

Adolescence — Stan Vruddhi and Macromastia: Ayurvedic and Modern Clinical Perspectives with Special Reference to Cosmetic Concerns

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Abstract: *Adolescence is a period of rapid somatic and hormonal change; breast development is a key pubertal milestone¹. Excessive breast growth in adolescence — termed juvenile macromastia or gigantomastia — can cause physical discomfort, psychological distress, and cosmetic concerns². Ayurveda describes breast disorders (stana-roga) including conditions of abnormal enlargement (stana-vruddhi) in classical texts³. Modern clinical practice defines macromastia and gigantomastia, investigates endocrine and idiopathic causes, and manages patients with conservative measures and reduction mammoplasty when indicated². This article reviews Ayurvedic concepts and modern clinical evidence, integrating both perspectives*

Keywords: Adolescence; Stan Vruddhi; Macromastia; Juvenile Gigantomastia; Breast Hypertrophy; Ayurveda; Adolescent Breast Disorders; Cosmetic Concerns; Reduction Mammoplasty; Pubertal Breast Development

I. INTRODUCTION

Breast development (thelarche) begins during early adolescence and progresses through Tanner stages¹. In some adolescents, breast growth becomes excessive, leading to pain, posture problems, and cosmetic issues². Juvenile macromastia (gigantomastia when massive) is rare but clinically significant⁴. Acharya Sushruta notes that *Stana Roga* is rare in young or nulliparous women because their breast Dhamanis remain constricted, preventing Dosha spread; however, during pregnancy and the puerperal period, these channels naturally dilate, making breast disorders more likely.³

II. REVIEW OF LITERATURE

REVIEW OF STANA/STANYASHAYA

The description regarding “Stanyashaya” is available in ancient classics but, it’s in scattered manner and not much focused on its clinical importance. Hence, the collection and critical review of information regarding Stanyashaya becomes significant to unravel and accumulate the hidden scientific information about Stanyashaya in different sources. Acharya Sharangdhara has mentioned about Stanyashaya in “Kaladikaakhyana Adhyaya”⁵ In Bhavaprakasha Purva Khanda, 3rd chapter “Garbhaprakaranam Adhyaya” description of Saptashaya along with Stanyashaya⁶. The word Stanyashaya consists of two words, Stanya and Aashaya. The meaning of word Aashaya can consider as Adhishtana (Place)². So, Stanyashaya can be understood as the Adhishtana of Stanya.

In the context of Aashaya, Acharya Ghanekar commenting on Sharangdhara’s opinion on Stanyashaya mentions that Stana is available in both male and female, but it is termed as Stanyashaya only in female, because modification of Stana occurs during puberty and pregnancy in female and during this period, there will be enlargement of lactiferous ducts also.



Development of Stana

In Astanga Samgraha Samhita, it is told that there is presence of Beejabhaga avayava of Stana in female child but it is not visible until puberty⁷.

Stana poshan and vrudhhi

Acharya susruta quoted that Sukra is manifested with the maturity of age in females. It is characterized by the menarche, appearance of line of hair (secondary sexual characters) as well as development of Stana, Garbhashaya and Yoni⁸.

Stana Sampata

The detail and scientific description of “Stana Sampata” is available in Charaka Samhita. The Stana which is not highly positioned, not having too much length, should have proper plumpness, nipples should be in appropriate location and with this only baby is able to suck the Stanya. So, such Stana is said to be as excellent⁹.

Stana Roga

Acharya Suśruta provides a detailed account of the etiological factors of Stana Roga in *Nidāna Sthāna*. He states that in women who have never conceived and in young girls, the Stanagata Dhamanīs remain naturally constricted, preventing the movement of Doṣas; therefore, breast disorders are rarely seen in this group. In contrast, during pregnancy and the puerperal period, physiological dilation of the openings of the breast Dhamanīs facilitates the movement of Doṣas, making these women more prone to developing breast diseases¹¹.

The vitiated Doṣas—arising either from their specific causative factors or from general causes described for Vidradhi (abscess)—reach the breast region of both lactating and non-lactating women, vitiating Rakta and Māṃsa, and producing firm swellings corresponding to the five types of external abscesses: Vātaja, Pittaja, Kaphaja, Sannipātaja, and Raktaja¹¹.

Dalhaṇa further clarifies that when breast milk is not properly expressed from an engorged mammary gland, it can itself become a causative factor. The stagnated milk vitiates the Doṣas in situ and initiates the formation of Stana Rogas¹¹.

Macromastia

Macromastia is defined as excessive breast hypertrophy causing functional impairment such as neck pain, back pain, shoulder grooving, or significant psychosocial distress in adolescents and adults⁽¹²⁾. Gigantomastia is its extreme form, characterized by unusually rapid and massive enlargement requiring removal of more than 1500 g tissue per breast or growth disproportionate to body habitus⁽¹³⁾.

Epidemiology

Juvenile macromastia is rare, and its incidence remains uncertain because diagnostic criteria vary. Most cases are idiopathic, but many are associated with heightened breast-tissue sensitivity to normal estrogen levels during puberty. It typically affects adolescents aged 11–18 years and rapidly progresses, causing early musculoskeletal and psychosocial symptoms⁽¹³⁾.

Etiology

Several mechanisms are proposed:

- **End-organ hypersensitivity to estrogen:** Breast tissue shows exaggerated response to normal estrogen levels⁽¹⁴⁾.
- **Autoimmune factors:** Gigantomastia has been reported with autoimmune disorders like SLE and myasthenia gravis⁽¹⁵⁾.
- **Gestational hormones:** Progesterone, prolactin, and estrogen contribute to pregnancy-related gigantomastia⁽¹⁴⁾.



- **Rapid adolescent weight gain:** May aggravate hypertrophy ⁽¹⁵⁾.
- **Idiopathic causes:** Many cases lack an identifiable trigger (14,15).

Clinical Presentation

Common clinical features include:

- **Musculoskeletal symptoms:** Chronic neck pain, upper/lower back pain, shoulder grooving from bra pressure ⁽¹⁶⁾.
- **Skin complications:** Intertrigo and fungal infections in the inframammary fold ⁽¹⁶⁾.
- **Cosmetic concerns:** Difficulty finding age-appropriate clothing and marked dissatisfaction with breast appearance.
- **Psychological effects:** Low self-esteem, social withdrawal, embarrassment, body-image disturbance, and depressive feelings are frequently reported in adolescents ⁽¹⁶⁾.

Investigations

Typical evaluation includes:

- **Clinical breast examination** to assess size, symmetry, tenderness, and skin condition ⁽¹²⁾.
- **Ultrasonography** to rule out masses; preferred in adolescents to avoid radiation ⁽¹²⁾.
- **Spinal examination** for postural abnormalities caused by breast weight ⁽¹⁷⁾.
- **Selective endocrine testing** (TSH, prolactin, estrogen, progesterone) only when hormonal imbalance is suspected ⁽¹⁷⁾.

Routine hormonal evaluation is not necessary in most adolescents.

Management

Conservative Management

Useful mainly for mild cases:

- Supportive or sports bras
- NSAIDs for pain
- Physiotherapy to improve posture
- Weight reduction for overweight individuals

However, conservative measures rarely stop progression in true juvenile macromastia.

Surgical Management — Reduction Mammoplasty

Reduction mammoplasty is the definitive treatment when symptoms persist or impair daily activity.

Indications include ^(17,18):

- Chronic back/neck pain
- Shoulder grooving
- Recurrent intertrigo or skin breakdown
- Significant psychological distress
- Failure of conservative therapy
- Pronounced breast asymmetry

Outcomes:

Substantial improvement occurs in pain, physical functioning, self-esteem, and overall quality of life. Adolescents show postoperative satisfaction rates comparable to adults ⁽¹⁸⁾.



Recurrence

Recurrence may occur, especially if surgery is performed before puberty completion ^(13,14).

Counseling should include:

- Possibility of continued growth
- Need for revision surgery
- Hormonal fluctuations
- Higher recurrence in gigantomastia

Cosmetic and Psychosocial Issues

Cosmetic dissatisfaction is among the most common reasons adolescents seek evaluation for macromastia. Excessively large breasts cause embarrassment, difficulty choosing appropriate clothing, and frequent unwanted attention. These factors disrupt emotional and social development at a vulnerable life stage ⁽¹⁹⁾.

Common Psychosocial Problems

1. Body-image dissatisfaction

Adolescents often perceive their breasts as abnormally large, which results in distorted self-image and decreased confidence. Studies show significantly lower body-image scores and increased appearance-related distress in individuals with hypertrophic breasts ⁽¹⁹⁾.

2. Teasing, bullying, and unwanted sexual attention

Many adolescents report teasing, sexualized comments, and harassment from peers, leading to shame, social avoidance, and emotional distress. Adolescents internalize such negative experiences more severely than adults ⁽²⁰⁾.

3. Avoidance of physical and social activities

Breast size limits participation in sports, dance, swimming, and other school activities. Discomfort, lack of appropriate supportive innerwear, and fear of being ridiculed often push adolescents into inactivity ^(19,20).

4. Cyberbullying and social media

Large-breasted adolescents are more prone to online body-shaming and sexualized commentary. Such negative online interactions worsen anxiety, depression, and social withdrawal ⁽²⁰⁾.

Effect of Surgery on Psychosocial Health

Reduction mammoplasty significantly improves cosmetic and psychological well-being.

- **Self-esteem:** Major improvements in body image and self-confidence are seen after surgery even in younger adolescents ^(19,21).
- **Psychosocial functioning:** Reduced anxiety, reduced depressive symptoms, and improved emotional stability have been consistently documented ^(21,22).
- **Social participation:** Adolescents resume sports, school events, and social interactions comfortably after surgery ^(19,21).
- **Mental health:** Validated tools (SF-36, BREAST-Q) show marked improvement in emotional and social domains ^(21,22).
- **Overall quality of life:** Breast reduction provides long-term improvement in both physical and psychosocial health ^(19,21,22).

Thus, psychosocial and cosmetic benefits are now considered **as important as** physical benefits in adolescent macromastia management.

III. DISCUSSION

The classical Ayurvedic concept of *Stanyāśaya* appears scattered across ancient texts, yet collectively provides a foundational understanding of breast structure and function. References from Śārṅgadhara Saṃhitā and Bhāvaprakāśa describe Stanyāśaya as the *adhiṣṭhāna* (seat) of *stanya*, emphasizing its anatomical, physiological, and reproductive



significance in women. Commentators such as Ghanekar elaborate that while *stana* exists in both sexes, the term *Stanyāśaya* is applied specifically to females due to the dynamic structural changes occurring during puberty and pregnancy, including ductal enlargement.

Breast development is acknowledged even in early life, as noted in *Aṣṭāṅga Saṃgraha*, where the *bījabhāga avayava* of the breast exists in childhood but becomes evident only with puberty. Classical texts explain that with the onset of menstruation, hormonal maturation, and appearance of secondary sexual characters, there is growth and nourishment of *stana*. Charaka's concept of *Stana Sampat* describes the ideal breast in terms of proportion, positioning, firmness, and functional ability to facilitate infant feeding, representing an early clinical understanding of normal morphology.

Pathological conditions of the breast (*Stana Roga*) are elaborated chiefly by Suśruta. He explains that in young and nulligravid women, constricted *dhamanīs* limit dosha movement, hence breast diseases are uncommon. Conversely, during pregnancy and lactation, the natural dilatation of channels facilitates doshic spread, predisposing to disorders. Suśruta and Dalhaṇa describe that vitiated doshas, often aggravated by retained milk in an engorged gland, can lead to inflammatory swellings corresponding clinically to different types of abscesses. These descriptions demonstrate Ayurveda's keen recognition of ductal physiology, inflammatory processes, and lactation-related pathology.

Modern clinical literature describes macromastia as excessive breast hypertrophy causing functional disability, including neck and back pain, shoulder grooving, and psychosocial distress. Gigantomastia is an extreme and rapid enlargement requiring large-volume excision. Juvenile macromastia, though rare, significantly affects adolescents during a psychologically sensitive developmental stage. Etiology is multifactorial, involving estrogen hypersensitivity, autoimmune associations, pregnancy-related hormonal surges, rapid weight gain, or idiopathic factors. Despite large size, routine endocrine abnormalities are uncommon, highlighting that the pathology is often receptor-mediated rather than systemic.

Clinically, adolescents present with musculoskeletal discomfort, chronic pain, intertrigo, cosmetic difficulty, and profound body-image disturbance. Investigations are minimal and focused on ruling out structural lesions or postural complications. Conservative treatment offers limited benefit in true hypertrophy. Thus, reduction mammoplasty remains the definitive intervention, providing excellent relief in symptoms and marked improvement in quality of life. However, recurrence is a known risk when surgery is performed before complete maturation, necessitating proper counseling.

Integrating both perspectives, Ayurveda provides conceptual understanding of breast structure, development, and disease predisposition, with emphasis on doshic flow and channel physiology, while modern medicine offers diagnostic clarity and an effective surgical solution for severe macromastia. A combined viewpoint enriches clinical comprehension, acknowledging traditional insights into breast health while applying contemporary evidence-based interventions for complex conditions like juvenile macromastia.

Adolescent macromastia causes significant cosmetic embarrassment and social discomfort, often leading adolescents to seek medical help. Difficulty choosing appropriate clothing, unwanted attention, and disproportionate breast size negatively affect self-esteem during a sensitive developmental stage. Body-image dissatisfaction is common, with many adolescents experiencing reduced confidence and a distorted perception of their appearance. Teasing, bullying, and sexualized comments further increase emotional distress, resulting in shame, social withdrawal, and lowered emotional resilience.

Excessively large breasts can also limit participation in sports and school activities due to discomfort, inadequate supportive garments, and fear of ridicule. With increasing social media use, many adolescents experience cyberbullying and body-shaming, which contribute to anxiety, depressive symptoms, and avoidance of social interactions.

Reduction mammoplasty provides significant improvement in self-esteem, emotional stability, and social functioning. After surgery, adolescents typically experience enhanced confidence, reduced psychological distress, and improved participation in physical and social activities. Overall quality of life markedly improves, making psychosocial and cosmetic benefits key considerations in managing adolescent macromastia.



IV. CONCLUSION

Adolescence is a period of dynamic physical and psychological transformation, during which breast development (Stan Vruddhi) plays a central role in female maturation. Ayurveda offers a detailed understanding of Stana and Stanyashaya, emphasizing normal development, structural characteristics, and the doshic factors that contribute to breast health and disease. These classical concepts align with modern descriptions of pubertal breast maturation, highlighting the importance of hormonal balance, tissue responsiveness, and developmental timing.

Macromastia represents a pathological exaggeration of this natural process, leading to excessive breast hypertrophy with significant physical, cosmetic, and psychosocial consequences. Adolescents with macromastia commonly experience musculoskeletal pain, restricted activity, body-image dissatisfaction, bullying, and emotional distress. Such challenges profoundly affect their self-esteem, social participation, and overall quality of life. Modern clinical evaluation focuses on ruling out underlying pathology, assessing functional impact, and offering surgical intervention when necessary.

Integrating Ayurvedic principles with modern clinical understanding provides a comprehensive perspective. Ayurveda underscores the role of proper Stana poshana, doshic balance, and timely development, while modern medicine explains the hormonal and tissue-level mechanisms contributing to macromastia. Both systems recognize that deviations in breast development can impair physical comfort and psychological well-being.

Thus, addressing adolescent macromastia requires a holistic approach—acknowledging its physiological basis, cosmetic implications, and deep psychosocial impact. Combining Ayurvedic insight with evidence-based modern management can support adolescents in achieving physical relief, emotional confidence, and healthy body-image development during this vulnerable stage of life.

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