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**Role of *Jalaukavcharana* in *Arjuna* (Subconjunctival hemorrhage), *Abhighataja*
/ *Tritiya Patalagata Vataja Timira* (Full Thickness Traumatic macular hole)
healing and improving the vision: A Case study**

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ABSTRACT

Arjuna (Subconjunctival haemorrhage) is a spot/dot on *Shuklamandala* [1]. Traumatic macular hole injury (TMH) occurs in 1.4% of closed globe injuries and 0.15% of open globe injuries. TMH incidence is limited, given its relatively rare occurrence, common in young age group because associated with sport, recreation, work and transportation [3]. TMH can be correlated with *Vataja Timira* according to *Asthanga-Hridaya*. **Aims and objectives:** To see the role of *jaulaukavcharana* in *arjuna* (subconjunctival hemorrhage), healing and improving the vision in

vataja timira (TMH) and healing of post suture scar. **Material and methods:** Suture site and surrounding area was cleaned with normal saline. Under aseptic precaution, activated *Jalauka* was placed 2 cm away from the outer canthus over the swelling site and another *Jalauka* was placed over the right supra orbital area (oedematous area) and waited for 40 minutes or till *Jalauka* leaves on its own. Post *Jalaukavacharana*, bite site was sprinkled with *Haridra Choorna* and bandaging was done. This procedure was followed for 11 days. **RESULTS:** There was complete resolution of sub-conjunctival hemorrhage within 12 days and complete cured traumatic macular hole within 5 months. Patient vision of right eye was drastically improved from 6/36 to 6/6P (Partial) within 25 days due to complete healing of traumatic macular hole. **CONCLUSION:** *Jalaukavacharana* is a method of removing (vitiated) blood or inflammatory exudates and creates negative pressure which can reduce intra-ocular pressure. Hence, *Jalaukavacharana* (leeches) used in the present case.

Keywords: *Arjuna, Timira, Subconjunctival haemorrhage, Traumatic Macular Hole, Jalaukavahcharana, Rakta Mokshana.*

INTRODUCTION

Arjuna (Subconjunctival haemorrhage) is a spot/dot on *Shuklamandala*; painless in nature, smooth and red like *Shasharudhiropamastu Bindu* (blood of rabbit) or like *Indragopa* [1]. According to *Dalhana* it is due to *Rakta Dushti* and *Sadhya*. It should be treated like *Pittabhishyanda* / *Raktabhishyanda* with *Ghritapana* – *Raktamokshana* – *Virechana* – *Shirovirechana* [4]. Subconjunctival haemorrhage is due to the rupture of small vessels beneath the conjunctiva. Causes include increase in blood pressure, diabetes, hyperlipidemia, trauma due to contact lenses or any foreign body or vigorous rubbing of the eyes.

Dristhi is shaped like *Masura-Dala* (lentil), composed of *Sara Bhaga* of *Panchamahabhuta*; sparkling like sparks of fire or fire-flea; *Avyaya* i.e. non-deteriorating, devoid of metabolism; consisting of everlasting *Teja*; externally covered by various *Patala*; *Vivarakriti* i.e. indicating the depth [5]. *Dristhi* is 1/7th of *Krishnamandala* – so it is considered as pupil and the internal organelles [6]. *Sushruta* describes 6 *Patala* out of which 2 *Patala* are outer and 4 *Patala* are inner ones [7]. A very severe and chronic disease ‘*Timira*’ is observed to be generated in these internal *Patala*. *Timira* is a symptom-complex comprising of blurring of vision, seeing non existing objects of various sizes

and shapes with changed color perception, diplopia, polypia etc. Some symptoms, suggesting complications without papillary discoloration, are seen in 5 types of *Timira* other than *kaphaja*. This condition is *reversible* if properly and promptly treated, because it is a *Sadhya* disease. Features of affliction of 1st and 2nd *Patala* clubbed with 6 types of *Timira* [8]. According to *Asthanga-Hridaya* – when dosha reach *Dwiteeya Patala*, *Abhuta* i.e. non existing objects like flies, hairs etc. are seen but *Bhuta* i.e. existing near objects are seen with difficulty. Very minute and very distant objects are not seen. Distant object appears nearer and nearer object appear far away. If *Dosha* are arranged in a circular manner, all objects look circular. If *Dosha* get accumulated in the center, diplopia develops. If pathology reaches deeper, larger object looks smaller (*micropsia*) and smaller objects looks larger (*macrospia*). If *Doshas* occupy lower part of *Dristhi*, near objects; upper part of *Dristhi* distant objects and in the flanges of *Dristhi*, sidewise objects are not seen [9]. *Timira-Kacha-Lingnasha* is characterized by *transient, partial, and total blindness* respectively. *Vataja Timira* according to *Sushruta & Asthanga-Hrudaya* is due to *vata*, objects look unstable (*iridodonesis*), dirty, crooked, i.e. broken/curved (*Vyavidhachoriditis*), and *ArunaVarna* (red colored) due

to accentuation of red colors as in lenticular opacity.

The first report of a macular hole was made by Herman Knapp in 1869 [2]. Macular hole is a full thickness void of the retina in the foveal center. Due to its location, central vision loss is a hallmark of the condition. Most commonly it is a degenerative mechanism arising from traction between the vitreous and the retina in non-traumatic cases. TMH is a sudden axial compression of the globe which can result in the flattening of the posterior sclera. With a fixed volume, the subsequent decrease in the globe's A-P diameter causes a compensatory equatorial expansion. This dynamic change in the globe structure can lead to horizontal forces and splitting of the retinal layers at the fovea. The predictability of traumatic injuries is always difficult and the progression to TMH is no different.

According to *Acharya Sushruta*, *Jalauka* is the best among *Anushastra*. According to *Acharya Charaka*, *Jalaukavacharana* is one among *Shastrakarmas*. Hirudin, calin and factor Xa are present in the saliva of leech (*Hirudina medicinalis*) which acts as anticoagulant and prevents clot formation; bdellin acts as anti-inflammatory agent maintaining normal circulation. *Jalaukavacharana* is done commonly in *Raja*,

Adhya Rogi, Bala, Vriddha, Stri and Sukumara.

Case report

Pradhana Vedhana (Chief complaints):

A 22 year of male known case of diabetes mellitus since 3 months, presented with h/o alleged RTA (Road traffic accident) on 21/01/2023 due to self fall from bike, patient was taken to nearby hospital and suturing was done for cut lacerated wound, no loss of consciousness after accident. Patient came with sutured cut lacerated wound (around 2-3 cm) over the lateral aspect of right eyebrow and another cut lacerated wound (around 3-4 cm), approximately 2 cm away from the outer canthus of the right eye associated with profound swelling around the orbit causing blurred vision and inability to open the right eye, central vision loss, patient seeing the object by tilting his neck, pain in the nape of neck, radiating towards the right arm and multiple lacerations around right side of the face.

Poorva Vyadhi Vrittanta (Treatment History): Known case of NIDDM since 3 months not under any medication (only under control with diet).

Chikitsa Vrittanta (Treatment History): Injection T.T 0.5 cc IM given, suturing done for the CLW (cut lacerated wound).

Vaikthika Vrittanta (Personal History)

- Diet : Mixed
- Appetite : Good
- Bowel : Regular
- Micturition : Regular
- Sleep : Sound

Samanaya Pareeksha (General examination):

- Built : Moderate
- General condition : Fair
- Nutritional status : Well nourished
- Pallor : Absent
- Icterus: Absent
- Cyanosis : Absent
- Clubbing : Absent
- Lymphadenopathy : Absent
- Oedema : Present

Samanaya Pareeksha (Vitals)

- BP : 120/80 mm of Hg
- Pulse rate : 67 bpm, Regular
- Respiratory rate : 17/min
- Temperature : 98.4 DF

Samsthanika Pareeksha (Systemic examination):

CNS: conscious, oriented, to time place and person

CVS: S1S2 heard

RS: normal vesicular breath sound present, no added sound

Sthanika Pareeksha (Local examination): Inspection palpation

Periorbital Edema present +++,
 Right eyelid margin oedematous
 Medial laceration present near the inner
 canthus of right eye
 Punctum not involved
 Congestion present in right eye periorbital
 area ++
 Subconjunctival haemorrhage (SCH) +++
 Cornea and lens are normal.

Prayogshala Pareeksha (Investigation):

- NCCT impression 22-01-2023: Right periorbital soft tissue swelling, no significant intracranial abnormality noted
- MRI Cervical spine with brachial plexus 23-01-2023 – fractured spinous process of C6 and C7 vertebra with edema in adjacent tissue.

- OCT of right eye impression - traumatic macular hole injury of right eye.
- Blood report: Hb% - 16.6 gm%, total W.B.C count – 13,500 cells/CMM
- HBA1C – 9.3, FBS – 170 mg/dl, PPBS – 257 mg/dl, Mean blood glucose – 220 mg/dl
- HIV, Hepatitis-B surface antigen non-reactive.

On examination patient had sub-conjunctival hemorrhage of right eye, visual acuity in right eye was 6/36 and 6/6 in left eye on 24-01-2023.

On slit lamp examination

	Right eye	Left eye
Eye lids	Edema present, medial laceration present, punctum not involved, eyelid margin oedematous	Normal
Eye lashes	Matted upper and lower eye lid and eye lashes	Normal
Conjunctiva	Congestion present subconjunctival haemorrhage (SCH) present	Normal
Cornea	Clear	Normal
Lens	Clear	Normal

Vyadi Vinischaya (Diagnosis):

Diagnosis – *Arjuna* (sub-conjunctival hemorrhage), *Abhighataja* / *Tritiya Patalagata Vataja Timira* (Full Thickness Traumatic macular hole), NIDDM, fracture of spinous process of C6 and C7 vertebra.

MATERIAL AND METHOD:

1. Patient was taken in supine position.

2. Suture site and surrounding area was cleaned with normal saline.
3. Under aseptic precaution, activated *Jalauka* was placed 2 cm away from the outer canthus over the swelling site and another *Jalauka* was placed over the right supra orbital area (oedematous area) and remove when it start *Kandu* (itching) and *Toda*

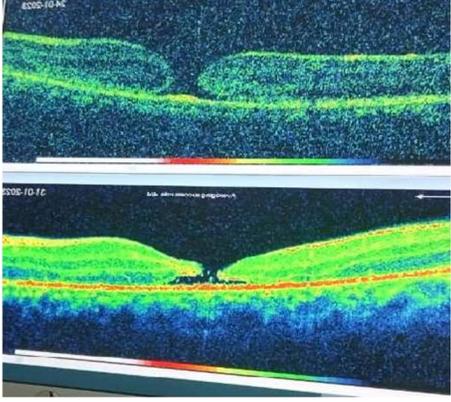
(pricking type of pain) on the bite site of *Jalauka* or waited for 30-40 minutes.

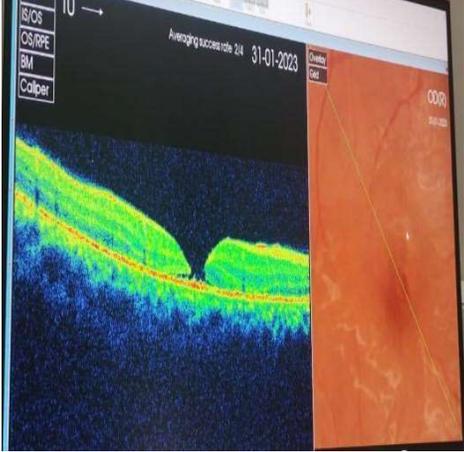
4. Post *Jalaukavacharana*, there was triangular wound created by the mouth of *Jalauka*/leech. The blood comes out from the post *Jalauka* wound was checked by application of tight bandaging with the use of *Haridra Choorna*. This procedure was followed for 11 days.

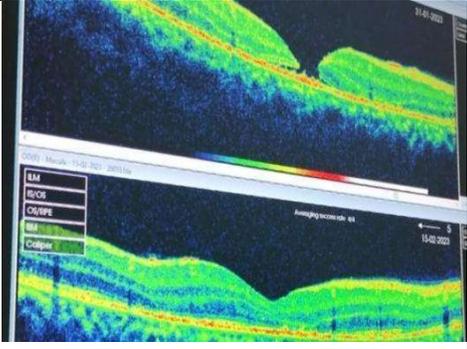
Precaution during leech application:

1. Bleeding and clotting time of the patient should be normal
2. Gentle handling of leech
3. Cover the leech with wet gauze
4. Remove *Jalauka* if any adverse effects present (e.g. severe itching, pain, allergic reaction etc.

OBSERVATIONS:

Date	Symptoms	Picture	OCT report
22-01-2023 1 st Day	Periorbital soft tissue swelling +++ Unable to open right eye +++		
24-01-2023 3 rd Day	Subconjunctival haemorrhage(SCH) +++ Oedema over eyelids ++ Medial laceration present Punctum not involved Right eye vision 6/36 Left eye vision 6/6 <i>Jalaukavcharana</i> day – 1		

<p>27-01-2023 6th Day</p>	<p>Subconjunctival haemorrhage (SCH) +++ Oedema over eyelids + Medial laceration resolving Right eye vision 6/36 Left eye vision 6/6 <i>Jalaukavcharana</i> day – 4</p>		
<p>30-01-2023 10th Day</p>	<p>Subconjunctival haemorrhage (SCH) ++ Oedema over eyelids + reducing No diplopia Eye lids – normal Cornea – seen with normal limit Medial laceration resolving Right eye vision improve from 6/36 to 6/18 Left eye vision 6/6 <i>Jalaukavcharana</i> day – 7</p>		
<p>31-01-2023 11th Day</p>	<p>Right eye lateral SCH ++ but resolving 60% Right Lateral laceration wound apposition well Right eye OCT - Right eye macular hole resolving Right eye vision 6/18 Left eye vision 6/6 <i>Jalaukavcharana</i> day – 8</p>		

<p>02-02-2023 13th Day</p>	<p>Right eye lateral SCH + but resolving 80 % Right Lateral laceration wound apposition well Right eye OCT - Right eye macular hole resolving Right eye vision improve from 6/18 to 6/12 Left eye vision 6/6</p>		
<p>03-02-2023 14th Day</p>	<p>Right eye lateral SCH + but resolving 99% Right Lateral laceration wound apposition well Right eye OCT - Right eye macular hole resolving Right eye vision 6/12 Left eye vision 6/6 <i>Jalaukavcharana</i> day – 11</p>		
<p>06-02-2023 17th Day</p>	<p>Right eye lateral SCH completely resolved Right Lateral laceration wound apposition well Right eye OCT - Right eye macular hole resolving Right eye vision 6/12 Left eye vision 6/6</p>		
<p>15-02-2023 26th Day</p>	<p>Right eye lateral SCH + but resolved Right Lateral laceration wound apposition well Right eye OCT - Right eye macular hole resolving Right eye vision 6/9p Left eye vision 6/6</p>		

19-05-2023	Right eye OCT - Right eye macular hole completely healed Right eye vision 6/6p Left eye vision 6/6		
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RESULT:

There was complete resolution of sub-conjunctival hemorrhage seen within 12 days, patient's vision was drastically improved from 6/36 to 6/6P (Partial) within 25 days with the application of 2 *Jalauka* daily for 11 days one time, 1 over right supra-orbital region and another 2 cm away from the outer canthus just below the suture line and complete healing of traumatic macular hole injury within 5 month with minimal surgical scar mark.

DISCUSSION

According to the *Acharya Sushruta Raktamokshana* is considering as *Ardha Chikitsa* in *Shalya Chikitsa*. *Jalaukavacharana* procedure is one among the Raktamokshana. According to *Acharya Sushruta*, *Jalauka* is the best among *Anushastra*. According to *Acharya Charaka*, *Jalaukavacharana* is one among *Shastrakarmas*. *Jalaukavacharana* is a method of removing (vitiated) blood or inflammatory exudates from the body. In present study, *Jalaukavacharana* removing

the vitiated *Rakta* (blood) and inflammatory exudates and creates negative pressure which can reduce intra-ocular pressure, which lead to reduce periorbital edema and resolution of sub-conjunctival haemorrhage and may be help to reduce flattening of the posterior sclera. Patient's vision was improved from 6/36 to 6/6P (partial) within 25 days in right eye due to healing of traumatic macular hole. Most probable mode of action of *Jalauka* is purification of blood by removing deep seated toxins and vitiated *Rakta* and vitiated *Dosha*. Hence, *Jalaukavacharana* (leeches) is considered as the best and convenient method. *Jalauka* dwell in cold and sweet water, having *Sheeta*, *Snigdha*, *Shlakshna*, *Madhura Gunas*. Hencethese are ideal to remove *Pittaja Dushtarakta*. *Acharya Dalhana*, commenting on *Saptopakrama* of *Shotha* states that *Jalaukavacharana* is one among the many forms of *Rakta Mokshana* (bloodletting). *Jalauka* saliva contains more than 100 bio-active compounds which contain analgesic, anti-inflammatory, thrombolytic, antioxidant,

vasodilator, anticoagulant properties, therefore helps in improvement of blood circulation. *Jalauka* application is prescribed as a postoperative care in patients who undergo any surgical intervention.

Hirudin, calin and factor Xa are present in the saliva of leech (*Hirudina medicinalis*) which acts as anticoagulant and prevents clot formation; bdelin acts as anti-inflammatory agent maintaining normal circulation.

CONCLUSION:

Jalaukavcharana is easy to learn and one of the oldest para-surgical methods used to remove deeply seated contaminants of blood and pacify the vitiated *dosha*. *Jalauka* saliva contains many bioactive components which are having anti-inflammatory, anticoagulant, anesthetic, vasodilator, thrombolytic, antibiotic, antioxidant properties. *Jalaukavcharana* increases blood flows due to its anticoagulant property, which improves local circulation leading to faster local healing. *Jalaukavcharana* in *Arjuna/ Vataja Timira/* traumatic macular hole injury is safe with minimal pain. In this case, there was complete resolution of sub-conjunctival hemorrhage seen within 12 days and traumatic macular hole injury was completely cured within 5 months with minimal surgical scar mark. Patient's vision of right eye was drastically improved from 6/36 to 6/6p

(Partial) due to complete healing of traumatic macular hole.

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