Role of Acharya Sushruta in Ophthalmology Surgery—Arma Chhedana (Pterygium Excision)

Meghna Motwani¹, Dr D.B. Vaghela², Dr. Deepak K Pawar³

¹2nd year M.S. Scholar, ²I/C HOD & Associate Professor, ³Assistant Professor
Department of Shalakya Tantra, ITRA, Jamnagar, Gujarat, India

Abstract

Background: Acharya Sushruta, being the father of surgery has described various surgical disorders with their respective detailed interventions. He depicted Ashtavidha Shastra-Karma like Chhedana (Excision), Bhedana (Incision), Lekhana (Scraping), Vyadhana (Puncturing), Eshana (Probing), Aaharana (Extraction), Vistravana (Drainage), Seevana (Suturing). He described 76 Netra Rogas, including 40 diseases which are surgically curable and with elaborative depiction of indications, contraindications, pre-para-post operatives of Utsangini (Trachoma), Arma (Pterygium), Pakshmakopa (Trichiasis), Lingnasha (Cataract) etc. is practiced in contemporary science with similar concepts that are mentioned by Acharya Sushruta. Till now, there is less work done on Arma Chhedana (Pterygium excision), so this topic has been selected. Aims and Objectives: To study the concepts of Acharya Sushruta and correlate with modern surgical practice of ophthalmology. Materials and Methods: Arma described in Sushruta Samhita with various commentaries and Pterygium with available sources of modern literatures is studied and analyzed. Result: If the root of surgery is traced, Acharya Sushruta is the pioneer of the various surgeries, that can be seen through the comparison of Arma Chhedana with Pterygium excision.

Keywords: Arma, Chhedana, Shastra Karma, Pterygium, Excision

Introduction: Acharya Sushruta has mentioned eight branches of Ayurveda, Shalakya Tantra is one of them. It is the science dealing with upper clavicular diseases such as Ophthalmology, Otorhinolaryngology and Dentistry. There is detailed description of Eye disorders in Sushruta Samhita-Uttara Tantra. Among them Arma is depicted in Shuklagata Rogas. There are five types of Arma described in Sushruta Samhita.¹

1. Prastaari Arma: It is Prathita (wide), Tanu (thin), Vistirna (spreading), Rudhira-Prabha Sanila (red structure having blue tinge) tissue in Shukla-Bhaga (white part).
2. Shukla Arma: It is Shukla (whitish), Mrudu (soft), Sama (uniform) and Vradhate Chirena (slow spreading tissue) in Shukla-Bhaga.
3. Lohita Arma: It is a Padmabham (growth resembling lotus) in Shukla-Bhaga.
4. Adhimansa Arma: It is Vistirna (spreading), Mrudu (soft), Bahala (thick), Yakruta-Prakasha (resembling liver) and Shyava (blackish) tissue in Shukla-Bhaga.
5. Snayu Arma: It is Pishitam (fleshy tissue) in Shukla-Bhaga, which is Khara (rough), Vridhhiata (hypertrophied) and Pandu (whitish).
Arma can be correlated with Pterygium. It is a wing-shaped fold of conjunctiva encroaching upon the cornea from either side within the interpalpebral fissure. Pathologically pterygium is a degenerative and hyperplastic condition of conjunctiva.

Types: Depending upon the progression it may be progressive or regressive pterygium.

1. Progressive pterygium: It is thick, fleshy and vascular with a few infiltrates in the cornea, in front of the head of the pterygium (called cap of pterygium).
2. Regressive pterygium: It is thin, atrophic, attenuated with very little vascularity. There is no cap. Ultimately it becomes membranous but never disappears.

Aims and Objectives: To study the concepts of Acharya Sushruta and correlate with modern surgical practice of ophthalmology.

Materials and Methods: Arma described in Sushruta Samhita with various commentaries and Pterygium with available sources of modern literatures is studied and analyzed.

Chhedana Karma of Arma: Arma is described as Chhedana Sadhya Vyadhi, but it cannot be done in all types of Armas. Acharya Sushruta has given certain indications.

Indications: Arma which is Charmabham (skin like), Bahala (thick), Snayu-Mamsa Ghanavritta (fibrous, covered with fleshy part) and Krushna Mandalaga (one with encroaching cornea) is indicated for excision.

Purva Karma:

- Collection of the materials and equipments:
  - Badisha Yantra
  - Muchundi Yantra
  - Suchi Yantra
  - Mandalagra Shastra
  - Pichu
  - Patta-Sutra
  - Pratisarana Dravya
  - Aschyotana Dravya
  - Anjana Dravya
- Patient should be given Sarvadehik Shodhana.
- Patient should be given Snigdha Ahara (oily food) before the surgery.
- Patient should be given supine position.
- Nayana Samroshana: Eyes of the patient should be sprinkled by Saindhava Lavana, in order to loosen out the Arma.

Pradhana Karma:

- Thus, loosen Arma of its attachment with eyeball by Samroshana, should be given Mrudu Swedana on it.
- Ask the patient to look laterally towards Apanga Sandhi (outer canthus).
- Arma should be lifted with the help of Badisha Yantra.
- Then it should be held with Muchundi Yantra or with Suchi Yantra and elevated.
- The lids should be held apart tightly as there is a risk of being hurt by the instrument.
- The Arma, thus loosened and suspended by these three instruments should be dissected from all sides with Mandalagra Shastra.
• After it has been freed from all sides and also from Krishna and Shukla Mandalas, it should be dissected from all attachments, sparing one-fourth part at Kaninika Sandhi (inner canthus).
• In case there is injury to the Kaninika Sandhi (inner canthus), there will be haemorrhage or a sinus.
• In case of inadequate excision, Arma may grow very soon.

**Paschata Karma:**

• **Pratisarana:** After the operation, eyes should be smeared with Yava-Kshara, Trikatu and Saindhava Lavana.
• **Swedana:** Hot fomentation should be given on eyes.
• **Netra Bandhana:** Eye bandaging should be done.
• On the third day, bandage should be opened and eyes should be fomented.
• **Aschyotana:** Karanja-Beeja, Amalaki, Yashtimadhu mixed with milk should be used as eye drop.

**Samyak Chhinma Arma Lakshana:** In properly excised Arma, Vishudhh Varna (eye looks normal in colour), Kriyasvakshi (proper functioning of eyes), Gata-Klama (no tiredness) and Anupdrava (free from all complications).

Treatment of complications: If part of Arma is still remaining, application of Lekhana-Anjana should be done.

**Pterygium Excision:**

Indications:
• Cosmetic Reasons.
• Continued progression threatening to encroach onto the pupillary area (once the pterygium has encroached pupillary area, wait till it crosses on the other side).
• Diplopia due to interference in ocular movements.

**Analogous Steps:**

| Arma Chhedana | Pterygium Excision
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| Arma is lifted with the help of Badisha Yantra. | Pterygium head is lifted with Castroviejo forceps. |

For separation and elevation of Arma, Badisha and Muchundi Yantras are used. Cap is dissected by dry surgical sponges, scraping with crescent or scarifier blade.
After it has been freed from all sides and also from Krushna and Shukla Mandala, it should be dissected from all attachments. Corneal portion is stripped by blunt dissection technique.

Arma is excised with Mandalagra Shastra. Pterygium is excised with Westcott Scissors.

Excision is done sparing one-fourth part at Kaninika Sandhi (medial canthus). In case there is injury to the Kaninika Sandhi (medial canthus), there will be haemorrhage or a sinus. In approaching to medial canthus, while dissecting prolapsed orbital fat, caution must be exercised to avoid severing blood vessels, which can be extremely difficult to cauterize.

Lekhana-Anjana is done post-operatively to avoid recurrence. Conjunctival limbal autograft (CLAU), Amniotic membrane graft and mitomycin-C application, Lamellar keratectomy and Lamellar keratoplasty is done to avoid recurrence.

Swedana and Aschyotana is given to combat pain. Topical antibiotic, NSAIDs, Corticosteroids are given.

Discussion:

- *Acharya Sushruta* has mentioned various surgeries with their respective pre and post operatives. He has mentioned whole chapter on *Trividha Karma - Poorva, Pradhana and Paschata Karma*. In that chapter he has included whole procedure from collection of the materials upto post-operative wound management.
- There is description of different types of incision for different body parts. Oblique incision is advised in eyebrows, eyelids and forehead – same is practised in contemporary science.
- Although Pterygium surgery is performed under local anaesthesia, *Acharya Sushruta* has described *Madhya* as Anaesthetic agent – in modern science also first ever used Anaesthetic agent was Ethyl Alcohol.
- The procedure described by *Acharya Sushruta* is widely used in modern science, as seen in the similarity in the process of steps.
Lekhana-Anjana described by Acharya Sushruta plays a huge role in preventing recurrence of Arma and the same is adopted at present where they use anti mitotic drug (Mitomycin-C) to check the recurrence.

There are various aspects where modern science is still behind:

- Indication of surgery depicted by Acharya Sushruta on the basis of characteristics of Arma.
- Types of Arma.
- Nayana Samroshana is itself important in order to loosen out the Arma,
- Treatment of Alpa Arma by medicines and Lekhana-Anjana (Shukravata Chikitsa).
- Modern science does not have any effective medicine.
- Low recurrence rate due to effectiveness of Lekhana-Anjana.

**Conclusion:** Acharya Sushruta is known as Father of Surgery. It is need of an hour to practice and understand the concepts of surgical views given by Acharya Sushruta. If the root of surgery is traced, Acharya Sushruta is the pioneer of the various surgeries, that can be seen through the comparison of Arma Chhedana with Pterygium excision.

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