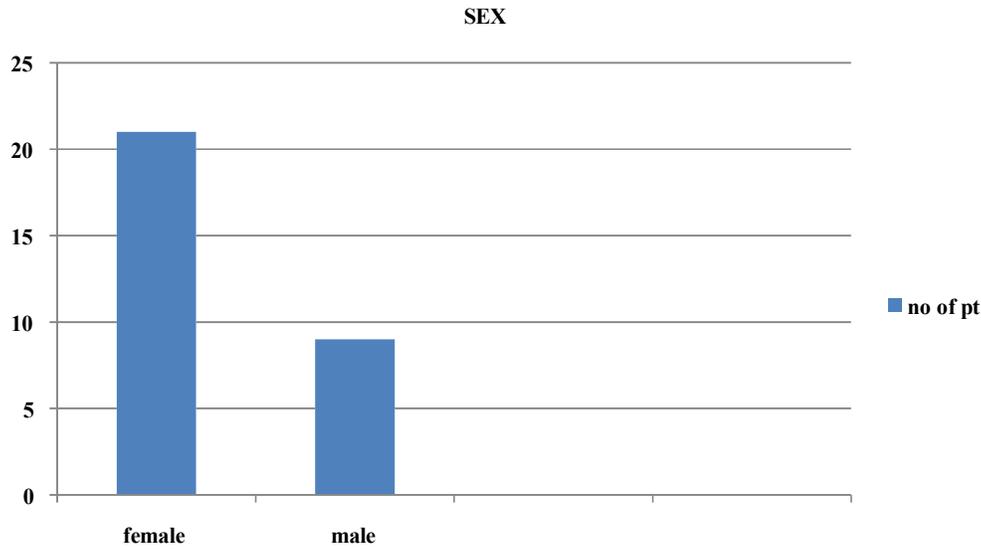
SEX

Women have a significantly higher incidence. In this study of 30 patients there

are 21 female (70%) and 9 male (30%) patients. It shows that females are more prone to this disease.

Table 3

S. No.	SEX	NO OF PATIENT	%
1	FEMALE	21	70%
2	MALE	9	30%



EDUCATION

1. Complete 10-pass: Out of 30 diagnosed patients, 12 individuals (40%) had completed the 10th grade.
2. 12-pass: Eight patients (26.6%) had completed their 12th grade education.
3. Complete Graduation: Six patients (20%) had obtained a bachelor's degree.
4. Complete Post-graduation: Four patients (13.3%) had completed their post-graduation studies.

Significant Observation: The distribution of educational qualifications among Ama Vata patients indicates no direct correlation between the disease and education level. This suggests that the occurrence of the disease is not influenced by educational attainment.

OCCUPATION

1. Farmers: Out of 30 diagnosed patients, 9 individuals (30%) were engaged in farming.
2. Housewives: Six patients (20%) identified themselves as housewives.
3. Business Owners: Similarly, six patients (20%) were involved in business activities.
4. Manual Laborers: Five patients (16.66%) reported being engaged in manual labor.
5. Service Professionals: Four patients (13.33%) were employed in service-related occupations.

Significant Observation: The distribution of occupations among Ama Vata patients suggests that farmers, housewives, and businesspeople are more susceptible to this disease, potentially due to the demands and lifestyle associated with their respective occupations. This observation highlights the

possible role of occupation in the development of Ama Vata. Top of Form

SOCIO-ECONOMIC STATUS

1. **Poor Class:** Among the 30 diagnosed patients, 18 individuals (60%) were classified as belonging to the poor socioeconomic class.
2. **Lower Middle Class:** Four patients (13.3%) were categorized as belonging to the lower middle class.
3. **Middle Class:** Three patients (10%) each were classified as belonging to the middle and upper middle classes.
4. **Rich Class:** Two patients (6.6%) were identified as belonging to the rich class.

Significant Observation The majority of diagnosed Ama Vata patients come from the poor socioeconomic class, constituting 60% of the total. This observation suggests a possible association between socioeconomic status and the prevalence of the disease, potentially attributed to factors such as inadequate nutrition, lack of access to healthcare, and strenuous working conditions prevalent in lower-income populations.

NATURE OF DIET

1. **Vegetarian:** Among the 30 diagnosed patients, 18 individuals (60%) adhered to a vegetarian diet.

2. **Non-vegetarian:** Twelve patients (40%) reported consuming a non-vegetarian diet.

Significant Observation The data suggests that a larger proportion of diagnosed Ama Vata patients follow a vegetarian diet. Some may speculate that certain aspects of a vegetarian diet, such as potentially higher cholesterol levels and lower protein intake, could contribute to increased Ama production. However, further research is needed to understand the relationship between dietary preferences and the development of Ama Vata, as dietary factors can be complex and multifaceted.

RANGE OF MOVEMENT IN AFFECTED WRIST EXTENSION

1. Variability in Wrist Extension:

- Among the 30 diagnosed patients, 50% exhibit a reduction in wrist extension ranging from 10 to 20 degrees.
- This highlights the prevalence of moderate impairment in wrist mobility within the cohort.

2. Significant Joint Restrictions:

- Notably, 40% of the patients suffer from a more profound limitation, with joint movement reduced by over 20 degrees.

- These findings underscore the substantial impact of Ama Vata on joint function and mobility.

3. Minor Afflictions:

- While the majority of patients exhibit noticeable joint impairments, 10% of

- the cohort presents with either minimal or no reduction in joint movement, less than 10 degrees.
- This minority group provides intriguing insights into the variability of Ama Vata manifestations.

Table 4

S. No.	EXTENSION	NO OF PATIENTS	%
1	10-20 reduction	15	50%
2	More than 20	12	40%
3	No reduction	3	10%

RANGE OF MOVEMENT IN AFFECTED WRIST FLEXION

1. **10–20-Degree Reduction:** Among the 30 diagnosed patients, 18 individuals (60%) exhibited a reduction in wrist flexion ranging from 10 to 20 degrees.
2. **More Than 20-Degree Reduction:** Nine patients (30%) experienced a reduction in wrist flexion exceeding 20 degrees.
3. **No Reduction or Less Than 10-Degree Reduction:** Three patients (10%) demonstrated either no reduction or a reduction of less than 10 degrees in wrist flexion.

Significant Observation: The These findings provide insights into the varying degrees of wrist flexion reduction among Ama Vata patients, highlighting the

spectrum of severity in joint mobility impairment.

RANGE OF MOVEMENT IN EFFECTED WRIST ADDUCTION

1. **5-Degree Reduction:** Among the 30 diagnosed patients, 15 individuals (50%) exhibited a reduction in wrist adduction of 5 degrees.
2. **More Than 5-Degree Reduction:** Twelve patients (40%) experienced a reduction in wrist adduction exceeding 5 degrees.
3. **No Reduction:** Three patients (10%) demonstrated no reduction in wrist adduction.

Significant Observation: These findings illustrate the varying degrees of wrist adduction reduction among Ama Vata patients, indicating the spectrum of severity in joint mobility impairment.

RANGE OF MOVEMENT IN AFFECTED WRIST ABDUCTION

1. **10–20-Degree Reduction:** Among the 30 diagnosed patients, 18 individuals (60%) exhibited a reduction in wrist abduction ranging from 10 to 20 degrees.
2. **Above 20-Degree Reduction:** Nine patients (30%) experienced a reduction in wrist abduction exceeding 20 degrees.
3. **No Reduction:** Three patients (10%) demonstrated no reduction in wrist abduction.

Significant Observation: These findings indicate that wrist abduction is the most affected movement among Ama Vata patients in this study, with a significant proportion experiencing reductions in this range.

DISCUSSION

DISCUSSION ON GROUP A:

Group A included 10 patients with Ama Vata affecting their wrist joints. X-rays revealed the following:

- Eight patients had a narrowed ulnocarpal joint space (the space between the ulna bone and the carpal bones).
- Three patients had a narrowed radiocarpal joint space (the space between the radius bone and the carpal bones).

- Three patients showed signs of bony erosion.
- Four patients had soft tissue swelling.

Importantly, no osteophytes (bone spurs), sclerosis (increased bone density), or subluxation (partial dislocation) were observed in this group. This is likely because the disease is in its early stages, and the wrist joint has a large articular surface area, making structural damage less evident at this point.

DISCUSSION ON GROUP B:

Group B consisted of 10 patients diagnosed with Ama Vata in their wrist joints. X-ray results showed a higher prevalence of structural damage compared to Group A, likely due to the disease being in a more advanced stage. Here's a breakdown of the findings:

- All 10 patients had a narrowed ulnocarpal joint space.
- Five patients had a narrowed radiocarpal joint space.
- One patient each showed signs of osteophytes (bone spurs) and sclerosis (increased bone density).
- Two patients each had subluxation (partial dislocation).
- Six patients had bony erosion.
- Seven patients had soft tissue swelling.

DISCUSSION ON GROUP C:

Group C comprised 10 patients with Ama Vata impacting their wrist joints. X-rays revealed the most extensive structural damage compared to Groups A and B, suggesting a chronic stage of the disease. Here's a detailed breakdown of the findings:

- All 10 patients had a narrowed ulnocarpal joint space.
- Nine patients had a narrowed radiocarpal joint space.
- Four patients each showed signs of osteophytes (bone spurs) and sclerosis (increased bone density).
- Seven patients each had subluxation (partial dislocation).
- Eight patients had bony erosion.
- All 10 patients had soft tissue swelling.

The significantly higher prevalence of structural damage in Group C compared to the other groups strongly suggests that this group is experiencing a more advanced, chronic stage of Ama Vata affecting the wrist joint.

CONCLUSION

Healthy joints have a special tissue called articular cartilage that acts like a shock absorber and cushion. When this cartilage breaks down, the joint becomes painful, stiff, and has limited movement. Over time, this disease can also cause other problems in the wrist joint. Ligaments weaken, leading

to subluxation (partial dislocation). Bone spurs (osteophytes) develop around the damaged joint, causing pain and limiting movement further. Increased bone density (sclerosis) occurs as the body replaces healthy tissue with scar tissue. The scaphoid bone is usually the first and most affected bone, with inflammation, swelling, and stiffness being early signs. The radiocarpal joint becomes most inflamed, while the connection between the articular disc, scaphoid, and lunate bones suffers the most damage. Wrist abduction (moving the wrist away from the thumb) is the most affected movement, likely because the muscles responsible attach to the radius and scaphoid, the areas most impacted by the disease.

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