

REVIEW ARTICLE ON THE CLINICAL EFFECT OF SHATAVARI TAILA NASYA IN THE MANAGEMENT OF POST MENOPAUSAL OSTEOPOROSIS

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ABSTRACT

According to WHO, “Osteoporosis is defined as the progressive systemic skeletal disease, characterized by low bone mass and architectural deterioration of bone tissue, with a consequent increase in bone fragility cause imbalance in bone resorption and remodelling which leads to accelerated bone loss due to low estrogen levels”.^[1] Reduced production of estradiol, the most active form of estrogen as well as increased levels of FSH and decreased levels of inhibin are observed in menopause. According to *Ayurveda*, Osteoporosis is clinically considered under *Asthikshaya* and Menopause is described as *Rajonivrutti*. According to *Acharya Sushruta* it can be considered under *Swabhav Pravritta Vyadhi*. *Asthikshaya* is the one described by *Acharya Charak* under 18 types of *kshaya* in which there is *kshaya of Asthi Dhatu*.^[2] *Shatavari* has long been used as an *Ayurvedic* herb for women’s health due to its estogenic properties.^[3] Here the considered

route of drug administration is nose, according to the contextual reference, nose is considered as a passage to brain. In the treatment regarding estradiol deficiency *Nasya Karma* is being suggested. As *Acharya Charak* has mentioned that “*Nasa Hi Shiraso Dwaram*” So,^[4] in this therapy drug is being administered through nose either in the form of Ghee, Oil, Liquid, Powder or Smoke. *Acharya Charak* has also mentioned five types of *Nasya Karma Navana, Avapeedan, Dhamapan, Dhuma, Pratimarsha*. Here, *Shatavari Taila Nasya Karma* is being considered under *Navana Nasya*.

KEYWORDS: Asthikshaya, Osteoporosis, Shatavari Taila Nasya, Nasya Karmass.

INTRODUCTION

Menopause is the natural end of fertility and occurs 12 months after your last menstrual period. Menopause can cause hormonal changes and other such factors that can lead to other symptoms. Hormonal therapies and lifestyle changes can help in manage these symptoms. Around the time of menopause females experience physical symptoms such as hot flushes, night sweat, vaginal dryness, and a reduced sex drive. Further it can lead to mood swings, anxiety, and a reduced bone health.

In *Ayurveda* Menopause is depicted as *Jarapakwa avastha* and *Rajonivrutti*. *Rajonivrutti janya lakshan* is a group of symptoms produced by degenerative changes in the body.^[5] Drugs having *Rasayana*, *Deepan*, *Pachana*, *Medhya*, *Balya*, *Vayasthapana* properties help in *dhatukshayajanya lakshana* pacification. Despite the fact that menopause is a physiological process in women, it is transforming into a significant medical condition deteriorating the whole world. As the life span of population is increasing due to developed medical facilities there is increased cases reported of this issue. *Ayurvedic* literatures has seen menopause as characteristic wonder in women as *Rajonivrutti*. Women having menopause are assigned as “*Nishphala*” “*Gatartava*” and it has been seen as beginning of *Vridhnavastha*.^[6] This is the stage of life when female body starts for confronting the scars of maturing and menopause. The changes in the women’s body at any stage are credited to hormonal levels.

According to *Ayurveda*, aging is a constant, irreversible, unstoppable, and natural physiological process. It is considered to be the most crucial time period of life as the physical strength in this period declines gradually. The joints are deeply affected by the quality of the bone tissue (*asthi dhatu*), but in *Ayurveda*, the joints also share an important connection with the nervous tissue (*majja dhatu*) and the nervous system as a whole.

As contextual reference suggests

ETYMOLOGY

1. ARUNDATTA- sushiryam asthanam

2. HEMADRI- sushiryam sarandharatwam (A.Hr.Su 11/19, A.Hr.Su.12/50).^[7]

That means *Saushirya of Sthayi Asthi Dhatu* in which the *Asthi* becomes porous.

(*Sarandhra*)^[8]

LAKSHAN OF ASTHI MAJJA KSHAYA

1. Charak Samhita explained

Asthi Kshaya as: describes as falling of *kesh*, *loma*, *smashru*, *nakha*, *sandhi shaithilya*, etc.

Majja Kshaya as: Degeneration of *asthi dhatu*, increase in the porosity of *asthi dhatu*, will be prone to become *vata rogi*.

2. Sushruta Samhita explained^[9]

Asthi kshaya as: *Asthi dhatu kshaya* will result in *asthishool*, breaking of nails, teeth, increase in dryness in the body.

Majja kshaya as: Decrease in the *shukra dhatu*, *parvabhed*(pain in small joints), *asthi nistoda*(pain in bones), *asthi shunyata*(porous bones).

3. Acharya Vagbhata explained^[10]

Asthi kshaya as: *Asthi nistod* (pain in bones), falling of dant, nakh and kesh.

4. Majja Kshaya as: *Asthi soushiryata* (increase in porosity of bones), *bhrama*(vertigo), *timir darshan* (darkness in front of eyes).

- **Chikitsa:** Acharya Sushrut explained that the use of *swayoni vardhak Dravya*(similar quality containing drugs) will enhance the good quality of bony constituents.

Vata vriddhi lakshan: *Vata vriddhi* causes *vaak parushyam*(hardness of voice), *karshaym* (thinning of the body), *karshanyam* (darkening of skin complexion), *gatrashfuranam* (feeling of palpitation), *ushnakamita*(want to have warm substances), *nidranash*(loss of sleep), *alpabaltvam* (loss of bodily strength), *gaadvarchsvam* (hardstool).

Krishata rog chikitsa:.....Acharya Sushrut defined the treatment with the use *Payasya*, *Ashwagandha*, *Vidarigandha*, *Shatavari*, *Bala*, *Atibala*, *Nagabala*,...etc *madhur dravya*, *Ksheer*, *Dadhi*, *ghrita*, *mansa*, *shali shashtika*, *yava*, *godhuma*, *divaswapa*, *brimhacharya*, *vyayam*, *brimhana basti*,etc.

3. Bhavprakash^[11]: defined that external and internal use of *Sneha* will be useful in the treatment of *asthi majja gata vyadhi*.

Which means that *Asthi* (bony tissue) undergoes decrease, there is falling of hairs of the head and body, nails, mustaches and teeth exhaustion and loosening of joints. *Asthi* becomes weak

and light in weight, as well as there is feeling of bones being broken down. Diseases of *Vata Dosha* always affect such a person. The stage of *Asthi Saushirya* arises in age beyond 60 to 70 years when there is maximum loss of all *Dhatus*.

Osteoporosis is a silent disease because there is no symptoms initially. Affected bones become so fragile that fractures occur spontaneously or as a result of, minor falls, normal stress such as bending, lifting, or even coughing. In Osteoporosis the rate of bone resorption accelerates that of bone formation.

Factors that increase your risk of Osteoporosis include.

Age: especially after the age of 70 years.

Sex: females are at higher risk than men.

Body Size: slender, thin-boned women and men are at higher risk.

Race: white and Asian women are at higher risk.

Family History: increased risk of developing Osteoporosis if your parents has a history of Osteoporosis.

Changes to hormones: low levels of certain hormones can increase your chances of developing osteoporosis. For example: Low Estrogen levels, Low Testosterone in males.

Diet: from childhood to old age, a diet low calcium and vitamin D can increase the risk.

Excessive dieting or poor protein intake may increase your for bone loss and Osteoporosis.

Other medical conditions: hormonal diseases, gastrointestinal diseases, rheumatoid arthritis, certain types of cancers, HIV/AIDS, and anorexia nervosa.

Medications: long-term use of certain medicines such as- Glucocorticoids, and adrenocorticotrophic hormone, antiepileptic medicines, cancer medications, proton pump inhibitors, SSRIs(selective serotonin reuptake inhibitors), thiazolidinediones.

Lifestyle: Low physical activity, prolonged period of inactivity, chronic heavy drinking of alcohol, smoking, tobacco chewing.

As a result, these factors are responsible for bone loss. Osteoporosis may be primary and secondary. Primary Osteoporosis is due to aging and natural menopause in women. Osteoporosis caused by or worsened by other disorders or medication exposures is referred as Secondary Osteoporosis. Bone Mineral Density is the most important tool for the diagnosis of osteoporosis.

BONE MINERAL DENSITY (W.H.O criteria for Osteoporosis)^[12]: As per this criteria, T-score value determines the bone health. It is graded as follows.

T-SCORE

Normal	=	-1 & above
Osteopenia	=	between -1 to -2.5
Osteoporosis	=	less than or equal to -2.5
Severe Osteoporosis	=	less than -2.5 with fracture

DIAGNOSIS AS PER MODERN MEDICINE IN POSTMENOPAUSAL OSTEOPOROSIS

Bone Densitometry: Indicated in

1. Premenopausal women with a long term steroid therapy, primary or secondary amenorrhoea, post oophorectomy, organ transplantation.
2. Postmenopausal women who are not on estrogen therapy, vertebral or hip fracture.
3. Men with unexplained fractures, hypogonadism and history of recurrent falls.

In *Ayurveda*, *Shatavari* (*Asparagus racemosus*) a herb has been widely used in the management of bone density loss.^[18] *Shatavari* predominantly balances *pitta dosha* followed by *vata dosha*. *Pitta dosha* is the biological energy responsible for digestion and balancing or regulating all metabolic and hormonal activities in the human body. *Shatavari* contains phytoestrogens, compounds known for their estrogen-like effects, which play a crucial role in alleviating the discomfort associated with menopause. *Steroid saponins*, *Shatavarins*, are the principle bioactive constituents of *shatavari root*. The traditional use of *Shatavari* suggests potential benefits in managing women's hormonal disorders. As it has been seen in earlier researches that *Shatavari* helps in the regulation of HPO-Axis in pre and post menopausal women.

HPO-AXIS: Hypothalamic-Pituitary-Ovarian Axis^[13]

This axis allows cyclic production of gonadotropic hormones (luteinizing hormone and follicle stimulating hormone,) and steroid hormones (testosterone, estradiol, progesterone, cortisol, aldosterone). This cycle is regulated to select a dominant follicle for ovulation, meanwhile priming the endometrium for implantation. Dysfunction in the regulation of this cycle leads to ovarian disorders can be classified into three categories defined by WHO.

1. Ovulation disorders
2. Eugonadal state
3. Hypergonadotropic hypogonadism

HPG, HPA and HPT axis are the three pathways in which hypothalamus and pituitary direct neuroendocrine functions.

Modern Treatment includes

It is often based on an estimate of bone density. Treatment might not include medication and might focus instead on modifying risk factors for bone loss and falls.

Biphosphonates (alendronate, risedronate, ibandronate, zoledronic acid)

Hormone-Related Therapy (raloxifene, that mimics estrogen's beneficial effects on bone density in postmenopausal effects)

Bone-Building Medicines (teriparatide, abaloparatide, romosozumab)

Ayurvedic Treatment Involves

• **Chikitsa**: According to *Acharya Sushruta in Sutrasthan(15/13)*

Swayonivardhak Dravya means the drugs that will help in pacifying *vridhdha vata dosha*, by balancing the same properties as of *asthi-majja dhatu*.

As it works on the principle: *Sarvada sarvabhavanam samanyam vridddhi karanam (charak sutra1)*.

Nasya Karma (transmucosal nasal insufflation) is a natural route for delivering rejuvenating substances to the brain in the form of *ghee*, oil, powder, paste preparation. This therapy may be helpful to the women to enter in menopausal phase. Changes in the female body at any time occurs due to the changes in the levels of hormones. *Ashtang Ayurveda* involves *Urdhvang chikitsa* as one of the important branch. *Nasya Karma* is the main therapeutic measure for *Urdhvajatrugata roga*. *Acharya Charak* has used the term "*Nastah Prachhardana*" for *Nasya*, which denotes *Shodhana Chikitsa*.^[12]

IMPORTANCE OF NASYA

- Best method to eliminate and alleviate the vitiated *Doshas of Urdhwanga*
- Only *Shodhana* procedure for *Uttmang Shuddhi*
- Better chances of absorption through blood vessels.

NASYA IN MENOPAUSE^[14]: It is particularly useful in the treatment of diseases occurring in the organs situated above the clavicle but indirectly, it works on the whole body by improving the functioning of the endocrine glands and nervous system. *Nasa* is said to be the

main doorway to *Shira*. *Nasya aushadhi* reaches to brain via nasal route and acts on higher centers of brain controlling different neurological, endocrinal and circulatory functions and thus showing local as well as systemic effects. This administration of drugs through nasal route opens a new hope for the both local and systemic drug administration. So here a review is presented on the mode of action of *Nasya Karma* according to *Ayurveda* and modern science.

MATERIAL AND METHODS

- Review of clinical studies on *rajonivrutti awastha* with special reference to menopausal syndrome^[15]: Menopausal symptoms are alarming call to more sincere attention to elderly women's health. As lifespan is increased with developed medical facilities, women are living around 30 years in postmenopausal state with all the complaints of menopause and geriatrics. In *Ayurveda*, menopause is depicted as "*jarapakwa avastha*" and *rajonivrutti*. *Rajonivrutti janya lakshana* is a group of symptoms produced by degenerative changes in the body. Degenerative changes are *dhatukshaya lakshana* in *Ayurveda*. *Vata dosha* is dominant in the *vridhha* stage of life. Symptoms in menopausal phase like insomnia, anxiety, urinary symptoms, and osteoporotic changes are due to dominance of *vata dosha*. Along with that *pitta dosha* symptoms like hot flushes, irritability, etc are seen, during this phase. Thus, review and compilation of the work done at Institute for Post Graduate Teaching And Research in *Ayurveda*, Jamnagar on the topic was done to help future researchers to fulfil the lacunae and develop standard ayurvedic treatment protocol. The research work conducted on *rajonivrutti avastha and its vyapada* were collected and reviewed from *Ayurvedic* research data base, Jamnagar, Jamnagar Central Library and Department of *Prasuti tantra and Stree roga*, Jamnagar. Total 15 research works were conducted. Drugs having *rasayana*, *deepana*, *pachana*, *medhya*, *balya*, *vayasthapana* help in *dhatukshaya janya lakshana* pacification, *vata- pitta doshahar*, *shrotoshodhana*, and the process of formation of *dhatu* is benefited and ultimately resulting into delay aging process and related complications. Menopausal syndrome can be well managed by ayurvedic treatment.

- Concept Of *Nasya* According To *Ayurveda* And Modern Science^[15]

Nasya is the *shodhan* procedure which can perform *Uttamanga shudhi*. Administration of the medicine through Nasal route is known as *Nasya*. *Nasa* is the root for head, the diseases related to head is best treated by this procedure. *Nasya* is divided into five types according to method of administration i.e., *Navana*, *Avapidana*, *Dhmapana*, *Dhuma*, *Pratimarsha*. The

procedure of giving *Nasya* therapy may be classified into the following three headings: *Purvakarma* (Pre-measures), *Pradhanakarma* (*Nasya* therapy) and *Paschatkarma* (Post measures). *Nasa* is the gate way to *Shirah*, the drug administered through nostrils reaches *Shringataka*, a *Siramarma* by *Nasa Srota* and spreads in the *Murdha* (Brain), taking routes of *Netra* (Eyes), *Shrotra* (Ears), *Kantha* (Throat) and stretches the morbid *Doshas* from *Urdhwajatru* and expels them from *Uttamanga*.

- *Ayurveda* Medicinal Plants For *Asthiḡshaya* (Osteoporosis): A Review^[16]

Ayurveda is an ancient science of life deals with the preventive as well as curative aspect. The function of *dhatu* is *dharāṇa* (maintain the structure) of the *sharira* (body). Among the *dhatu*, *asthi dhatu* is responsible for maintenance of structural frame work of the body. It gives shape to the body and protects the vital organs. Concept of osteoporosis has explained under 18 types of *ḡshaya* by *Acharya Carakain sutra sthan kiyantahshirasiya adhyaya*. *Asthiḡshaya* pathogenesis can be explained in many ways in *Ayurveda*. According to the principles of *ashrayaashrayibhava*, *asthidhatu* is the seat of *vata doṣa* and inversely related to each other. Increase of *vata* is the main factor responsible for *asthiḡshaya*. *Acharya Caraka* has opined increase of *vata* may follow two patterns; one is from *margavarāṇa* and another is from *dhatuḡshaya* which can further lead to *asthiḡshaya*. Osteoporosis or porous bone is a global problem characterized by low bone mass and structural deterioration of bone tissue, leading to bone fragility and an increased risk of fractures of the hip, spine and wrist. Men as well as women are affected by osteoporosis but females are at higher risk. This risk even increases at the time of menopause, which is the period of hormonal imbalance. Treatment available in modern science is mainly symptomatic and not devoid of adverse effects. *Ayurveda* treatment visualizes the human body as a single unit and this approach has opened many innovative approaches for treatment. On this background present study was taken to analyze the fundamental concept of *asthiḡshaya* and to find out single herbs beneficial for it. Drugs from classical texts along with commonly used in practice have been analyzed in context of *asthiḡshaya*. Study reveals that drugs like *guduchi*, *ashwagandha*, *prishnaparni*, *samanga*, *vacha* etc. possess *kaphavatashamak* properties which helps in breaking the pathogenesis by clearing and nourishing the *srotas* (channels). Drugs like *madhuyasti*, *priyangu*, *vidarikanda*, *shatavari* etc. have *vatapittashamak*, *balya* (tonic), *brimhan* (nourishing) properties works directly on *dhatuḡshaya*.

RESULTS

Shatavari Taila was given in both the nostrils (6-6) drops each. The patient was relieved in her pre and postmenopausal symptoms as hot flushes, irritability, mood swings, emotional disturbances, and physical disabilities. *Shatavari Taila* worked as *Vatashamak* and *Kaphavardhak* rejuvenating agent to the female's body. Estrogen like substances found in *Shatavari* helped out in alleviating hormonal imbalances too. The role of *Shringataka Marma* is also being seen in *Nasya Karma* as presented below.

DISCUSSION

Ashtikshaya is the most common disabling disease in present time. It's prevalence is at peak in people of age group above 40-50years. Peak bone mass is attained by the age age of 25-30 years. Analysis in the textual references regarding causative factors of *asthikshaya* discloses fact that *Vatavikara*. During menopause *Shatavari* plays an important role in managing a female's physical, psychological health. As *Shatavari* regulates hormonal metabolism via working on HPO-Axis. During this phase a *Shatavari* helps in increasing bone resorption and balancing all metabolic and hormonal activities in the human body. As studies have shown that *Shatavari* contains phytoestrogens, a estrogen like compound known for their crucial role in alleviating discomfort associated with menopause. *Shatavarins* are the principal bioactive constituents found in roots of *Shatavari*. In this review *Shatavari Taila* is being given in both the nostrils (6-6 drops) each in early morning. The rejuvenating substances present in the *Shatavari* will reach out to brain via natural route. A clear description regarding mode of action of *Nasya Karma* is not given in the classical texts. *Acharya Charak* has described that *Nasa* is the only gateway to *Shirah*.(Ch.Si.9/88). So, the medicine administered through *Nasa* can be absorbed easily. *Indu*, the commentator of *Ashtang Samgraha* mentioned that *Shringataka Marma* is situated in the middle of head. The role of *Shringataka Marma* in the *Urdhwanga Chikitsa* can be presented as.

FACTS ABOUT SHRINGATAKA MARMA

FACTS	INTERPRETATION
<i>Shringataka</i> is joining column of <i>jihwa, ghrana, netra, and srotas</i> (Su. Sha 6/27)	Confirms the influence of <i>Nasya Karma</i> on senses.
<i>Shringataka</i> is a <i>Sadya Pranhara Marma</i>	Proper stimulus can cause desired effect suddenly
<i>Shringataka</i> is a <i>Siramarma</i>	Through these <i>Nasya</i> rejuvenating substances will be easily absorbed in vascular circulation.

So, according to *Ayurveda* assimilation and transportation of *Nasya* drug take place through *Shringataka Marma* and reaches to local as well as general circulation.

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