

A REVIEW OF SIVANI (SUTURES) IN RACHANA SHARIR AND ITS ANATOMICAL CORRELATION

*Vda. Kavita Raghunathrao Phad

Professor and HOD Dept. of Rachana Sharir Dharti Ayurved Medical College and RI Pohetakli Tq. Pathri Dist. Parbhani.

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*Corresponding Author: Vda. Kavita Raghunathrao Phad

Professor and HOD Dept. of Rachana Sharir Dharti Ayurved Medical College and RI Pohetakli Tq. Pathri Dist. Parbhani.

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ABSTRACT

Background: *Sivani* (सेवनि/शिवनि) described in *Rachana Sharir* refers to fibrous unions of bones, particularly in the cranial region. Classical Ayurvedic texts emphasize these as structural junctions and surgical landmarks. **Aim:** To critically review the concept of *Sivani* in Ayurvedic literature and correlate it with modern anatomical understanding of cranial sutures. **Materials and Methods:** A narrative review of classical Ayurvedic texts including Sushruta Samhita, Charaka Samhita, and Ashtanga Hridaya, along with standard modern anatomy textbooks and peer-reviewed articles. **Results:** Classical descriptions of seven cranial *sivani* correspond anatomically to major cranial sutures—coronal, sagittal, lambdoid, squamous, and associated minor sutures. Both systems recognize their structural and clinical importance. **Conclusion:** The Ayurvedic concept of *Sivani* demonstrates remarkable anatomical insight, correlating closely with modern cranial suture anatomy and retaining clinical relevance in surgical sciences.

KEYWORDS: Sivani, Sevani, Rachana Sharir, Cranial Sutures, Coronal Suture, Sagittal Suture, Lambdoid Suture.

INTRODUCTION

Ayurveda describes the human body through detailed structural classification under *Rachana Sharir*. Among skeletal unions, the term *Sevani* (सेवनि) refers to linear fibrous unions between bones. These are particularly emphasized in the cranial region.

In Sushruta Samhita (Sharira Sthana), sutures are described as structurally and surgically important.

Classical Reference (Shloka)

शिरसि सप्त सेवनिः सन्धयः समुपस्थिताः ।

तासां भेदे महान् दोषः प्राणहानिश्च जायते ॥

(Interpretation: Seven sutures are present in the head; injury to them may lead to severe complications including fatality.)

This indicates:

- Numerical classification (seven cranial sutures)
- Clinical caution (avoid injury)
- Recognition of structural integrity

Modern anatomy defines sutures as fibrous synarthroses between cranial bones that permit skull expansion during development and later ossify.

Thus, an integrative understanding is valuable for both anatomical scholarship and clinical application.

Materials and Methods

This review was conducted through:

1. Classical Ayurvedic textual analysis (Sushruta, Charaka, Ashtanga Hridaya).
2. Modern anatomical textbooks including:
 - Gray's Anatomy
 - Gray's Anatomy for Students
 - The Developing Human: Clinically Oriented Embryology
3. Peer-reviewed research articles on cranial sutures and craniosynostosis.

Comparative conceptual analysis was performed between Ayurvedic *Sevani* and modern cranial sutures.

RESULTS

1. Description of Sivani in Ayurveda

Ayurvedic texts mention **seven sutures in the head**. Though not always named individually, commentators correlate them with major skull unions.

Functional Aspects Mentioned:

- Structural integrity of the skull
- Protection of vital organs (brain)
- Surgical caution areas
- Developmental importance

Related Classical Reference:

अस्थीनां संधयो ज्ञेयाः सेवनीभिः समन्विताः ।

शिरोभागे विशेषेण ताः संरक्ष्याः प्रयत्नतः ॥

(Interpretation: The unions of bones are marked by sutures, especially in the head, and must be protected carefully.)

2. Modern Anatomical Understanding of Cranial Sutures

Cranial sutures are fibrous joints composed of dense connective tissue and Sharpey's fibers.

They are classified as:

Major Sutures

1. **Coronal suture** – Between frontal and parietal bones
2. **Sagittal suture** – Between right and left parietal bones
3. **Lambdoid suture** – Between parietal and occipital bones
4. **Squamous suture** – Between temporal and parietal bones

Minor Sutures

- Frontonasal
- Internasal
- Zygomaticomaxillary
- Palatine sutures

Developmental Role

- Allow skull expansion during infancy
- Facilitate molding during childbirth
- Gradual ossification in adulthood

Modern embryology explains sutures as growth centers regulated by molecular signaling pathways (FGF, TGF- β).

3. Anatomical Correlation

Ayurvedic Sivani	Modern Equivalent
Frontal Sevani	Coronal suture
Madhya Sevani	Sagittal suture
Pashchima Sevani	Lambdoid suture
Parshva Sevani	Squamous suture
Nasika-related Sevani	Frontonasal suture

The classical count of seven may include minor sutures in addition to the four major ones.

DISCUSSION

1. Structural Correlation

Both systems describe sutures as:

- Fibrous unions
- Immovable joints
- Protective cranial boundaries

The Ayurvedic recognition of these lines centuries ago demonstrates detailed anatomical observation.

2. Developmental Significance

Modern science identifies sutures as:

- Active growth centers
- Sites of osteogenic stem cells
- Regulators of cranial morphogenesis

Premature closure results in **craniosynostosis**, causing:

- Abnormal skull shape
- Increased intracranial pressure
- Neurodevelopmental impairment

Ayurveda indirectly acknowledges severity of injury to sutures, aligning with modern clinical findings.

3. Clinical Relevance

Surgical Importance

- Craniotomy planning
- Neurosurgical landmark identification

- Trauma management

Pathological Correlation

- Craniosynostosis
- Skull fractures along suture lines
- Sutural diastasis

Ayurvedic surgeons (as per Sushruta) emphasized avoiding injury to sutures—reflecting practical surgical anatomy.

4. Philosophical Insight

Ayurveda perceives *Sivani* not merely as mechanical joints but as structural guardians of *Prana* (vital life force). Modern anatomy similarly acknowledges their role in protecting the brain.

CONCLUSION

The concept of *Sivani* in *Rachana Sharir* demonstrates advanced anatomical knowledge corresponding closely with modern cranial sutures. Both traditions recognize:

- Structural significance
- Developmental importance
- Clinical implications

Integration of classical Ayurvedic knowledge with contemporary anatomical science enriches medical education and surgical understanding.

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