

Research Article

# Clinical Trial of *Pippaladi Gutika Anjan* in the Management of *Arma* with Special Reference to Pterygium

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## I N F O

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## A B S T R A C T

**Introduction:** Ayurveda is considered the oldest medical science, existing since or before human creation. According to Ayurvedic texts, "*Arma*" describes a condition where a triangular, wing-like fibro-vascular layer gradually advances towards the "*krisna mandala*" (cornea) from either the "*kaneenika*" (inner canthus) or "*apanga sandhi*" (outer canthus) of the eye. Pterygium, on the other hand, is characterised by a wing-shaped fold of conjunctiva encroaching upon the cornea within the interpalpebral fissure. This condition is degenerative, involving the subconjunctival tissues, and manifests as vascularised granulation tissue invading the cornea, potentially damaging Bowman's membrane and the superficial stromal layers.

**Aims:** The aims and objectives of this study are twofold: (i) To review the literature on "*Arma*" from various Ayurvedic Samhitas and other classical texts, alongside modern reviews on pterygium from contemporary sources, and to analyse conceptual and clinical studies involving patients with pterygium vis-à-vis *Arma*. (ii) To evaluate the efficacy of "*Pippaladi Gutika Anjana*" in managing *Arma*, particularly in relation to pterygium.

**Method:** In a clinical trial, one hundred patients with *Arma* were included in a single group. All patients received treatment with *Pippaladi Gutika Anjana* as a *lekhana anjana* for 60 days.

**Results:** The mean scores before the treatment were 1.28, 1.22, 1.04, 1.65, and 1.26, which reduced to 0.35, 0.85, 0.85, 1.06, and 0.90 after 60 days of treatment, in cases of irritation, *daha*, *ragata*, foreign body sensation, and *mamsa vriddhi*, respectively.

**Conclusion:** The trial compound showed promising symptomatic relief for most clinical features, including the growth of pterygium (*Arma*). Importantly, no adverse effects of the treatment compound were observed during the trial period.

**Keywords:** *Arma*, *Pippaladi Gutika Anjana*, *Lekhana Anjana*, Pterygium

## Introduction

*Arma* is a disease in which a triangular wing-like fibro-vascular layer gradually encroaches towards the *krisna mandala* (cornea) from either *kaneenika sandhi* (Inner canthus) or *apanga sandhi* (outer canthus) of the eye. If this layer invades the cornea and blocks the pupillary region, there will be a reduction in vision.<sup>1</sup>

The pterygium is a wing-shaped fold of conjunctiva encroaching upon the cornea from either side of the eye within the interpalpebral fissure. It is a degenerative condition of the subconjunctival tissues. It proliferates as vascularised granulation tissue, which invades the cornea and destroys the Bowman's membrane and the superficial layers of the stroma.<sup>2</sup>

In Sushrut Samhita, *uttar tantra*, eleven types of *Shuklagata roga* are mentioned. Out of these eleven types, five are *Arma*.

The five types of *Arma* are named as follows:<sup>1</sup>

1. *Prastari arma*
2. *Shuklarma*
3. *Lohitarma (Shonitarma/ kshataj arma)*
4. *Adhimamsajarma*
5. *Snayu arma*

In modern medical science, *Arma* can be correlated with pterygium. Pterygium is a triangular-shaped growth consisting of bulbar conjunctival epithelium and hypertrophied subconjunctival connective tissue, occurring medially and laterally in the palpebral fissure and encroaching onto the cornea.

In both modern and Ayurvedic sciences, surgery or *chedan karma* is advocated as the main treatment of *Arma*. However, in the initial stage, different types of lekhan Anjan are used for the treatment of *Arma* in Ayurveda.<sup>1</sup>

## Aims and Objectives

The present clinical trial has been undertaken with the following main objectives:

1. Conceptual and clinical studies and review of literature about *Arma* through different Ayurvedic Samhitas and other classical texts, along with modern reviews of pterygium through contemporary texts.
2. To study the role of *pippaladi gutika anjana* in the management of *Arma*, with special reference to pterygium.

## Materials and Methods

The clinical study was conducted on 100 clinically diagnosed patients of *Arma*, aged between 20 and 65 years. The selection of all patients was made from the Outpatient Department (OPD) and Inpatient Department (IPD) of Government Ayurvedic College and Hospital, Jalukbari, Ghy-14. All the patients were kept in a single group. A

special study proforma was prepared based on the signs and symptoms of *Arma* described in Ayurvedic and modern texts.

## Inclusion Criteria

- Patients aged between 20 and 65 years
- Clinically diagnosed patients of *Arma* (pterygium) covering the conjunctiva but not encroaching on the cornea

## Exclusion Criteria

- Patients below 20mmatory disease of the eye
- Patients with pterygium crossing the cornea
- Patients with any systemic disease such as diabetes mellitus etc.

## Investigational Criteria

The following investigations were performed for all registered patients to rule out any pathologies and systemic diseases.

- Haemoglobin
- Total leukocyte count (TLC), Differential leukocyte count (DLC), Erythrocyte sedimentation rate (ESR)
- Random blood sugar (RBS)

The following examinations of the eye were also performed for the correction of vision and to detect any ocular pathology:

- Visual acuity testing
- Refraction
- Measurement of intraocular pressure

## Posology

Figure 1 shows *Pippaladi gutika Anjana*, which is the Ayurvedic topical formulation used in this study.



Figure 1. *Pippaladi gutika Anjana*

## Ingredients<sup>3</sup>

- *Lauha churna*
- *Sandhav lavana*
- *Pippali*
- *Hareetaki*
- *Vibheetaki*
- *Amalaki*
- *Bhringaraj*

- *Draksha*

*Pippaladi gutika Anjana* was prepared in Assam Ayurvedic Product, Bamunimaidam, Guwahati.

Patients were treated with *Pippaladi Gutika Anjana* as *lekhana anjana* for a duration of two months (60 days). The follow-up period was 60 days after the completion of treatment.

### Criteria of Assessment

1. **Subjective assessment:** All patients registered for the present trial were examined for changes in fleshy growth of conjunctiva on the sclera and cornea.
2. **Clinical assessment:** The effect of treatment, i.e., results, were assessed with respect to clinical signs and symptoms noted in each case.

The following signs and symptoms were assessed for improvement after the course of therapy:

- *Daha* (burning sensations)
- Irritation
- *Raga* (redness/ congestion of conjunctiva)
- Foreign body sensation
- *Mansa vridhhi* (fleshy growth of conjunctival tissue)

They were evaluated using a suitable scoring method. The details are as follows:

#### Irritation in eyes

- 0: No irritation in the eyes
- 1: Occasional irritation in the eyes
- 2: Irregular irritation in the eyes
- 3: Regular irritation in the eyes

#### *Daha* (burning sensation in the eyes)

- 0: No burning sensation in the eyes
- 1: Occasional burning sensation in the eyes
- 2: Irregular burning sensation
- 3: Regular Burning sensation

#### *Raga* (congestion or redness in the conjunctiva)

- 0: No congestion
- 1: Occasional congestion
- 2: Redness during external exposure
- 3: Continuous redness in the eyes

#### Foreign body sensation

- 0: No foreign body sensation
- 1: Occasional foreign body sensation
- 2: Intermittent foreign body sensation
- 3: Continuous foreign body sensation

#### *Mansa vridhhi* in *suklamandal* (fleshy muscular growth of conjunctiva)

- 0: No muscular growth
- 1: Mild muscular growth in the bulbar conjunctiva
- 2: Muscular growth just before the limbus
- 3: Encroaches the cornea up to 1 mm

### Results

In the present clinical study, it was observed that the maximum number of patients (38%) were in the age group of 51–65 years. The sex-wise distribution of patients reveals that the highest number of patients were male (60%), followed by female (40%). Analysis based on the socio-economic status of the patients depicts the incidence of *Arma* among the lower middle class (50%) and the upper middle class (5%) of society. Distribution of the patients according to diet showed a higher incidence of *Arma* in non-vegetarians (75%), followed by vegetarians (25%). The maximum number of patients had Vata-Pitta Prakriti (42%), followed by *Vata-Kapha Prakriti* (24%). In the present study, 30% of the patients had a family history, whereas 70% had no family history. Most of the cases (64%) were of the progressive type, whereas 36% were of the stationary type of pterygium.

In the present clinical trial, we found that symptom-wise distribution among the 100 patients showed that *mamsa vridhhi lakshana* (muscular growth) was seen in all the patients (100%). Other symptoms such as *raga* (redness) and foreign body sensation were found in 92% and 77% of patients, respectively. Patients experiencing irritation were 60%, while 55% of patients had *daha* (burning sensation).

#### Clinical Profile

The clinical data presented here (Tables 1–5) is based on the trial work with 100 patients in a single group. Figure 2 shows a comparison among the clinical profiles of the patients before and after treatment.

**Table I. Effect of Treatment for Irritation in the Eyes of 100 Patients**

Mean Value			t Value	SD	SE	p Value	R
BT	AT	D					
1.28	0.35	0.93	10.455	0.95	0.104	< 0.005	S

BT: Before treatment, AT: After treatment, D: Difference, S: Significant  $t(60) = 10.455$ ,  $p \leq 0.005$ , hence the result is statistically significant at the level of  $< 0.005$ . Paired t test was used.

**Table 2. Effect of Treatment for *Daha* (Burning Sensation) on 100 Patients**

Mean Value			t Value	SD	SE	p Value	R
BT	AT	D					
1.22	0.85	0.37	12.868	0.85	0.078	< 0.0001	HS

BT: Before treatment, AT: After treatment, D: Difference, HS: Highly significant  $t(55) = 12.868$ ,  $p \leq 0.0001$ , hence the result of *daha* is statistically highly significant at the level of  $< 0.0001$ . Paired t test was used.

**Table 3. Effect of Treatment for *Raga* on 100 Patients**

Mean Value			t Value	SD	SE	p Value	R
BT	AT	D					
1.04	0.85	0.19	10.832	0.87	0.85	< 0.0001	HS

BT: Before treatment, AT: After treatment, D: Difference, HS: Highly significant  $t(92) = 10.832$ ,  $p \leq 0.0001$ , hence the result is statistically highly significant at the level of  $< 0.0001$ . Paired t test was used.

**Table 4. Effect of Treatment for Foreign Body Sensation on 100 Patients**

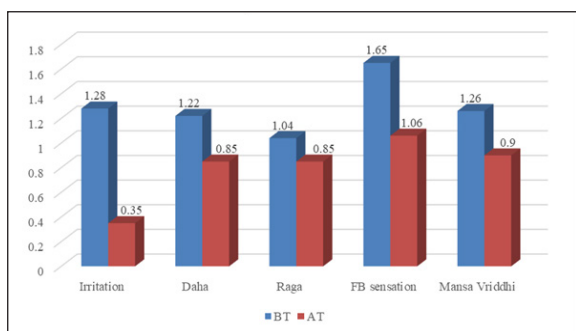
Mean Value			t Value	SD	SE	p Value	R
BT	AT	D					
1.65	1.06	0.59	11.091	0.83	0.069	< 0.001	S

BT: Before treatment, AT: After treatment, D: Difference, S: Significant Note:  $t(77) = 18.73$ ,  $p \leq 0.001$ , hence the result is statistically significant at the level of  $< 0.001$ . Paired t test was used.

**Table 5. Effect of Treatment for *Mansa Vriddhi* on 100 Patients**

Mean Value			t Value	SD	SE	p Value	R
BT	AT	D					
1.26	0.90	0.36	18.73	0.50	0.042	< 0.005	S

BT: Before treatment, AT: After treatment, D: Difference, S: Significant Note:  $t(100) = 18.73$ ,  $p \leq 0.005$ , hence the result is statistically significant at the level of  $< 0.005$ . Paired t test was used.



FB: Foreign body, BT: Before treatment, AT: After treatment

**Figure 2. Summary of Clinical Profile of the Patients**

*Arma* is considered a disease of *suklamandal*. In contemporary science, *Arma* is usually correlated with pterygium. Both diseases are diagnosed based on their characteristics and type of growth.

## Arma and Pterygium

The descriptions of *Arma* present in classical texts or *samhitas* are quite similar to pterygium in modern ophthalmology. Many similarities are found between these two. Some of the common features are mentioned below:

1. *Arma* is a disease of the *suklamandal* (conjunctiva and sclera), while pterygium is also caused by degenerative changes in the bulbar conjunctiva. It is defined as a conjunctival or subconjunctival triangular growth that gradually encroaches towards the cornea.
2. *Arma* generally occurs in the *apanga* or *kaneenaka sandhi*. Pterygium is also considered a growth from the nasal canthus as well as from the lateral canthus.
3. Both *Arma* and pterygium are fleshy growths that gradually encroach towards the *krishna mandal* or cornea.
4. In advanced stages, both diseases cover the *dristi mandal* (pupillary region), and recurrence is very

common in both conditions after surgical removal.

5. The principle of treatment of both Arma and pterygium is chedan karma, i.e., surgery. Of the eleven types of shuklagata rogas, five are Arma.

A total of 100 patients were registered for the study. The study showed a predominance of male patients. Occupational distribution indicated that the highest number of patients (35%) were farmers. The maximum number of patients had Vata-Pitta Prakriti (42%), followed by Vata-Kapha Prakriti (24%).

Before treatment, the mean score of irritation was 1.28, which was reduced to 0.35 by the application of Pippaladi Gutika Anjana as *lekhana anjana* for 60 days, which was statistically significant at the level of  $p < 0.005$ .

In the case of *daha* (burning sensation), the reduction of symptoms was observed from an initial mean score of 1.22 to 0.85 after 60 days of treatment with Pippaladi Gutika Anjana, which is highly significant at the level of  $p < 0.0001$ .

Before treatment, the mean score of *ragata* (redness) was 1.04, which was reduced to 0.85 after 60 days of application of Pippaladi Gutika Anjana, which is highly significant at the level of  $p < 0.0001$ .

The initial mean score of foreign body sensation was 1.65, and after two months of treatment, it became 1.06, with a difference of 0.59, which was statistically significant at the level of  $p < 0.001$ .

The mean score of *mamsa vriddhi* (fleshy growth) in the *suklamandal* was 1.26 before treatment, which was reduced to 0.90, with a mean difference of 0.36 after the 60-day treatment schedule, which was statistically significant at the level of  $p < 0.005$ .

### Probable Mode of Action<sup>3,4</sup>

*Arma* is a kapha predominant *mamsa dhatu dusta tridoshaj vyadhi*. The ingredients of the drug used in the present trial are mainly kapha samak possessing *lekhana* qualities.

The *gunas*, which have *lekhana* properties, are *laghu*, *ushna*, *tikshna*, and *ruksha*. These *gunas* are also the main properties of the constituents of the trial drug, indicating that the trial drug possesses *lekhana* properties.

The *rasas* such as *katu*, *tikta*, and *kashaya rasa* also have *lekhana* properties. Most of the constituents of *pippaladi gutika anjana*, the trial drug, possess these properties, thus acting as *lekhana karma*.

According to modern medical science, antimitotic drugs act as fibrinolytic agents and cause the scrapping of pterygium tissue. The trial drug also acts as a fibrinolytic agent.

The exact mode of action of the trial drug cannot be explained without ultra-modern laboratory parameters.

However, the action of the drug seems similar to that of anti-metabolite drugs used by modern ophthalmologists.

### Conclusion

*Arma* in Ayurvedic literature and pterygium in modern literature are essentially the same diseases. The incidence of *Arma* increases with age, whereas pterygium tends to regress in older individuals. Clinical trials and research have shown sustained long-term relief during the two-month follow-up study. Therefore, prolongation of therapy may yield better results. No adverse or toxic effects were observed during or after the treatment in the trial.

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**Conflict of Interest:** None

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