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OBSERVATIONAL INSIGHTS INTO NABHI: FROM AYURVEDIC MARMA TO MODERN CLINICAL LANDMARK

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ABSTRACT

Introduction: Nabhi (umbilicus) is described in Ayurveda as the origin of *Siras*, the seat of *Prana* and *Agni*, and one of the *Dashapranayatana*.[1] Modern anatomy views it as the remnant of the umbilical cord, closely related to vital vascular and visceral structures.[11] Understanding Nabhi from both perspectives is essential to appreciate its anatomical, physiological and clinical relevance. **Methods:** Classical Ayurvedic texts (*Charaka Samhita, Sushruta Samhita, Ashtanga Hridaya, Sharangadhara Samhita*) were reviewed alongside modern anatomical and embryological references.[12] Comparative analysis was performed to correlate traditional descriptions of Nabhi with contemporary anatomical and surgical understanding. **Results:** Ayurvedic sources emphasize Nabhi as a *Sira Marma* and *Sadyah Pranahara Marma*[2], centre to fetal nourishment and postnatal physiology.[3] Modern anatomy confirms its embryological role via the umbilical vessels, which later transform into ligaments, and its relation to major vascular structures such as the abdominal aorta, vena cava, and mesenteric vessels.[3] Clinical relevance is noted in conditions like portal hypertension and in surgical procedures utilizing the umbilical site.[23]

KEYWORDS: Nabhi, Umbilicus, Marma, *Sadyah Pranahara Marma*, *Dashapranayatana*, *Prana*, *Agni*, Umbilical cord.

INTRODUCTION

The human body is a highly complex system, with each part carrying unique structural and functional significance. Among these, Nabhi (umbilicus) occupies a special position, being regarded as the body's central point.[7] In Ayurvedic tradition, Nabhi[2] is described as the seat of Prana[7] and the origin of vital channels, while in modern anatomy it is recognized as the postnatal remnant of the umbilical cord and an important vascular landmark.[11] Understanding Nabhi through both perspectives not only enriches embryological and physiological knowledge but also enhances its clinical relevance in diagnostics, therapeutics, and surgery.

Ayurvedic Perspective of Nabhi

Ayurveda describes *Nabhi* as the central origin of the body's vascular system. The body is said to contain 700 *Siras* (vessels), all of which are believed to emerge from the *Nabhi*[2], radiating outward like the spokes of a wheel. *Nabhi* is also regarded as the seat of *Prana*[7], signifying its role in sustaining life.

Acharya Vagbhata, in *Ashtanga Hridaya*, includes *Nabhi* among the *Dashajeevitadhamani*[7] (ten seats of life), while in *Ashtanga Sangraha*, it is mentioned as one of the *Dashapranayatana*[8] (ten vital centers of life force). According to Acharya Sharangadhara, twenty-four *Dhamanis* originate from *Nabhi*: ten ascend upward, ten descend downward, and four move in both directions. These channels play a vital role in the circulation and nourishment of *Rasa* (nutritive fluid) throughout the body.

In the context of *Garbha Sharira* (embryology), *Nabhi Nadi* holds significant importance. During intrauterine life, it is the only channel of communication between the fetus and the mother. The fetus remains connected to the mother's *Hridaya* (heart) through the *Nabhi Nadi*[4], which ensures its nourishment and vitality. According to Sushruta, the mother's *Rasa Vaha Srotas* transport life force (*Jeeva*) and essential nutrients through the *Nabhi Nadi*[3] of the fetus. Nutrition is provided by the process of *Upasneha* (filtration and absorption) via the *Rasa Vaha Dhamanis*, which spread obliquely throughout the fetal body.[5] This system supports the complete development of fetal organs and structures from conception until full formation.

Thus, from the Ayurvedic perspective, *Nabhi* is not only the anatomical center but also the physiological seat of *Prana*[7], making it indispensable in both fetal and postnatal life.

Embryological Significance

The umbilical cord begins forming between the 4th and 8th weeks of embryonic development and is fully developed by the 12th week.[15] It usually measures 50–60 cm in length and 1–2 cm in diameter.[14] The cord consists of two umbilical arteries, one umbilical vein, remnants of the vitellointestinal duct, and the allantois, all enclosed within a protective amniotic[17] covering.

The umbilical cord ensures the exchange of gases, nutrients, and waste products between the fetal[14] and maternal circulations, thereby enabling proper growth and development. After birth, these vessels undergo closure and transformation into ligaments, forming structures such as the ligamentum teres (round ligament of the liver), medial umbilical ligaments, and the median umbilical ligament.[15]

Thus, from a modern medical standpoint, the umbilicus represents both a developmental remnant and a clinically significant anatomical landmark due to its vascular, surgical, and diagnostic importance.

Contemporary Anatomical Perspective of Nabhi

In modern anatomy, the umbilicus is defined as a median depression on the anterior abdominal wall, representing the scar left after the separation of the fetal umbilical cord[11]. Structurally, it is formed of cicatricial tissue[12] and is regarded as a weak point in the abdominal wall.

The abdominal wall at the level of the umbilicus is composed of multiple layers: skin, superficial fascia, fat, the three flat muscles (external oblique, internal oblique, and transversus abdominis), rectus abdominis, transversalis fascia, extraperitoneal connective tissue, and peritoneum. In adults, the umbilicus is generally located at the level of the L3–L4 vertebrae, whereas in neonates[13], it lies slightly lower.

Vascular Supply

The umbilical region is supplied by the superior and inferior epigastric arteries.[11] These vessels anastomose near the umbilicus, creating an important collateral pathway, especially in cases of aortic coarctation. Venous drainage occurs through the paraumbilical veins, which

connect with the portal system and form a portacaval anastomosis[23] along with the lumbar, thoracic, and epigastric veins.

Nerve Supply

The umbilicus receives sensory innervation from the 10th thoracic spinal nerve (T10 dermatome[12]).

OBSERVATION AND DISCUSSION

On cadaveric observation, after removing the anterior abdominal wall layers, the area around the umbilical region—measuring approximately *four angula pramana*—was examined. The following vascular structures were identified: the abdominal aorta, inferior vena cava, superior and inferior mesenteric vessels with their branches, and the anastomosis between the superior and inferior epigastric arteries, small intestine, transverse colon and greater omentum.

Ayurvedic texts describe *Nabhi Marma* as a *Sira Marma* located between the *Amashaya* (stomach) and *Pakvashaya* (intestines). Its dimension is given as four *angula*. Trauma to this marma is said to result in *sadyah pranahara* (instant death), reflecting its critical nature.

Nabhi as *Prabhavasthana*

Acharya Sushruta refers to the umbilicus as "□□□□□□□□□□□□□" (*Sira Prabhava Nabhi*), meaning that vessels originate or terminate here during intrauterine life.[1] The word *prabhava* signifies "origin." During fetal life, the *Siras* associated with *Nabhi* carry nutrition to the developing body through the *Nabhi Nadi*. After birth, these fetal vessels lose their function, though the region continues to hold anatomical and clinical importance.

Nabhistha Prana

The verse

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— explains that *Prana* resides in *Nabhi* and is supported by surrounding *Siras.*[7] Here, *Sira* acts as *Adhara* (support) and *Prana* as *Adheya* (that which is sustained). Just as the hub of a wheel holds together its spokes, Nabhi supports and protects life energy through these channels.

Nabhi as the Seat of *Prana Vayu*

Sharangadhara describes the physiological role of *Nabhi* in relation to *Prana Vayu*. It is said that *Prana Vayu* at the *Nabhi* connects with the *Hridaya* (heart) and moves through the *Kantha* (throat) to the exterior for respiration.[9] After imbibing *Ambarapiyusha* (celestial nectar, metaphorically oxygen), it re-enters the body, nourishing it and stimulating *Jatharagni* (digestive fire). This can be interpreted as an ancient description of the respiratory and metabolic processes.

Importance of Nabhi in Chikitsa (Clinical Applications)

Ayurveda and folklore traditions attribute several therapeutic practices to the Nabhi region.

- Classical Reference: In *Bhavaprakasha Madhyama Khanda* (Atisara[10] Adhikara 8/40–41), it is mentioned that an *Alavala* (flour ring) should be constructed around the Nabhi, into which *Amalaki* paste and *Ardraka Swarasa* (ginger juice) are placed. This treatment is indicated in severe *Atisara[10]* (diarrhea).
- Folk Practices: In various traditional practices, medicated oils are pooled in the navel pit within a flour boundary. The oil is retained for 10–30 minutes or longer depending on the disease. This method is believed to pacify *Vata* and stimulate local circulation, thereby offering relief in digestive and reproductive disorders.
- Modern Correlation: From an anatomical standpoint, the umbilical region has rich vascular and neural connections, making it a sensitive and clinically useful site for therapeutic interventions.

Postnatal Anatomical Changes

In fetal life, the umbilical vessels are functional, but after birth they undergo obliteration and transform into ligaments:

- The **umbilical vein** becomes the **ligamentum teres hepatis**[15] (round ligament of the liver).
- The **umbilical arteries** persist proximally as the **superior vesical arteries** (branches of the anterior division of the internal iliac arteries) and obliterate distally to form the **medial umbilical ligaments.[15]**
- The **urachus** (a remnant of the fetal allantois) fibroses to become the **median umbilical ligament.[15]**

These transformations signify the shift from fetal dependence on maternal circulation to independent postnatal physiology.

The Sanskrit term *Sira*, as defined in Sir Monier Williams' Sanskrit–English Dictionary, means "stream" and extends its meaning to any tubular structure in the body such as a vessel, nerve, vein, artery, or tendon. This wide definition resonates with the anatomical complexity of the umbilical region, where vessels and embryological remnants converge.

Acharya Sushruta's description of Nabhi as the origin of *Siras* and *Dhamanis* can thus be correlated with the fetal umbilical vessels. Furthermore, the concept of *Adhoga Dhamanis*—responsible for nourishing the *Basti* (bladder), *Kati* (pelvic region), *Uru* (thighs), and *Guda* (rectum)—aligns closely with the modern anatomical distribution of the internal iliac artery and its branches.

Surgical and Clinical Relevance

In modern medicine, the umbilical[19] region is of critical importance in surgery and diagnostics:

- Laparoscopic and abdominal surgeries: The superior and inferior epigastric arteries, which meet around the umbilicus, are at risk of injury during trocar insertion or hernia repair.
- Collateral circulation: In cases of aortoiliac occlusive disease, the inferior epigastric artery plays an important role in supplying the lower limb.
- Portal hypertension: In conditions like liver cirrhosis, dilatation of paraumbilical veins produces the classic "caput medusae[23]" appearance, a key clinical sign.
- Other interventions: Umbilical access is used in paracentesis, PEG tube placement, and certain pediatric procedures.

Thus, Nabhi continues to serve as a landmark of both anatomical and clinical significance.

CONCLUSION

Every part of the human body carries unique significance, and the Nabhi is no exception. Its understanding requires a dual perspective:

- Shabdartha (literal meaning): Nabhi as the umbilicus.
- Bhavartha (functional meaning): Nabhi as a physiological junction
- sustaining *Prana* and metabolic processes.

Ayurvedic literature places Nabhi at the center of *Sira Marma*, located between the *Amashaya* and *Pakvashaya*, measuring four *angula*. Classical references and cadaveric studies confirm its location at the umbilical region, which contains major vascular

structures[11] such as the abdominal aorta, inferior vena cava, and mesenteric as well as epigastric vessels.

Although Nabhi Marma is classified as *Sira Marma*, injuries here can be fatal, not because of direct involvement of the abdominal aorta but due to damage to the surrounding vital vascular[2] and visceral structures. Thus, even if death may not be instantaneous, trauma to this region can lead to severe and life-threatening consequences.

Both Ayurveda and modern anatomy highlight the Nabhi as a vital point of origin, nourishment, and clinical importance. Its study bridges traditional concepts of *Prana* and *Marma* with modern surgical and diagnostic relevance, warranting deeper exploration for future research.

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