

**ASTHI DHATU KSHAYA AND OSTEOPOROSIS: A COMPARATIVE STUDY OF
AYURVEDIC AND MODERN PERSPECTIVES****Amritanshu Saroch^{1*}, Swapnil Saini², Akhilesh Srivastava³, Ajay Kumar Shukla⁴ and Pooja Sharma⁵**¹M.D. 2ND Year, Deptt. of Rog Nidan Evam Vikriti Vigyan, R.G.G.P.G. Ayurvedic College and Hospital, Paprola, Distt. Kangra, H.P., India.²Reader Deptt. of Rog Nidan Evam Vikriti Vigyan, R.G.G.P.G. Ayurvedic College and Hospital, Paprola, Distt. Kangra, H.P., India.³Prof. Deptt. of Rog Nidan Evam Vikriti Vigyan, R.G.G.P.G. Ayurvedic College and Hospital, Paprola, Distt. Kangra, H.P., India.^{4,5}Lecturer Deptt. of Rog Nidan Evam Vikriti Vigyan, R.G.G.P.G. Ayurvedic College and Hospital, Paprola, Distt. Kangra, H.P., India.***Corresponding Author: Amritanshu Saroch**M.D. 2ND Year, Deptt. of Rog Nidan Evam Vikriti Vigyan, R.G.G.P.G. Ayurvedic College & Hospital, Paprola, Distt. Kangra, H.P., India.

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ABSTARCT

In Ayurveda, Asthi Dhatu is a tissue responsible for building and maintaining the skeletal structure of the body. Its supported by Asthivaha Srotas, the channels that help nourish and sustain bone health. When this system becomes imbalanced—due to poor metabolism (Dhatvagni Mandya), increased Vata, or improper nutrition—also it can lead to Asthi Dhatu Kshaya, a condition characterized by weak bones, brittle nails, hair loss, and skeletal deformities. These classical Ayurvedic symptoms closely mirror what modern medicine describes as osteoporosis—a condition in which bones become fragile and more prone for fractures, often due to aging, hormonal changes, and nutritional deficiencies. This review aims to bridge Ayurvedic and modern perspectives by highlighting similarities in how both systems understand the causes and symptoms of bone deterioration. It compares diagnostic methods—from traditional Ayurvedic examination to modern tools like DEXA scans—and discusses how treatment can be approached holistically. Ayurvedic therapies such as Laksha Churna, Ashwagandha, Basti, and Abhyanga can complement modern treatments like calcium supplementation, hormone therapy, and lifestyle changes. By bringing together insights from both Ayurveda and contemporary science, this article offers more integrated, comprehensive approach for maintaining bone health and managing conditions like osteoporosis.

KEYWORDS: Asthi dhatu, Asthi kshaya, Asthivaha srotas, Joint.**INTRODUCTION**

Bone health is essential for the maintaining structural integrity, enabling movement, and supporting overall vitality. Human skeletal system not only provides a mechanical framework but it also safeguards vital organs and serves as reservoir to minerals. However, with advancing age, sedentary habits, poor nutrition, and hormonal imbalances, bone strength gradually declines. Osteoporosis, a common degenerative bone disorder, characterized by low bone mass and microarchitectural deterioration of bone tissue, which significantly increases the risk of fractures. Often progressing silently, it remains undetected until a fracture occurs. According to World Health Organization, osteoporosis is ranked second only to cardiovascular disease as a major global health issue and predominantly it affects elderly individuals, especially postmenopausal women.

"कीकसं कृत्यमस्थि च" । (२/६/६८)

According to *Amarkosh*, bones help in movement and provide solid structure to the body, the fifth of the Sapta Dhatus, responsible for giving shape and strength to body. Asthi Dhatu is sustained through proper digestion and transformation of nutrients and closely linked to the functioning of Asthivaha Srotas, the channels responsible for the transportation and nourishment of bone tissue. Any disturbance in this physiological process—particularly due to Vata Dosha aggravation, Dhatvagni Mandya (impaired tissue metabolism), or poor lifestyle—can lead to Asthi Dhatu Kshaya, a pathological condition marked by clinical features like bone pain, joint stiffness, brittle nails, hair loss, and skeletal fragility.

The classical description of Asthi Dhatu Kshaya in Ayurvedic texts shows remarkable similarity to clinical presentation of osteoporosis in modern medicine. Both

describe a gradual weakening of bone tissue due to intrinsic and extrinsic factors, leading to compromised structural integrity and increased fracture risk. Notably, while the peak incidence of osteoporosis occurs around 70–80 years of age in Western populations, in India, it is reported a decade earlier, often beginning between 50–60 years of age. This earlier onset may attributed to genetic, nutritional, and lifestyle-related factors. This review aims to explore the Ayurvedic understanding of Asthi Dhatu and Asthivaha Srotas, analyze the pathogenesis of Asthi Dhatu Kshaya, and establish its clinical correlation with osteoporosis based on modern pathological concepts, thereby encouraging a deeper interdisciplinary understanding of bone degeneration.

Asthi Dhatu

- अस्यते अस किधनमासाभ्यन्तरस्थे 'हाड' इति ।
(शब्दस्तोम)

According to *Shabdastomkara* - it is part of body which remain till long period even after death of body. "*Hada*" is synonym *Asthi*.*

- स्थिरकठिनअवलंबन धातुः शरीरस्य यत्र प्रतिवध्यन्ते
मास पश्येयन्ता स्नायचच । (प्रत्यक्षशरीरम्)

Asthi is hard and stable *Dhatu* which gives support to *Mamsa*, *Peshi* and *Snayu*.

Formation of Asthi Dhatu

- ततो अपि पच्यमानान्मलः केशलोमश्मश्रूणि
स्थूलो अस्थि, सुक्ष्मस्तु मज्जा । (सु.सू-14/10 पर डल्हण)

At the time of formation of meda dhatu (fat tissue), the asthi-forming component present in its nutritive (prasada) fraction undergoes transformation by the action of asthya-agni (the metabolic fire specific to bone tissue). As a result, the gross portion of this nutritive fraction gives rise to the formation and nourishment of asthi dhatu (bone tissue).

Asthivaha Srotas

Asthivaha Srotas is the bodily channel described in Ayurveda that is responsible for nourishing and transporting Asthi Dhātu (bone tissue). Charaka identifies its roots as Majjā (bone marrow) and Snāyu (ligaments), while Sushruta points to Asthi (bones) and Sandhi (joints). This srotas is essential for preserving

bone strength, structural integrity, and healthy joint movement. When it becomes imbalanced, it can result in conditions like bone pain, joint problems, hair loss, and brittle nails or teeth. Disruption may arise from aggravated Vāta, malnutrition, or physical injury. Management involves calming Vāta, using bone-strengthening ayurvedic drugs, and therapies like basti.

Asthi Dhatu Kshaya

In Ayurveda, Asthi Dhatu Kshaya refers to depletion or pathological weakening of the Asthi Dhatu, the tissue that is responsible for the body's structural framework, including bones, teeth, nails, and hair. The term Asthi is derived from root "As + Kthin," meaning "to stay" or "to provide stability," indicating its role in maintaining physical integrity and support. According to classical texts, Asthi is one of most stable and enduring tissues, persisting even after the decay of softer tissues like Twacha (skin) and Mamsa (muscle), and is therefore considered the Sara (essence) of the body. definitions of Kshaya are 'Kshiyate anena iti Kshaya'; 'Kriya kshayakarawat tu Kshaya ityucyatebudhaihi'; 'Kshaya vyadhi visheshaha'. It means which decreases is called as

Kshaya or the kriya which causes the decrease either qualitatively or quantitatively is known as Kshaya, and together, Asthi Kshaya means the deterioration or loss of bone tissue.

Correlation of Asthi Dhatu Kshaya with Osteoporosis

In Ayurveda, *Asthi Dhatu Kshaya* refers to gradual weakening or loss of the body structural tissues — mainly bones, teeth, nails, and hairs. This concept closely resembles what modern medicine describes as osteoporosis — a condition where bones become weak, brittle, and more likely to break.

Osteoporosis is widespread skeletal disorder in which bone mass is reduced and the internal structure of bone starts to deteriorate. This will leads to fragile bones and higher risk of fractures, especially in the spine, hips, and wrists. According to Ayurveda, this is seen as the *kshaya* or depletion of Asthi Dhatu, both in quantity and also quality.

How these Two Conditions Overlap

Asthi Dhatu Kshaya (Ayurveda)	Osteoporosis (Modern Medicine)
Hair fall, brittle nails, loose teeth	Signs of poor bone health like hair thinning, and fragile nails
Looseness or weakness in joints (<i>Sandhi Shaithilya</i>)	Instability of joints, reduced bone density around joints
Bone porosity (<i>Asthi Saushirya</i>)	Porous bones seen on bone scans (DEXA)
Tendency for fractures (<i>Bhagna</i>)	Frequent fractures, especially in elderly individuals
Constant fatigue and weakness (<i>Shrama</i>)	Common complaint due to structural weakness and bone pain

Understanding the Causes

From the Ayurvedic perspective

- *Agnimandya* (weak digestion) leads to poor absorption of nutrients.
- *Vata dosha* gets aggravated — its dry, light, and rough qualities damage the bone tissue.
- Improper nourishment in the Dhatu Poshana chain leads to *Asthi Dhatu* not receiving what it needs.

From the modern medical view

- Deficiencies in calcium and vitamin D
- Hormonal changes, especially post-menopause (low estrogen levels)
- Aging, sedentary lifestyle, and poor nutrition all play major roles.

What the Classics Say

"केशलोम नखश्मश्रु द्विजपतनं श्रमः।

जेयमस्थित्क्षये लिङ्गं संधिशैथिल्यमेव च ॥

— *Charaka Samhita, Sutrasthana 17/67*

This means

Hair fall, loss of body hair, brittle nails, tooth loss, fatigue, and joint looseness are all signs of *Asthi Dhatu Kshaya*.

These match very well with the early symptoms we see in osteoporosis today.

DISCUSSION AND CONCLUSION

Looking at *Asthi Dhatu Kshaya* in Ayurveda and osteoporosis in modern medicine, it is very clear that both of the systems describe similar story—bone becoming weak, fragile, and prone to fractures as result of long-term imbalances. Ayurveda attributes this to factors like impaired digestion (*Agnimandya*), increased *Vata dosha*, and also poor lifestyle habits, while modern science points nutritional deficiencies, hormonal shifts (especially after menopause), aging, lack of physical activity. Despite the different terminologies, both agree on the gradual weakening of the bones structure and its consequences.

The Ayurvedic idea of *Asthivaha Srotas*, is rooted in *Majja* (bone marrow) and *Snayu* (ligaments), which offers a unique and holistic perspective on how bone tissue is nourished and maintained. When these channels are disturbed or disbalanced, it can lead to symptoms that mirror those of osteoporosis—joint pain, brittle nails, hair loss, and bone fragility. This Ayurvedic view adds depth to our understanding of how bone health not just a matter of minerals, but of the entire bodily system working in harmony.

Treatment in both systems ultimately aims to restore strength and balance. Ayurveda offers time-tested remedies like *Laksha Churna*, *Ashwagandha*, *Guduchi*, along with therapies like *Basti* (medicated enemas) and *Abhyanga* (oil massage), which help in nourishing bones

and calming aggravated *Vata*. These approaches can work hand in hand with modern strategies such as calcium and vitamin D supplementation, hormone therapy, and adopting a bone-friendly lifestyle.

In essence, blending Ayurvedic wisdom with modern science doesn't just offer more treatment options—it offers a more complete picture of bone health. Such an integrated approach can help in prevention, early intervention, and long-term management of conditions like osteoporosis. Ultimately, this synergy between ancient and contemporary knowledge can lead to better outcomes and improved quality of life for individuals at risk of or living with weakened bones.

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