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### Review Article

## AYURVEDIC PERSPECTIVE ON ARMA WITH SPECIAL REFERENCE TO PTERYGIUM—A COMPREHENSIVE REVIEW

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### ABSTRACT:

*Arma* is an ocular disease described in Ayurveda under *Shuklagata Netra Rogas*, characterized by the progressive growth of fibrovascular tissue from the conjunctiva onto the cornea. It closely corresponds to pterygium in modern ophthalmology, a chronic degenerative and proliferative disorder of the ocular surface. The condition is primarily associated with prolonged exposure to ultraviolet (UV) radiation and environmental irritants such as dust, wind, smoke, and dry climates, making it more prevalent among outdoor workers and populations living in tropical and subtropical regions.

Ayurvedic classical texts provide a detailed account of *Arma*, including its causative factors, pathogenesis, clinical features, classification, prognosis, and treatment. The disease is attributed to dosha imbalance leading to progressive fibrovascular tissue growth. While early-stage *Arma* is often asymptomatic, advanced lesions may cause ocular irritation, astigmatism, and visual impairment due to corneal involvement. Modern research on pterygium highlights chronic inflammation, ultraviolet-induced damage, fibrovascular proliferation, genetic predisposition, and molecular alterations as major factors in its development and progression.

Surgical excision is the primary treatment for advanced pterygium, but postoperative recurrence remains a major challenge. Modern approaches such as conjunctival autografting, amniotic membrane transplantation, and adjunctive therapies have improved outcomes by reducing recurrence rates. Combining the Ayurvedic understanding of *Arma* with contemporary scientific knowledge may enhance early diagnosis, optimize treatment strategies, prevent recurrence, and improve long-term patient outcomes.

**Keywords:** *Arma*, Pterygium, *Shuklagata Roga*, *Netra Roga*, Ayurveda.

### INTRODUCTION:

*Arma*<sup>1</sup> is a Shukla Mandala disorder characterized by a progressive, wing-shaped fibrovascular growth arising from the *Kaneenika Sandhi*, *Apanga Sandhi*, or occasionally both, extending towards the Krishna Mandala. With progression, the lesion may involve the cornea and lead to visual impairment.

Extension of *Arma* onto the *Krishna Mandala* (cornea) can compromise its transparency, resulting in visual disturbances. It is a common disorder encountered in *Shalakya Tantra* and is clinically comparable to pterygium in modern ophthalmology. The term *pterygium* is derived from the Greek word pterygion, meaning “small wing,” which describes its characteristic wing-shaped appearance.

Pterygium is a triangular-shaped fibrovascular growth composed of bulbar conjunctival epithelium along with thickened sub-conjunctival connective tissue. It commonly arises on the medial side and less frequently on the lateral side of the palpebral fissure, gradually extending onto the cornea<sup>2</sup>. According to modern science Pterygium divided as Regressive and Progressive Pterygium<sup>3</sup>.

Pterygium is common in tropical and subtropical regions, with prolonged UV exposure being the principal risk factor. Other contributing factors include outdoor occupations, dry and dusty environments, genetic predisposition, and increased sun exposure, making the condition particularly prevalent in countries like India. *Arma* is regarded as a *Mamsavridhhi* and is classified by Acharya Sushruta into five types based on its morphology. As it is predominantly *Kaphaja*, *Lekhana* and *Chedana Karma* are considered the main treatment modalities<sup>4,5</sup>. Likewise, surgical excision is the standard treatment for pterygium in modern ophthalmology, although recurrence remains a significant challenge<sup>6</sup>.

In the early stage of *Arma*, *Lekhana Anjana* is recommended for thin, superficial lesions limited to the *Shukla Mandala*. Its *Lekhana* (scraping) action helps reduce fibrovascular tissue, prevent further progression, and may decrease lesion size. The procedure involves applying medicated *Anjana* systematically along the conjunctival margin from *Kaneenika Sandhi* to *Apanga Sandhi*. Among the three varieties of *Anjana* described by Acharya Sushruta, *Lekhana Anjana* is specifically indicated for conditions characterized by *Kapha* predominance and abnormal tissue overgrowth<sup>7</sup>. It facilitates the removal of accumulated *Doshas* from the *Netra*, *Vartma*, *Sira*, *Netra Kosha*, and *Ashruvaha Srotas*, promoting ocular cleansing through the eyes, nose, and oral cavity<sup>8</sup>. However, when the *Arma* becomes thick, fleshy, extensive, and extends onto the *Krishna Mandala*, surgical excision is considered the treatment of choice.

#### **Prevalence:**

The prevalence of pterygium was stated to vary widely from 0.3 to 29 percent in the world. In India, the prevalence ranges from 9.5 to 13%<sup>9</sup>.

#### **Definition:**

The abnormal fleshy growth that originates from the *Kaninaka* or *Apanga Sandhi* and extends toward the *Krishna Mandala* is known as *Arma*.

#### **Nidana:**

Ayurvedic classics do not mention specific *Nidanas* for *Arma*. However, the general etiological factors responsible for *Netra Rogas*, including *Aharaja*, *Viharaja*, *Achakshushya*, and *Pittanusari* factors, are considered important in its pathogenesis.

*Kriya Atiyoga*, such as prolonged distant viewing (*Dureekshanata*) and continuous observation of minute objects (*Sukshma Nireekshana*), along with exposure to dust, smoke (*Raja-Dhooma Nisevana*) and ocular trauma (*Abhighata*), are considered important factors that predispose to *Arma* by increasing ocular surface stress and promoting degenerative changes.

According to modern science, pterygium develops due to a combination of genetic, immune-mediated, and environmental factors. Among these, prolonged ultraviolet (UV) radiation exposure is the most significant risk factor, followed by chronic ocular irritation from dry, dusty, hot, and windy environments<sup>10</sup>.

Other contributing factors include *Vega Vinigraha* (suppression of natural urges), *Swapna Viparyaya* (disturbed sleep), sudden exposure to cold after heat, *Ati Maithuna* (excessive sexual activity), *Ritu Viparyaya* (improper seasonal adaptation), and psychological stress such as *Kopa* and *Klesha*, all of which may predispose to *Arma*.

**Purvaroop:** *Purva Roopa* denotes the prodromal stage of a disease. Although classical Ayurvedic texts do not describe specific *Purva Roopas* for *Arma*, the general prodromal features of *Netra Rogas* described by Acharya Sushruta are considered applicable.

#### **Roopa/Clinical features:**

The characteristic feature of *Arma* is *Mamsa Vridhhi*, a fibrovascular conjunctival overgrowth comparable to pterygium. Common symptoms include *Gharsha* (foreign body sensation), *Avila Darshana* (blurred vision), *Netrasrava* (watering), *Prakasha Asahishnuta* (photophobia), and *Raga* (redness). In addition to these general manifestations, each type of *Arma* is classified into 5 different types: *Prastari Arma*, *Shukla Arma*, *Lohita Arma*, *Adhimamsa Arma*, and *Snayu Arma*<sup>11,12</sup>.

#### **Vyavachedaka Nidana:**

**Table 1: Showing the Vyavachedaka Nidana of Arma**

| Sr. No. | A.H.          | Sushruta                 | Colour                         | Dosha      | Other symptoms                                                                         |
|---------|---------------|--------------------------|--------------------------------|------------|----------------------------------------------------------------------------------------|
| 1       | Prastharyarma | Prastharyarma            | Shyava – Lohitham (Bluish red) | V, R, K, P | Thin Glandular swelling, sudden onset of Development                                   |
| 2       | Shuklarma     | Shuklarma                | Shuklavarna (White)            | K          | Soft and whitish growth, slowly extending over the entire length of the sclerotic coat |
| 3       | Shonitarma    | Kshatajarma or Lohitarma | Rakthavarnam (Red)             | R          | Soft fleshy growth, reddish colour like petals of the lotus flower.                    |
| 4       | Adhimamsarma  | Adhimamsarma             | Shyavavarnam                   | K, V       | Soft, thick and dark brown membrane                                                    |
| 5       | Snayauarma    | Snayauarma               | Panduravarnam                  | K          | Rich in blood vessels and nerves and rough growth of the membrane.                     |

**Samprapti/Pathophysiology****Vishista Samprapti of Arma:**

Classical Ayurvedic texts do not describe a specific Samprapti for *Arma*; its pathogenesis is understood from the general mechanism of *Netra Rogas*. Vitiated *Doshas* localize at the *Kaneenika* and *Apanga Sandhi*, leading to progressive fibrovascular (*Mamsa*) overgrowth that extends from the *Shukla Mandala* toward the *Krishna Mandala*, and in advanced stages may involve the *Drishti Mandala*, causing visual impairment. The lesion's colour reflects the predominant *Dosha*—*Kapha* (white), *Pitta*–*Rakta* (red), or *Tridosha* (bluish-red). Both Acharya Sushruta and Acharya Vagbhata classify *Arma* into five types, differing mainly in the terminology used for the vascular variety (*Lohitarma*/*Kshatajarma* vs. *Shonitarma*).

**Samprapti Ghataka**

*Dosha*: *Tridosha*

*Dushya*: *Rasa, Rakta*

*Adhistana*: *Shukla Mandala*

*Vyakta Sthana*: *Shukla Mandala*

*Roga Marga*: *Madhyama*

**Sadhyasadhyata (Prognosis)**

*Sadhyasadhyata* determines the prognosis of *Arma* based on factors such as disease stage, severity, age, constitution, and patient strength. *Arma* is generally considered a *Chedana Sadhya Vyadhi*, with surgical excision being the definitive treatment for established lesions. However, early-stage *Arma* with thin, superficial growth can be effectively managed with Ayurvedic therapies, especially *Netra Kriyakalpas* such as *Anjana*, to control progression and relieve symptoms.

**Upadrava (Complications) of Arma**

Although Ayurvedic classics do not specifically describe the *Upadras* of *Arma*, complications occur as the lesion extends onto the *Krishna Mandala*. Progressive corneal involvement may cause visual impairment, irregular astigmatism, and obstruction of the visual axis, leading to reduced visual acuity. Early diagnosis and timely management are therefore essential to prevent progression and preserve vision.

**Specific Treatment (Chikitsa Vivechana) of Arma**

*Arma* is a *Shukla Bhaga* disorder and is considered a *Chedana Sadhya Vyadhi*, with *Chedana Karma* indicated for advanced lesions. However, small, thin, and early-stage *Arma* should be managed conservatively with *Netra Kriyakalpas*, particularly *Lekhana Anjana*, to reduce fibrovascular growth and prevent disease progression. Classical formulations such as *Triphaladi Mash* *Anjana*, *Samudra Phena Varti*, and *Chandrodaya Varti* are recommended. Additional therapies including *Snehana*, *Swedana*, *Nasya*, *Raktamokshana*, and appropriate internal medications may be used according to *Dosha* predominance, while *Anjana* may also help reduce postoperative recurrence following surgical excision.

### Treatment of Different Types of Arma<sup>13</sup>

The management of *Arma* depends on its type, extent, and severity. Although *Chedana Karma* is the definitive treatment for most established lesions, *Lekhana Anjana* is beneficial in early-stage disease and as an adjunct to reduce recurrence after surgery.

#### 1. **Prastari Arma:**

This variety is primarily managed by *Chedana Karma* (surgical excision). In addition, *Tikshna Lekhana Anjanas*, such as *Chandrodaya Varti* and *Nayana Sukha Varti*, are recommended to reduce the fibrovascular tissue and help prevent further progression or recurrence.

#### 2. **Shukla Arma:**

*Chedana Karma* is considered the treatment of choice for established lesions of *Shukla Arma*.

#### 3. **Lohitarma (Shonitarma/Raktarma/Kshatajarma):**

This vascular variety of *Arma* is also managed primarily by *Chedana Karma*, as surgical removal provides definitive treatment.

#### 4. **Adhimansa Arma:**

Due to its fleshy and proliferative nature, *Chedana Karma* is indicated as the preferred therapeutic procedure.

#### 5. **Snayu Arma:**

*Chedana Karma* remains the principal treatment modality. However, in selected cases, *Lekhana Anjana* may be administered as an adjunctive therapy to limit disease progression and reduce the likelihood of recurrence.

### **Chedana Karma for Arma**

*Chedana Karma*, (surgical excision) is the first of the *Ashta Vidha Shastra Karmas* described by Acharya Sushruta. It is indicated for diseases involving abnormal tissue overgrowth, including *Arma*, *Bhagandara*, and *Granthi*.

Acharya Sushruta recommends instruments such as the *Mandalagra Shastra* and *Karapatra Shastra* for *Chedana* and *Lekhana Karma*. Their sharpness and efficiency are maintained through *Payana*, a preparatory process involving sequential treatment with *Kshara*, *Udaka*, and *Taila* before use.

*Chedana Karma* is the definitive treatment for well-developed *Arma*. Acharya Sushruta and Acharya Vagbhata have described its indications, surgical technique, and preoperative and postoperative care, emphasizing meticulous excision and proper postoperative management to ensure healing and minimize recurrence.

In modern ophthalmology, surgical excision is the standard treatment for advanced pterygium, particularly when it threatens the visual axis, induces significant astigmatism, or causes persistent symptoms. This closely parallels the Ayurvedic concept of *Chedana Karma*, highlighting its continued relevance in the management of *Arma*.

### **Indications for Arma Chedana**

*Chedana Karma* is indicated for advanced *Arma* presenting as a thick, dense, firm lesion, especially when there is extensive *Snayu* (Fibrous tissue) and *Mamsa* (Fleshy growth) involvement or extension onto the *Krishna Mandala* (cornea).

In the early stage, *Arma* usually does not affect vision as the lesion is confined to the peripheral cornea. With progression, it may extend toward the *Drishti Mandala* (visual axis), obstruct light entry, and cause visual impairment.

*Chedana Karma* is the preferred treatment when *Arma* threatens the visual axis or causes significant symptoms. Surgical excision restores visual axis clarity, relieves ocular discomfort, and helps preserve or improve vision. The decision for surgery depends on the extent of corneal involvement, lesion progression, symptom severity, and visual impairment.

### **Pre-operative Preparation (Purva Karma)**

In Ayurveda, *Purva Karma* is an essential preoperative preparation before *Shastra Karma*. It aims to balance the Doshas and prepare the patient through appropriate *Panchakarma* and *Shodhana* therapies, ensuring optimal fitness for *Chedana Karma*.

Before surgery, the patient is advised to *Snehapana* or *Snigdha Ahara* (unctuous diet) to facilitate the operative procedure. On the day of surgery, a light unctuous meal is administered before the patient is positioned for the operation.

As a local preoperative measure, *Lavana Churna* is applied by *Anjana Vidhi* to produce *Prakshobha*, loosening the fibrovascular growth from the underlying tissues and facilitating easier surgical excision.

Acharya Vagbhata recommends performing *Arma Chedana* with the patient in the supine position. He also advises applying *Amla Rasa* (e.g., lemon juice) before surgery to soften the lesion and facilitate easier excision.

| Instruments Required     | Other requirements             |
|--------------------------|--------------------------------|
| <i>Badisha yantra</i>    | Powder of <i>Lekhan Dravya</i> |
| <i>Muchundi yantra</i>   | Cotton balls                   |
| <i>Needles</i>           | Gauze pieces                   |
| <i>Mandalagra yantra</i> | Bandage                        |
|                          | Attendants                     |

### Main Surgical Procedure (*Pradhana Karma*)

After *Snehana* and *Swedana*, with attainment of *Samyak Snigdha Lakshanas*, mild fomentation is given to the affected eye. The patient is then seated comfortably with proper head support to ensure stability during the procedure.

After local fomentation, a paste of *Saindhava Lavana* and *Beejapura Rasa* (lemon juice) is applied to the *Arma*. Gentle massage helps loosen the fibrovascular tissue from the underlying conjunctiva, facilitating its surgical excision.

During *Arma Chedana*, the patient's head should remain steady, and the gaze is directed opposite to the lesion to improve surgical exposure—laterally for nasal *Arma* and medially for temporal *Arma*. This positioning facilitates safe and effective excision.

After adequate mobilization, the *Arma* is grasped with *Badisha*, *Muchundi*, or *Suchi-Sutra* and carefully excised using a *Mandalagra Shastra*. Following separation from the *Krishna Mandala* and *Shukla Mandala*, the lesion is removed from its base while preserving a small portion of the tissue to prevent excessive excision and reduce postoperative complications.

Complete but judicious excision of *Arma* is essential, as inadequate removal increases the risk of recurrence, and recurrent lesions are often more aggressive than the primary disease.

During *Arma Chedana*, careful dissection is essential to avoid injury to the *Kaneenika Sandhi*, *Apanga Sandhi*, lacrimal passages, and adjacent neurovascular structures. Proper tissue handling helps prevent complications such as *Nadi Vrana*, epiphora, delayed wound healing, and functional impairment, ensuring better surgical outcomes.

### *Paschat Karma* (Post-operative Care) / *Pratisarana Vidhi*

*Paschat Karma* is essential after *Chedana Karma* to promote healing, prevent infection, and reduce recurrence. It includes *Pratisarana* with *Lekhana Dravyas*, followed by *Swedana*, *Vrana Bandhana*, and internal *Sneha* according to the patient's condition. After bandage removal, *Hastasweda*, *Shodhana*, *Ropana Chikitsa*, and *Seka* with medicated *Kwatha* are performed to facilitate wound healing, reduce inflammation, restore ocular comfort, and minimize recurrence.

### Treatment of Complications (*Arma Upadrava Chikitsa*)

A successful *Arma Chedana* is characterized by relief of symptoms without postoperative pain or complications. If complications occur, Ayurvedic management includes *Seka*, *Aschyotana*, *Anjana*, and other local therapies with *Lekhana*, *Ropana*, and *Brimhana* properties to reduce inflammation, relieve pain, and promote healing. Medicated preparations containing *Karanja Beeja*, *Amalaki*, *Yashtimadhu*, *Madhu*, *Ghrta*, and *Durva* are commonly used to support postoperative recovery and improve surgical outcomes.

### Prevention of Recurrence

Prevention of recurrence after *Arma Chedana* depends on complete surgical excision, as *Heena Chedana* (incomplete removal) leaves residual fibrovascular tissue that can lead to regrowth. Postoperative use of *Lekhana Dravyas* and *Lekhana Anjana* helps eliminate residual tissue, inhibit further fibrovascular proliferation, promote healing, and reduce the risk of recurrence.

### Features of Properly Performed *Arma Chedana* (*Samyak Chedana Lakshana*)

Successful *Arma Chedana* is recognized by the presence of characteristic postoperative features including the following:

- **Clear and Healthy Appearance of the Eye**
- **Normal Ocular Movements**
- **Absence of Postoperative Complications:**

The presence of these features signifies **successful *Chedana Karma***, indicating complete lesion excision, satisfactory anatomical and functional recovery, and a **low risk of recurrence or postoperative complications**.

#### ***Shukra Chikitsa in Arma***

Acharya Vagbhata recommends that certain early-stage varieties of *Arma* should be managed according to *Shukra Chikitsa* rather than *Chedana Karma*. The principal modality of *Shukra Chikitsa* is the application of *Lekhana Anjana*, which possesses scraping and tissue-reducing properties. After *Arma Chedana*, regular use of *Anjana* for up to one year is recommended to promote healing and reduce the risk of recurrence.

#### ***Aushadhi Yogas or Anjanas explained in different classics:***

Several *Lekhana Anjana* formulations are described for the conservative management of early-stage *Arma*, including *Shankhadi Anjana*, *Shilanjana*, *Shuklari Varti*, *Sitadi Anjana*, *Dakshnadi Anjana*, *Nayan Sukha Varti*, *Prabhavati Gutika*, *Gutikanjana*, *Guduchyadi Anjana*, *Chandanadi Choornanjanana*, *Tamradi Anjanam*, *Tutthadi Varti*, *Marichyadi Lepa*, *Manjishthadi Anjana*, and *Manashila Anjana*. These preparations help reduce fibrovascular growth and retard disease progression.

***Pathya (Wholesome Regimen):*** *Pathya* plays an important role in the management of *Arma* by supporting healing, preventing disease progression, and reducing recurrence. A diet rich in *Tikta Rasa*, *Laghu Guna*, and *Kapha-Pittahara* properties, along with protection from sunlight, dust, smoke, and wind, good ocular hygiene, and adherence to prescribed therapies, is recommended to maintain ocular health and improve treatment outcomes.

***Apathya:*** *Apathya* in *Arma* includes foods, medicines, and practices that aggravate the disease. Substances with *Amla*, *Lavana*, and *Katu Rasa*, as well as *Tikshna*, *Ushna*, *Guru*, *Vidahi*, and *Vistambhakara* properties, should be avoided as they may worsen the condition and delay recovery.

#### **Modern Management of *Arma* (Pterygium)**

##### **Medical Management:**

Early-stage pterygium is managed conservatively with lubricating eye drops, topical NSAIDs, mild corticosteroids, and supportive measures. Patients are advised to avoid dust, smoke, and excessive UV exposure, and to use UV-protective sunglasses to relieve symptoms and slow disease progression.

##### **Surgical Management:**

Surgery is indicated for progressive or symptomatic pterygium. Common procedures include bare sclera excision, conjunctival autografting, amniotic membrane transplantation, and ocular surface reconstruction, often combined with adjunctive therapies such as mitomycin-C or beta irradiation to reduce recurrence.

#### **CONCLUSION:**

*Arma* closely corresponds to pterygium in modern ophthalmology, as both are characterized by progressive fibrovascular growth over the ocular surface. Ayurveda attributes its development to the general *Nidanas* of *Netra Roga*, with *Mamsa Vridhhi* being its cardinal feature. Early-stage *Arma* can be managed with *Lekhana Anjana* to retard progression and reduce postoperative recurrence, whereas advanced lesions involving the *Krishna Mandala* require *Chedana Karma*. Likewise, surgical excision is the definitive treatment for pterygium, although recurrence remains a challenge. The condition is more prevalent in tropical and subtropical regions, particularly among individuals exposed to UV radiation, dusty environments, and outdoor occupations.

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