

**UPAMAN PRAMANA W.S.R. TO TUNNASEVANI SANDHI**<sup>1</sup>Prakash R. Ide, <sup>2</sup>P.V.Mahesh Babu<sup>1</sup>Associate Professor Department of Rachana Sharir Mandsaur institute of ayurved education & research Mandsaur, MP.<sup>2</sup>Associate Professor Department of Samhita & Siddhanta Mandsaur ayurved education & research Mandsaur, MP.Corresponding Author: [ideamunna@gmail.com](mailto:ideamunna@gmail.com)<https://doi.org/10.46607/iamj05p8052024>

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**ABSTRACT**

**Background:** -Fundamental aspects of *Ayurved* concern with *Sandhi sharir*. It gives information about the basic structure of the human body, which is essential in diagnosis and treatment. *Acharya Charak* describes *sandhi* as “*Asthi sanyoga sthanam*”, i.e meeting place between two or more bones (*Asthi*) is called *sandhi*<sup>1</sup>. *Acharya Sushruta* had categorised *sandhi sharira* into two main types: *Chala* (movable) & *Achala sandhi* (immovable or fixed)<sup>2</sup>. Sutures present between the skull bones are immovable joints. *Upamana pramana* (analogy) is one of the types of *pramana* widely utilised to explain *Sharir* concepts. *Upamana pramana* enlightens the features of un-manifested things with a familiar or manifested thing based on similarities. These analogies mentioned in ancient texts are found to be very helpful in understanding the basic concepts of *Rachana Sharir*, like *Paribhasha*, *Garbha sharir*, *Sandhi sharir*, *Marma sharir* etc. The anatomical concept of ‘*Tunnasevani Sandhi*’ is one example of using analogy. So, a sincere effort has been made to evaluate and analyse the anatomical concept of *Tunnasevani sandhi* with the help of *Upaman Praman*. **Materials & Methods:** The study for *Upamana pramana* related to *Tunnasevani sandhi* is done with the help of both *Ayurvedic* and Modern texts. From *Brihatrayis* and *Laghutrayis* and other classical books. **Results:** It is concluded that *Tunnasevani sandhi* is located in the skull, & the predominant anatomical structures present in the cranial vault are three sutures- sagittal, parietal & lambdoid suture.

**Key words:** *Upamana*, *Pramana*, *Analogy*, *Sevani*, *Tunnasevani*

## INTRODUCTION

Analogies are a tool in which two things or objects are compared, and conclusions are drawn based on their similarities. Good analogies are simple, help to understand complicated subjects, are easy to remember and are based on familiar analogue concepts.

In *Rachana Sharir's* subject, *Upaman Praman* is used to identify the structure based on its resemblance. *Sandhi sharir* is unique because it presents complex anatomical concepts in an easy way to understand and remember. It uses analogies and comparisons to everyday objects and situations students can relate to, such as *Ulukhala Sandhi* (Ball and socket joint). This type of *Sandhi* looks like pastel & mortar used in the kitchen. *Ulukhala* variety of *sandhi* is found in the *Kaksha* (Shoulder joint), *Vankshana* (Hip joint), and *Dashana* (Teeth) regions<sup>3</sup>.

Thus, using these analogies, students can visualise and understand the structures and functions of eight types of joints (*Ashtavidha Sandhi*), making the learning process more engaging and exciting.

**Aim:** -*Upaman pramana* w.s.r. to *Tunnasevani sandhi*

**Objectives:** -

1. To compile the literature about *Tunnasevani sandhi* from *Ayurvedic* and classical texts.
2. To critically analyse the anatomical concept of *Tunnasevani sandhi* with the help of *Upaman praman*.

**Materials & Methodology:**

Literary study:

This is a literary study. References and data about *Upaman Praman* and *Tunnasevani Sandhi* are collected from various *Ayurvedic* texts, including *Brihatrayis*, *Laghutrayis*, and other classical books. Classical texts of *Ayurveda*, *Rachana Sharir*, and *Parishadya Shabdārtha Shariram* were referred to, studied, and data compiled. Also, modern textbooks of Anatomy were referred to find out a structural correlation.

**Review of literature:** -

The Knowledge gained through similarity is known as *Upamiti* & *Karana of Upamiti* is known as *Upamana*. *Upamana Pramana*, enlightening the features of unfamiliar or unknown objects with a familiar or Known object based on the similarities. According to *Acharya Sushruta*, *Upaman* is described as an individual *Praman* in *Sushruta Samhita Sutrasthana* 1st Chapter-Vedotpatti Adhyaya (*Su. Su.1.16*). as a separate tool for learning. According to *Nyaya Darshan*, *Upaman Praman* is considered the 3<sup>rd</sup> *Praman*. But *Acharya Charak* described, *Upaman praman* as *Aupamya*, as one of the four *gyan hetus*<sup>4</sup>. There are three types of *Upamana Praman*, i.e., 1. *Sadharmya/Sadrishya Upaman*, 2. *Vaidharmya Upaman*, 3. *Asadharana dharma vishishta Upaman (Tark sangraha)*. In *Sadrushya Upaman*, similar things that are known or familiar are compared with unknown or unfamiliar things. For example, a) *Tilakalaka* is a *Twak Roga* (Skin disease), which is termed due to its similarity with *Tila* (season seeds)<sup>5</sup>. b) The *Hridaya*(Heart) resembles the lotus bud (*Pundarik Sadrushyam*)<sup>6</sup>.

According to *acharya sushruta*, the *sandhis* or bony joints are 210. Of these, five *sandhis* are present in the *Shira kapala* (Cranial sutures) & 3 *sandhis* are present in the *Kati kapala* (Pelvis)<sup>7</sup>.

Types of *sandhi* according to movement are,

1. *Cheshtavant* (Movable): - *Shakha* (Upper & Lower Limb), *Hanu* (Temporomandibular joint), *Kati* (Lumbosacral joint) &

2. *Sthira* (Non movable) All remaining joints.

*Tunna* means Tailor or stitched like mark<sup>8</sup>. A structure which appears stitched like a mark on the clothes or mark remains after the wound. These joints are in the form of stitches or sutures between two bones. The sutures are not straight lines but are twisted to interlock the bones placed against one another. This type of joint is found only in the skull.

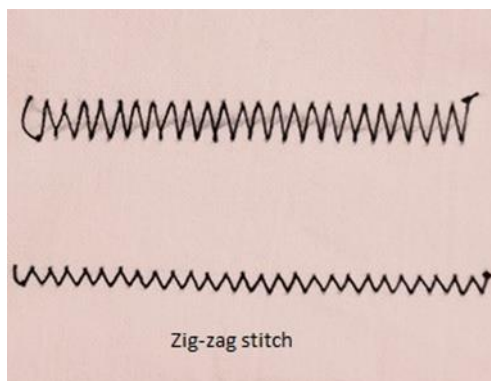


Fig.1 Zigzag stitch-like mark

Four types of *Seevana karma*(Suturing)<sup>9</sup>-*Gophanika*, *Vellitaka*, *Tunnasevani* & *Rujugranthi* are mentioned by *acharya sushruta* in *Sutrasthana* 25th chapter, i.e., *Ashtavidha Shastra Karma Vidhi Adhyaya*. *Tunnasevani* is done as if the torn garments are sutured. This type of *Seevana karma* resembles a subcuticular suture.

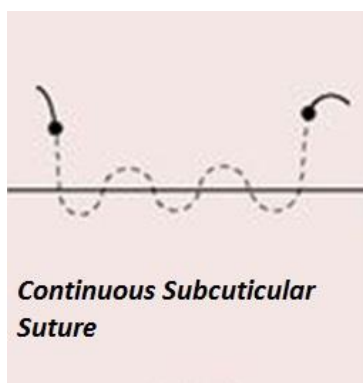


Fig.2 Subcuticular suture joins the edges of a wound together.

*Tunnasevani sandhi*: - These joints have dentate edges on their articulating surfaces. *Acharya sushruta* mentioned *Shira kapala* (skull sutures) and *Katikapala* (joints between pelvic bones) *sandhi*. *Acharya* also mentioned that *Katikapala* is not *tunnasevanni sandhi* primarily but gets converted into it after *Yuva awastha*<sup>10</sup>. These points towards the synostosis of the pelvic bones.

In *Tunnasevani sandhi*, joining margins are denticulate in appearance. These denticulate processes meet each other to form a uniform joint. This is *Sthira* or immovable joint in the cranium. A joint is a junction between two or more bones or cartilages. The skull comprises two main parts: the neurocranium (bones surrounding the brain) and the viscerocranium (bones of the face). The skull contains 22 bones; all are firmly interconnected in adults by immobile fibrous joints called sutures. The upper part of the skull is known as

the superior aspect of the cranium or norma verticalis. The skull is viewed from above; it appears oval, wider posteriorly than anteriorly.

In this view, a portion of the four cranial bones is visible.

1. Frontal Bone (Squamous Part) Anteriorly.
2. Parietal Bones (Paired) on each side of the midline.
3. Occipital Bone (Squamous Part) Posteriorly. The Sutures unite these Bones.

The sutures are seen in norma verticalis<sup>11</sup>: -

1. The coronal suture runs transversely between the frontal bone & the two parietal bones.
2. The sagittal suture runs in the median plane between the parietal bones.
3. The lambdoid suture lies posteriorly between the occipital bone and the two parietal bones. The

metopic suture in 3 to 8% of cases is present in the median plane.

The sagittal suture connects the other two sutures. The meeting point with the coronal suture is termed

Table no.1

Sutures	Location	Type of suture	Sutures
Sagittal suture	In between 2 parietal bones	Serrate suture	01
Coronal suture	In between frontal & parietal bone.	Serrate suture	02(On each side skull bone)
Lambdoid suture	In between parietal & occipital bone.	Denticulate suture.	02(On each side skull bone)

bregma, and that with the lambdoid suture is lambda. Skull landmarks of anatomic importance exist where sutures join.

Tunnasevani sandhi present in *Shira kapala*:-

Sutural joint: It is a solid joint between the bones of the skull without a joint cavity. Articular surfaces are

joined by fibrous tissue. These joints provide stability with no movement. They are protective in function.



1 & 2-Coronal suture, 3-Sagittal suture, 4 & 5-Lambdoid suture

Types of sutural joint<sup>12</sup>: -

A) Serrate suture B) Denticulate suture

A) Serrate suture- In this suture, bony edges are like serrations of a saw & these 'Saw-edged' processes of the two bones fit into one another. Example-Sagittal & coronal suture. The margins present a saw-toothed appearance.



Fig.4 Serrate suture (Sagittal suture)

B) Denticulate suture-In this suture, a series of tooth-like processes (Tips are broader than the roots) of the two bones fit each other. The margins present a teeth-like appearance. E.g. Lambdoid suture.



Fig.4 Denticulate suture (Lambdoid suture)

Tunnasevani sandhi present in *Katikapala*:-

The ilium, ischium & pubis meet one another using triradiate(Y-shaped) cartilage at the acetabulum. The hip bone is a flat bone, represented by three independent bones: ilium, ischium and pubis. These bones are connected by triradiate cartilage at an early age. The fusion of these bones takes place in the area of the acetabulum. At Puberty, the bony union will replace triradiate cartilage to stabilise it.

## DISCUSSION

Comparison between *Tunnasevani sandhi* & other structures which are located in the head region: -  
Table no.2

Sl no.	Structure name	Description	Number
1.	<i>Asthisanghat</i>	<i>Sanghata</i> means group & <i>Asthi sanghata</i> means group of bones. (A group composed of two or more skeletal elements)	01(According to <i>acharya sushruta</i> ) (Skull=Parietal-02, Frontal-01, Temporal-02, Occipital-01=06)
2.	<i>Seemanta</i> (in <i>paribhasha sharir</i> )	These structures forming the border or suture lines	According to <i>acharya vagbhata</i> , <i>seemanta</i> are 18 as five in head.
3.	<i>Seemanta marma</i>	It is <i>sandhi marma</i> & measures about 4 <i>anguli</i> (finger unit)	Five in number (Described by <i>acharya sushruta</i> )
4.	<i>Sevani</i>	<i>Sevani</i> is the suture like structures	Five in number (Described by <i>acharya sushruta</i> )
5.	<i>Tunnasevani sandhi</i>	The joining edges are denticulate appearance. This is <i>Sthir sandhi</i> or immovable joint.	Its five components are the five aspects of these three sutures- the two sides of the coronal suture, the one sagittal suture, and the two sides of the lambdoid suture.

1. *Seemanta*: -*Seemanta* represents the line of junctions of bones. According to *Acharya Vagbhata*, the *seemanta* are 18, or five in head. These are five skull sutures under the heading *seemanta*<sup>13</sup>.

2. *Seemanta marma*: -*Acharya sushruta* described five *seemanta marma* (vital areas) in *Shira*. It is *sandhi marma* and five in number. The primary sutures in the skull cap can be compared with *seemanta marma*, which are coronal suture, sagittal suture & lambdoid suture. Its five components are the five aspects of these three sutures: - the two sides of the coronal suture, the one sagittal suture and the two sides of the lambdoid suture. Various sensory and motor areas are located near cranial sutures

Traumatic effect of *Seemanta marma*: -Death due to *Unmad* (insane), *Bhaya* (fear), *Chittanasha* (psychological disturbance)<sup>14</sup>.

3. *Sevani*: The structure, similar to the parts joined by sewing, is called '*Sevani*'. One which appears like a sutured site or a line where two halves come together is known as a *Sevani*. Just as stitching is done by mixing two pieces of clothing equally, similar stitching is also seen in some parts of the body, like bones, skin, etc., described in *Su. Sha.5, Sharir Sankhya Vyakaran Shaarir Adhyay* under the name of *Sevani*. Due to its surgical importance, *acharya sushruta* mentioned five *Sevani* in *Shira*

(Head), one in *Jivha* (Tongue) & one in *Shepha* (male external genitalia) The *sevani* of *asthi*(bone) are called Skull Sutures. The *sevani* of *twacha* (mucous skin) is called *Raphe* or *Ridge*<sup>15</sup>. *Raphe* means the line of union of the two halves of various symmetrical body parts. All these locations have important veins underneath the venous sinuses of the brain (Head), deep lingual vein(*Jivha*) & dorsal vein of the penis (*Shepha*).

From the above discussion, *Seemanta*, *Seemanta marma*, *Sevani*, and *Tunnasevani* are present in the head, and they are five in number. Its five components are the five aspects of three sutures: coronal, sagittal, and lambdoid sutures.

## CONCLUSION

- 1) In *Tunnasevani sandhi*, the predominant anatomical structures present at the skull are three cranial sutures, i.e sagittal, parietal & lambdoid sutures.
- 2) There are flat bones (*Kapalasthi*) in the skull (Occipital, Parietal, Frontal), having serrate and denticulate edges, called '*Tunnasevani sandhi*'& these type of joint is mainly found in the skull bone.
- 3) Visual analogies may help the students develop a better understanding of the *Sandhi Sharir* of the *Rachana Sharir* curriculum.

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