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## Management of Rajo-nivṛtti Janya Asthi-kṣaya Asthi-Kṣaya Insights from Ayurveda on Post-Menopausal Osteoporosis

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## Management of Rajo-nivṛtti Janya Asthi-kṣaya Asthi-Kṣaya: Insights from Ayurveda on Post-Menopausal Osteoporosis

### Abstract:

**Introduction** - Rajonivṛtti signifies the natural cessation of the menstrual cycle, most often occurring at age of 50. It marks a phase of vāta predominance, During this phase, degeneration occurs, with asthi dhātu kṣaya (bone depletion) becoming particularly prominent. This condition correlates with post-menopausal osteoporosis in modern medicine, characterized by reduced bone density due to cessation of hormones like estrogen and it can lead to complication of fracture. Understanding of rajonivṛttijanya asthikṣaya by focusing on the āśrayī-āśrayabhāva between vāta and asthi - Asthi is the āśraya and vāta is the āśrayī. When the āśraya is damaged, the āśrayī is also impaired and vice versa., the role of pṛthvī, agni, and vāyumahābhūtain asthi dhātu formation, and the application of sāmānya-viśeṣa siddhānta - Sāmānya causes vṛddhi and viśeṣa causes kṣaya, in its pathogenesis and management is prime focus. This article explores understanding & management of rajonivṛtti janya asthikṣaya. **Objectives** - This article aims to understand rajo-nivṛtti janya asthi-kṣaya from āyurveda principles, explore post-menopausal osteoporosis from a modern medical perspective, correlate the two conditions, and evaluate effective āyurveda management including śamana, basti, and rasāyaṇa therapies. **Methodology**—Literary review of āyurveda point of view from different saṁhitā and modern review were studied from modern text book of gynecology and peer reviewed journals. **Conclusion** - An integrative approach incorporating internal medications, external therapies, rasāyaṇa (rejuvenation), and lifestyle modifications is presented as a safe and constitutionally aligned strategy for long-term management.

Key words: rajo-nivṛtti, asthi-kṣaya, menopause, osteoporosis

### 1. Introduction:

“Rajonivṛtti, derived from the Sanskrit terms ‘raja’[1] (menstrual blood) and ‘nivṛtti’ [2] (cessation), signifies the cessation of menstruation. According to āyurveda the natural cessation of the menstrual cycle, typically occurring around the age of 50 years, marking **the end of a woman’s** reproductive phase.[3]“As noted by Aruṇḍatta, the age of onset for Rajonivṛtti is not fixed and may vary.[4]In modern **medicine, menopause is defined as the permanent cessation of menstruation resulting from loss of ovarian follicular** activity typically occurring between 45 to 55 year of age. This follicular loss leads directly to a profound decline in the production of estrogen (primarily estradiol). Natural **menopause is recognized to have occurred after 12 consecutive months of amenorrhea, for which there is no other obvious pathological or physiological cause.** Post **menopause should be defined as** dating from **the final menstrual period,** regardless of whether **the menopause** was induced or spontaneous.[5]

## 2. Methodology:

**Literature Review:** A systemic review of Āyurveda texts such as Caraka Saṁhitā, Suśruta Saṁhitā, Aṣṭaṅghṛdaya and associated commentaries was conducted.

**Key Concepts:** Special emphasis was given to Āyurvedic principles like āśrayī-āśrayabhāva, sāmānya-viśeṣasiddhānt, mahābhūtasand Āyurvedic formulations.

**Modern Review:** Modern similarity to post-menopausal osteoporosis were also reviewed.

## 3. Review –

### 3.1 Āyurveda Review

Rajonivṛtti is a natural, physiological transition rather than a disease. It aligns with the onset of vāta kāla, leading to dhātu-kṣaya, particularly asthi dhātu.

#### 3.1.1 Role of pañchmahābhūta in asthidhātu formation

The combination of pṛthvī, agni, and vāyu forms a balanced structure, with Pṛthvī providing hardness, Agni transforming Meda (fat) into Asthi, and Vāyu guiding the movement and shaping of bone.[6] Therefore, in rajo nivṛtti janya asthikṣaya, the treatment protocol should focus on enhancing the pṛthvīmahābhūta, preventing the aggravation of vāyu, and maintaining the stability and proper functioning of agni in its designated site.

#### 3.1.2 Āśrayi-āśrayabhāva:

Asthi is the āśraya and vāta is the āśrayi.[7] When the āśrayais damaged, the āśrayi is also impaired and vice versa.[8] Vāta, when aggravated during rajonivṛtti, causes imbalance in asthi dhātu, leading to a reduction in bone density due to cessation of hormones like estrogen and increased probability of fracture.

#### 3.1.3 Dhātu kṣaya:

Human lifespan is divided into three stages: kapha predominant (childhood), Pitta predominant (youth), vāta predominant (old age). In old age, due to vāta vṛddhi and disruption in dhātu pōṣaṇa, there is a decline in the bodily tissues (rasādihātukṣaya).[9] This degeneration also manifests as a reduction in memory (smṛti), retention (dhāraṇa), physical strength (bala), and other vital functions. Since dhātu-kṣaya leads to upadhātu-kṣaya, and considering that raja is the upadhātu of rasa dhātu, rasadhātu-kṣaya consequently results in artava-kṣaya. Thus, rajo-nivṛtti is a multifactorial process influenced by kāla, svabhāva, dhātu-kṣaya etc. marking the physiological transition from the reproductive to the non-reproductive phase in a woman's life. The onset of menopause corresponds with the beginning of vāta kāla, with declining hormones and reproductive capacity, vāta doṣa aggravates, especially apānavāyu, which governs the pelvic region and reproductive functions[10] With age and vāta aggravation sarva dhātu kṣaya occurs specially asthi dhātu kṣaya manifests in symptoms like the falling of hair, body hair, nails, beard/mustache, teeth (kēśalōmanakhaśmaśrudvijaprapatanam), excessive fatigue (śramaḥ), looseness of joints (sandhiśaithilyama), [11] pain in bones (asthiśula),

dryness(raukṣyam).[12]Majjā dhātu which is present inside the asthi dhātu provides nutrition to asthi. Accordingly, along with the asthi dhātu kṣaya, majjā dhātu kṣaya found as well manifests symptoms like weak and light bone as if they are disintegrating (durbalāni ca laghūniśīryanta iva asthī), constantly afflicted by vāta disorders (pratataṁ vātarōgīṇi),[13] reduced semen (alpaṣukratā), small joint pain(parvabheda), pricking sensation in the bones(asthinistoda), and hollow (asthiśūnyatā),[14] porous bone) (sauṣiryam).[15]

### 3.1.4 Sāmānyaviśeṣasiddhant

Sāmānyaviśeṣasiddhantis a fundamental principle explaining the increase and decrease of substances in the body. Sāmānyacauses vṛddhi and viśeṣacauses kṣaya.[16]In the context of rajonivṛtti, there is a natural predominance of vāta doṣa, which is dry (rukṣa), light(laghu), cold(śita), rough (khara), minute (sūkṣam), and mobile (cala) in nature,[17]qualities opposite to those of asthi dhātu, which is rough (khara), heavy (guru), stable(sthira), and dense (sthūla), hard (kaṭhina),[18]due to this opposition vāta vṛddhi leads to asthi kṣaya during menopause.

### 3.1.5. Role of vāyu on nervous system

Sarvaśarīravayūhakara is the normal function of vāyu, which gives the body's tissues (dhātus) an appropriate structural constitution. Asthi dhātu, one of the saptadhātus, gets weakened when vāta is compromised, which causes the bone to become less dense soon after menopause. Vāyu is the leader and controller of the mind (manas), which also stimulates all of the sense organs. When vāyu is compromised, these functions are also compromised, which results in symptoms similar to menopause, such as confusion and irritability. Vāyu is root that provides joy and enthusiasm, when it gets imbalanced it leads to symptoms like lethargy, lack of energy, mood swings, depression etc. like symptoms. [19]

### 3.1.6. Role of vāyu in Agni(Digestion)

SamānaVāyu resides near the agni and wanders in whole kośtha and governs the kindling and modulation of Jatharāgni, aids in integrating food with digestive secretions and promotes proper absorption. The production and quality of all dhātus, including asthi dhātu kṣaya, diminish when Jatharāgni is vitiated in aging (Jarāvasthā). This also affects following dhātvaṅni and bhūtāgni. In menopause, natural vāta prakopa (aggravated vāyu) makes jatharāgni more unstable tending towards viśamāgni or mandāgni which promotes āma production and under-nourished dhātus. This inadequate nutrition directly manifests as asthi dhātu kṣaya, clinically paralleling low bone density and osteoporosis.[20]

## 3.2 Modern review

### 3.2.1 Physiology of menopause

Menopause occurs as a result of ovarian failure due to depletion of the follicular reserve. The average age of menopause is around 51 years, though it tends to occur earlier in smokers, in women who had intrauterine growth restriction or low weight gain in infancy, and in those with Down's syndrome. The ovaries are endowed with a finite number of germ cells, reaching their peak of about seven million follicles by 20 weeks of fetal life. From mid-gestation onwards, there is a progressive decline in the number of follicles due to atresia and apoptosis, and fewer than 0.5% of these are ever ovulated. When this follicular reserve becomes exhausted, ovarian function gradually ceases, marking the onset of menopause. As the number of follicles declines, the secretion of estradiol and inhibin falls, reducing the negative feedback on the pituitary gland. This results in a compensatory rise in follicle-stimulating hormone (FSH) and later luteinizing hormone (LH) levels. The ovary also becomes less responsive to gonadotrophins several years before the final menstrual period. During this transition, FSH levels fluctuate widely, showing both premenopausal and postmenopausal values within short intervals. Eventually, complete follicular failure occurs, and estradiol production becomes insufficient to stimulate the endometrium, leading to amenorrhea. In this stage, FSH and LH remain persistently elevated, with FSH values above 30 IU/L generally considered to be in the postmenopausal range.[21]

### 3.2.2 Symptoms & Prevalence:

Short-term symptoms of ovarian failure include, hot flushes, night sweats, mood swings, irritability, depression, lethargy, lack of energy, vaginal soreness, dysuria, dyspareunia, recurring lower urinary tract infection, and reduced libido. As a long-term complications osteoporosis, cardiovascular disorders etc. could be found.[22]

A systematic review and meta-analysis reported that approximately 71% of premenopausal women experience musculoskeletal pain (MSP), with severity increasing post-menopause.[23]

The loss of estrogen in menopause is a *viśeṣa* (specific reduction) of hormonal influence that leads to *asthi dhātu kṣaya*, *vāta vridhhi*, and subsequent bone fragility. Hence, administration of drugs and diet having *sāmānya guṇa* (i.e., similar qualities to *asthi dhātu guru*, *kaṭhina*, *sthira*, *khara*) can restore balance and support regeneration.

### 3.3 Samprapti of Rajo-nivṛtti Janya Asthi-kṣaya:

Diagram 1

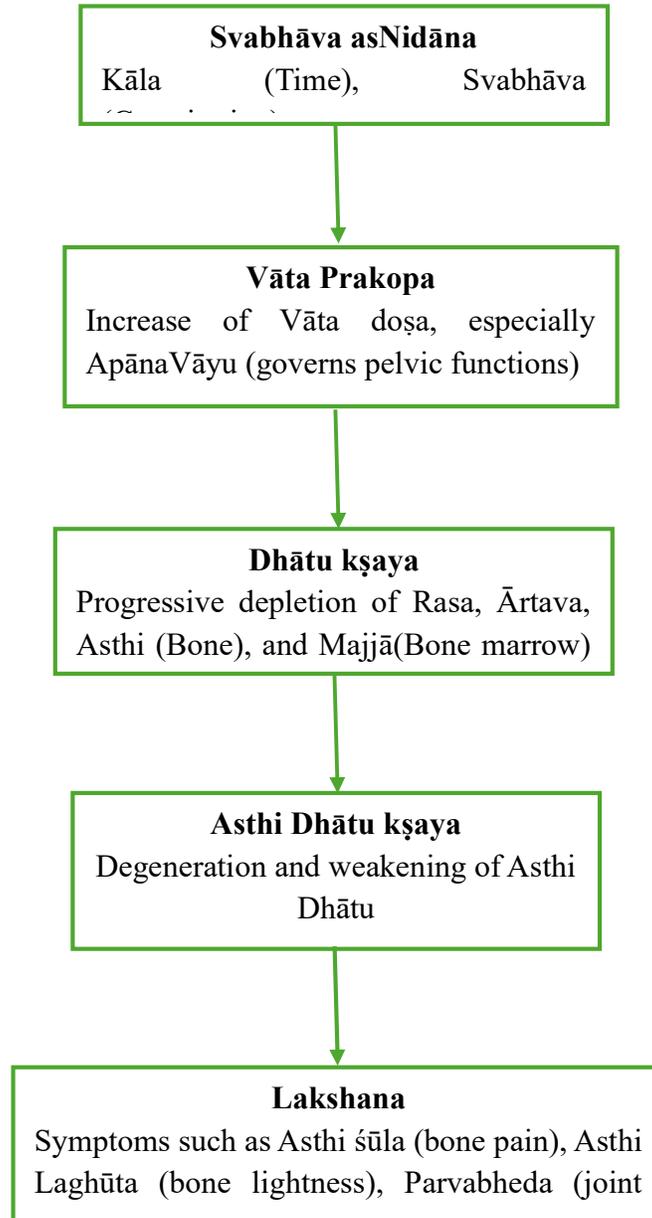
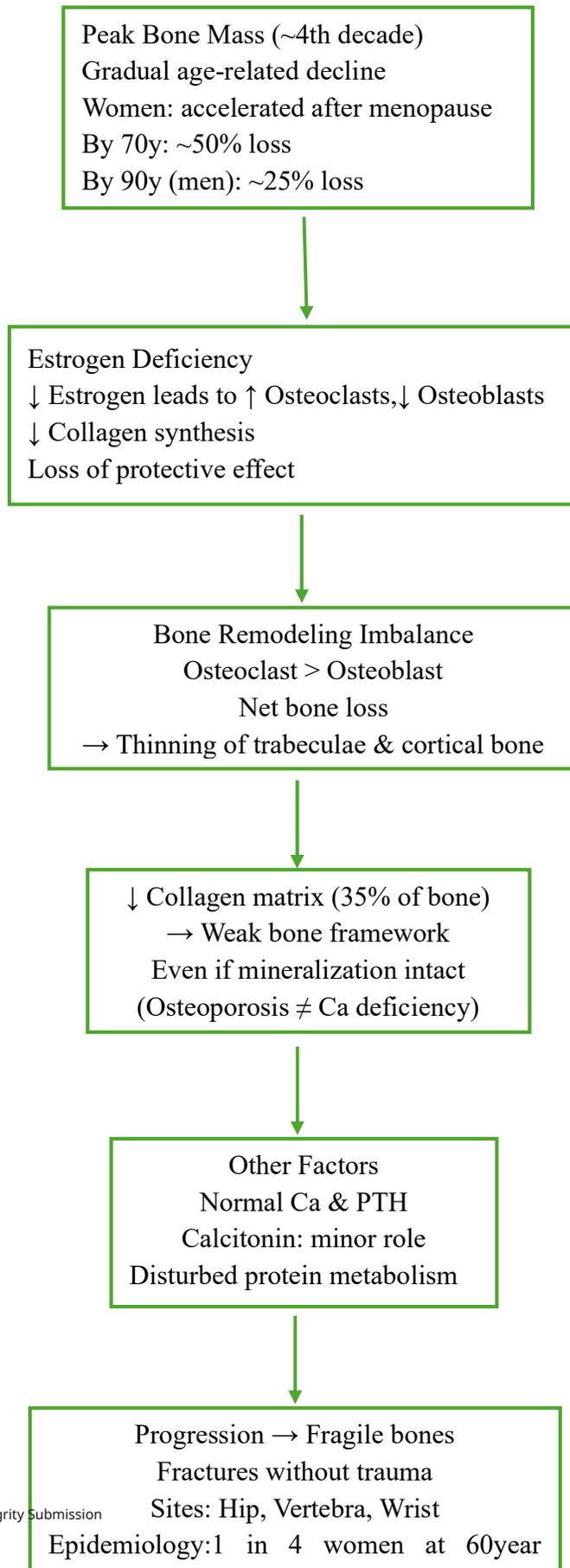


Diagram 2

### 3.4 Pathophysiology of Post-Menopausal Osteoporosis [24]



### 3.5 Management

Āyurveda treatment visualizes the human body as a single unit and this holistic approach focusing on correction at the root level. Therapeutic efforts should primarily aim at nourishing the body tissues (dhātu poṣaṇa) and sustaining life(yāpana).

#### A. Nidānaparivarjana[25]

- ✓ Excessive exercise (vyāyāma),
- ✓ Fasting or lack of food (anśanam),
- ✓ Anxiety or worry (chintā),
- ✓ Eating dry, scanty, or food having single taste (rūkṣa-alpa-pramita-āśanam),
- ✓ Exposure to wind and sunlight (vāta-ātapah),
- ✓ Fear (bhaya),
- ✓ Grief or sorrow (śokaḥ),
- ✓ Drinking alcohol (rūkṣa-pānam),
- ✓ Sleep deprivation (prajāgarah),
- ✓ Excessive loss or discharge of kapha, blood (śoṇita), semen (śukra), and other bodily wastes (malānāmativartanam) etc.

#### B. Basti

- ✓ Sodhan is indicated in bahu doṣa avasthā.[26]
- ✓ Pañcakarma therapies are highly effective. Especially basti therapy is particularly beneficial for pacifying vātadoṣa.
- ✓ The enema (basti) therapy in the management of rajo-nivṛtti janya asthi-kṣaya should be prepared using bitter (tikta) drugs combined with milk (kṣīra) and ghee (ghṛta). This unique combination is important because it balances aggravated vāta doṣa while supporting the naturally rough and dry qualities of asthi dhātu (bone tissue).[27]The use of milk and ghee with bitter drugs ensures that the formulation possesses the necessary qualities to nourish and strengthen the bones while pacifying vāta. Such a basti therapy supports both symptomatic relief and tissue regeneration, making it an effective therapeutic approach in post-menopausal osteoporosis.

#### C. Śamana

- ✓ In both vātavṛddhi and asthi-kṣaya, brīmhaṇa auśadha should be administered.[28] Accordingly management should be based on sāmānyasiddhānt, i.e., using dravya and therapies having similar properties to asthi dhātu such as unctuous (snigdha), heavy (guru), and stable (sthira) to nourish and rebuild the bone tissue.[29]
- ✓ Use of asthi vardhakaekaldravyaor with combination such as aśvagandhā, śatāvarī, guḍucī, lakṣa, asthiśṛṅkhalā, etc. can be useful.

#### D. Formulations:

- ✓ **Lākṣādiguggulu&muktāśuktipiṣṭi**[30] - Lākṣādiguggulu, with ingredients like lākṣā, asthiśṛṅkhalā, arjuna, aśvagandhā, nāgabalā and guggulu, provides these sāmānya guṇa to the depleted asthi dhātu, thereby promoting its regeneration.
- ✓ Lākṣādiguggulu, a polyherbal formulation, and muktāśuktipiṣṭi, a natural marine calcium supplement, have shown promising results in improving bone density and relieving symptoms of asthikṣaya in osteoporotic patients. In a clinical study, significant reduction in symptoms like kaṭiśūla (low back pain), bhrama (vertigo), timirdarśana (blackouts), and increased vyāyāmaśakti was observed, indicating the strengthening effect on asthi dhātu.[31]
- ✓ **Pravālpāñchāmṛta**—Pravālpāñchāmṛtarasa is a classical herbomineral formulation containing pravāl, muktā, śankha, śukti, and kapardikābhasma, processed with arkakṣīra. It is rich in natural calcium and acts as a pittahara rasāyaṇa, making it highly beneficial in rajonivṛtti janya asthikṣaya (post-menopausal osteoporosis). It helps relieve symptoms like kaṭiśūla (low back pain), bhrama (giddiness), and dhātu-kṣaya related debility, while improving bone strength through its calcium-replenishing and rasāyaṇa actions. This formulation represents the therapeutic application of sāmānya to correct the viśeṣa-induced kṣaya of bone tissue.[32]
- ✓ **DaśamūlaKvātha**- This classical formulation serves as a potent vātaśāmaka and analgesic (śūla-hara) anti-inflammatory (śoṭh-hara) action. Comprised of ten roots (five each from bṛhatpāñcamūla and laghupāñcamūla), it alleviates musculoskeletal stiffness, reduces bone and joint pain, and improves mobility. While not directly nourishing asthi dhātu, its rukṣa, guru, and uṣṇa guṇa counteract the rūkṣa, laghu and śīta properties of aggravated vāta, thereby preventing further dhātu kṣaya. It can be administered internally or used externally (as daśamūlatailaabhyāṅga) for symptomatic relief in osteoporosis-related conditions. Its dīpana-pācana action also enhances dhātu agni and supports better tissue assimilation when used along with dhātu poṣaka medicines. Similarly classical formulations such as mahārasnādikvātha, rāsnāsaptakakvātha etc. exert comparable actions to daśamūlakvātha.
- ✓ **Kirātatiktādikvātha and guḍūcyādikvātha** - Though classically indicated in viṣama-jvara, their site of action being asthi and majjāre respectively provides a rational basis for their use in conditions involving degeneration of these dhātu. Kirātatiktādikvātha, mentioned in tṛṭiyakajvara, includes ingredients such as kirātatikta (*Swertia chirata*), guḍūcī (*Tinospora cordifolia*), candana (*Santalum album*), and śuṅṭhī (*Zingiber officinale*). This formulation, owing to its tikta rasa, laghu-rūkṣa guṇa, and uṣṇa vīrya, pacifies aggravated vāta and pitta, particularly acting on the asthi-vaha srotas. It improves agni at the dhātu level through its dīpana and āma-pācana properties, thereby aiding in asthi dhātu-poṣaṇa. Additionally, the antioxidant and anti-inflammatory actions of guḍūcī and kirātatikta help in preventing oxidative damage to bone tissues, while candana reduces inflammation and śuṅṭhī acts as a natural vedanā-sthāpana, providing symptomatic relief in osteoporotic pain. Similarly, guḍūcyādikvātha, indicated in

caturthakajvarawith majjāas the affected dhātu, comprises guḍūcī, āmalakī (*Embllica officinalis*), and muṣṭa (*Cyperus rotundus*). The rasāyaṇa properties of guḍūcī and āmalakī strengthen and rejuvenate both asthi and majjādhātu, promoting structural regeneration, while musta supports agni, reduces tridoṣaduṣṭi, and clears srotorodha, thus enhancing nutrient delivery to deeper tissues. Together, these formulations offer a comprehensive approach in managing rajonivṛtti janya asthikṣaya by addressing both the symptomatic and structural components of bone loss.

- ✓ **Rasayana therapy for tissue rejuvenation-** In the context of rajonivṛtti janya asthikṣaya, where vāta aggravation leads to degeneration of asthi and majjā dhātu, the use of rasāyaṇa and vāta-pitta śamakadravya plays a vital role in dhātu poṣaṇa. Therapeutic efforts should primarily aim at nourishing the body tissues (dhātu poṣana) and sustaining life (yāpana). Drugs like aśvagandhā, śatavarī, śunṭhī, āmalakī etc. are commonly used due to their strengthening (balya), vāta pacifying (vātashāmaka), and rejuvenative (rasāyana) properties. These rasāyanas enhance agni, promote tissue nourishment, and improve hormonal balance, thereby supporting bone regeneration and mitigating degenerative changes associated with post-menopausal osteoporosis.
- ✓ **Modern management**[33] -

Nutrition	Calcium, Vitamin D, Protein
Exercise	Weight-bearing, resistance, balance
Medications	Bisphosphonates, Denosumab, Calcitonin, SERMs, bezodoxifene, Clonidine, Teriparatide, Estrogen, Hormone replacement therapy etc.
Lifestyle	Stop smoking, limit alcohol, fall prevention
Monitoring	DEXA scan, biochemical markers
Fracture care	Surgery + rehabilitation

#### 4. Discussion:

The management of rajonivṛtti janya asthikṣaya requires a multidimensional approach rooted in classical āyurveda principles. Central to this is āśrayī-āśrayabhāva siddhānta, wherein vāta (āśrayī doṣa) is naturally situated in asthi dhātu (āśraya). Degeneration of the āśraya weakens its structural integrity, leading to vāta prakopa, which further accelerates the degeneration process, a pathological feedback loop central to osteoporosis. In this context, basti therapy using tiktadravyas combined with kṣīra and ghṛta serves as a foundational intervention. Although tikta rasa is inherently vāta-provoking, its combination with snigdha substances modifies its effect, allowing simultaneous vāta pacification and asthi dhātu support. The classical logic behind this lies in compensating for the lack of a single substance that is both snigdha and ṣoṣaṇa. Accordingly, the treatment is prescribed using milk and ghee combined with bitter drugs, and basti with similar combinations because milk and ghee, when mixed with bitter substances, take on a quality resembling the natural roughness of bone. Formulations like daśamūlakvātha, mahārasnādikvātha, and rāsnāsaptakakvātha, though not directly rasāyaṇa or asthi-var dhaka, plays a regulatory role by pacifying vāta and relieving inflammation. By stabilizing the āśrayī

doṣa, they indirectly helps to restore the functional capacity of asthi dhātu, thereby offering structural support in osteodegenerative disorders. A crucial yet often underemphasized factor in such degeneration is agni, particularly dhātvāgni. With the onset of rajonivṛtti, not only does jāṭharāgni often decline due to aging and hormonal shifts, but the downstream asthidhātvāgniis also weakened. This impairs the proper transformation and nourishment of successive dhātu, especially asthi and majjā. As a result, āma accumulates, causing srotorodha and further disrupting the nourishment cycle. Formulations like kirātatiktādikvātha and guḍūcyādikvātha support agnidīpana and āmapācana at the dhātu level while targeting specific tissues, asthi and majjā respectively. This dhātu specific site action, combined with immunomodulatory and anti-inflammatory properties, makes them rational therapeutic choices even though they are not classically asthivardhaka. The sāmānyaviśeṣa siddhānta provides additional logic for formulation selection. Substances like lākṣādiguggulu, pravālapañcamṛta rasa, and muktāsuktiṣṭi exhibit guṇas similar to asthi dhatu - namely guru, khara, and sthira. According to the dictum “sāmānyamvṛddhikāraṇam,” such substances support dhātu regeneration. Lakṣādiguggulu, with its asthisandhānīya and balyadrugs, strengthens the bone matrix. Muktaśukti, being rich in bioavailable calcium and possessing asthisāmānya guṇa, directly replenish mineral loss while promoting structural integrity. These formulations are particularly valuable in countering viśeṣainduced degeneration caused by vāta prakopa and hormonerelated guṇa kṣaya. Adjunct therapies like abhyanga with mahānārāyaṇataila, a kṣīra-ghṛta-based diet, and rasāyaṇa drugs such as aśvagandhā and śatāvarī further aid by strengthening agni, supporting dhātu formation, and calming vāta.

Thus, the āyurvedic management of rajonivṛtti janya asthikṣaya is not merely focused on symptomatic relief or calcium replacement. It is a siddhānta based approach that balances the doṣa-dhātu-agni-srotas axis, using both āśrayī-āśraya and sāmānya-viśeṣa principles to restore internal homeostasis. The tailored application of classical formulations, combined with dietary and lifestyle protocols, offers a constitutionally aligned and sustainable pathway for managing degenerative bone disorders in post-menopausal women.

### Conclusion:

Rajonivṛtti janya asthikṣaya, correlated with post-menopausal osteoporosis, results from dhātu kṣaya and vāta aggravation. Āyurveda management, based on principles like āśrayīāśrayabhāva and sāmānyaviśeṣa siddhānta, emphasizes restoring doṣadhātu balance, strengthening agni, and supporting tissue regeneration. An integrative approach combining āyurvedic treatments like basti, easāyana therapy, and lifestyle modifications with modern osteoporosis treatments can provide holistic support and bone regeneration. **Future research should focus on clinical studies to validate the āyurvedic approach in managing post-menopausal osteoporosis and its integration with modern medical practices.**

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