



AN APPROACH OF KAPHAJ LINGANASH SURGERY GIVES THE BASIC IDEAS FOR ADVANCE CATARACT SURGERY

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ABSTRACT Ayurveda is the science of life, since its origin is service the mankind throughout in health & disease state of life. Shalakyatantra one of it's specialized branch deals with the science of Ophthalmology, Otorhinolaryngology, Oro-dental surgery & Head ; was contributed and developed by Rajarshi Nimi, the king of Videha. The available literature related to this specialty is reproduced from original text of Nimitantra in Uttaratantra of Sushruta Samhita. So Rajarshi Nimi deserves all the credit and regards for shalakyatantra and for being the first eye surgeon on this earth. The fact regarding the technique of cataract surgery adopted by ancient surgeon is still a matter of debate. Most of the medical fraternity accepts cataract surgery of ancient surgeons as couching procedure but after going through forth coming pages, the prevailing concept will prove to be a myth. It started with extracapsular extraction through small incision during the period of sushruta Samhita but later shifted to couching like technique by Acharya Vagbhatta. Secondly, the objective of this literary research paper is to find proper co- relation of the disease cataract to those mentioned in Ancient Ayurveda classics.

KEYWORDS :

INTRODUCTION

According to morphological and etiological evidence, endogenous linganasha is clearly defined as the last stage of Timira, a severe illness of the visual system. According to anatomical descriptions, when vitiated body humours approach or invade the fourth /last patal/layer of the eye ball (nucleus of the lens), the patient's vision is impeded. If the patient's pupil is covered by vitiated body humours, they will only be able to see brightly things, even if the posterior segment of the eye is healthy. This Timira stage—the invasion of the fourth patal (Lens)—is known as linganasha (Cataract). Linganasha is once more the third stage of the disease Timira, with Kaach-(ISC) being the second, according to the etiological classification. According to the vitiating/causative bodily humours, the clinical picture is accurate. The only linganasha with a pathological classification is the Kaphaja linganasha (KL).

With an incision less than 1.8 mm, microincision cataract surgery (MICS) is a method of doing cataract surgery with the goal of minimizing surgical invasiveness while simultaneously increasing surgical results. The control and prevention of medically induced corneal astigmatism and the reduction of postoperative corneal aberrations are the key benefits of MICS that have been scientifically proven. MICS has been shown to be a less traumatic procedure that offers superior postoperative results than conventional tiny incision phacoemulsification. The ability to do extremely complex cataract surgery is made possible by a high level of surgical innovation, the use of modern phacoemulsification surgical platforms with pressured fluidic control, and novel surgical instruments. MICS prefers the use of fluidics whereas phacoemulsification power is used less frequently. Bimanuality offers the chance to manipulate the region of the anterior chamber more readily and pleasantly than with Coaxial method as is. Today, a 1 mm incision is used for surgery. 1.8 mm incisions are needed to employ the current MICS intraocular lens (IOL). The improved accessibility of MICS IOLs enables patients to choose the optimal IOL for their needs. MICS is the most advanced and suitable method for minimally invasive cataract surgery because of the long-term stability of the MICS results and the wide range of surgical capability.

AIMS AND OBJECTIVES

- To review the literature of Kaphaja linganasha and cataract.
- To compare the Ayurvedic cataract surgery with modern MICS Surgery.

MATERIAL AND METHOD

Ayurvedic and western medical classics on the issue were carefully examined, and where it was deemed essential, assistance from experts in Sanskrit grammar was sought. The next pages contained a systematic comparison and presentation of the gathered classical information.

CLINICAL FEATURES

- The only thing the patient can see is a bright light or object due to total obstruction.
- Pupillary circle has the appearance of being thick, smooth, and white in color, similar to a white fluid drop moving across a lotus leaf.
- The pupil contracts in the sun and dilates in the shade or in the dark (positive Pupillary reaction).
- On ocular massage, the pupillary circle moves around or modifies its shape.
- These clinical characteristics of the invading fourth patala (Lens) of the Kaphaja linganasha perfectly mimic the white and soft mature/hypermature senile cortical cataract.
- According to known and unknown (idiopathic) exogenous causes, the exogenous varieties of Linganasha (Vision loss)-Sanimitaja and Animitaja types are categorized. Both of these varieties maintain the pupillary circle's clarity and color, which are both jet black. They are both terminal. Trauma can also result in permanent loss.

INDICATION OF SURGERY

- Fully mature/hypermature cortical cataract with the aforementioned clinical symptoms is an example of a well-developed Kaphaja linganasha.
- Uncomplicated cataract, such as Avartaki, etc. Before undergoing surgery, patients should avoid the following six Kaphaja linganasha complications:
- Avaratki: Pupillary circle has the appearance of a reddish-white, hyperactive whirlpool.
- Sharkara: Where the linganasha cataract, or calcified cataract, resembles coagulated milk.
- Rajimati: A hard cataract, also known as an anterior capsular calcification, is a cataract whose anterior surface is lined.
- Chhinanshuka: A cataract with uveitis and posterior synechiae causes the pupil to be uneven, filled with tears, burnt in color, and painful.
- Chandraki: Cataract with retinal detachment is characterized by the pupillary region reflecting an off-white tint and having a moon-like appearance.
- Chhatrki: The posterior segmental pathologies (cataract).

CONTRAINDICATIONS FOR SURGERY

- Cataract-related (Kaphaja Linganasha)
- Species of Pupillaries:- A sweat drop; posterior subluxated lens with a half-moon-shaped pupillens anterior dislocation, pearl-shaped, shrunk lens
- A severe cataract- Unusual in shape - Containing streaks-calcified - From the center thin.

- Blood or other strange substance in the pupillary region; Multicolored, hurtful eye nascent cataract.
- In relation to patient ,patients who should not undergo veinesection—bloodletting, i.e.having anasarca, anemia, hemorrhoids, abdominal distension, being under 16 years old, pregnant with oedema, elderly, in the postpartum period, without oleation and sudation, having received Pancha Karma therapy, having neurological and bleeding problems, diarrhoea, dysentery, and being afraid of surgery. Individuals with severe polydypsia (Hyperglycemic) sinusitis, bronchitis, nausea, headache, otalgia, ocular pain, and oedema.

PREOPERATIVE PROCEDURES

Patient Preparation

- Snehan (Oleation),
- Sudation (Swedan).
- Virechana, also known as medical purging.
- Ghrita fusion cuisine.
- by abhyanga (massage), tarpana of the head.
- the preparation and gathering of necessary materials:
- Yav-vakra shalaka with the following characteristics -
- 8 anguls long, or 6 inches.
- thread wrapped in the middle for a good grip.
- the thickness of a thumb.
- Both ends have a flower-bud form.
- composed of gold, iron, and copper.
- Scleral incision using the Vetas-Patra Shastra.
- goat, cow, or mother's milk.
- Leaves of ricinus communis.
- Setting up the heater.
- Ghrita.
- Decoction of vata-suppressing herbs, such as Dashamoola Kwatha and R. communis leaves and roots.
- Using Glycyrrhiza glabra decoction, Grita was treated.
- Bandage: Vastra Patta.
- Cotton's Pichu.
- Poultice cloth (sudation).
- Attendants who can hold the patient during the process while also being brave, strong, and committed.

OPERATIVE PROCEDURES

- Fix a particular date and time for the operation and pay prayers to the God.
- Make the patients sit in O.T. with extended legs, hands resting on seat, hyper extended neck-facing sun (light) in the forenoon. The attendants should make patient sTable
- Surgeon should sit in front of the patient at a convenient height and posture.
- Eye to be operated upon is given mild sudation and lids fixed with thumb and index fingers. Patient is asked to continuously look towards his nose.
- Surgeon should hold the *shalaka* (*linganasha vedhani shalaka*) steadily in Right Hand (Gripped with thumb, index and middle finger) and enter the left eye at *Daiva Krita Chhidra* i.e. keyhole (2/3 parts from *Krishna-shukla sandhi* and 1/3 parts from the *Apang sandhi* in the interpalpebral space). The *Shalaka* should be introduced in the eyeball by rotatory movements; a specific sound of entry of *Shalaka* inside the eye is experienced which follows a drop of water (Aqueous humour) through the vedhana site.
- Steadily pushing forward & manipulating the *shalakya* until it reaches the *drishti mandala* (papillary aperture) i.e. on ant surface of the cataractous lens so that *lekhana karma* is completed under direct vision.
- *Shalaka* is to be gripped in left hand for operation on right eye.
- Hold the entered *shalaka* in situ and irrigate the eye with mother's milk (Human milk) and apply mild sudation on the closed eye with *Vata* pacifying leaves e.g. *R. communis* leaves. This will prevent redness, discharge and pain.
- There after assuring the patient, push the *shalaka* to the centre of pupil through rotatory movements. Incision at *vedhana* site (key hole) should be given before entry of *Shalaka*.
- With the tip of the *shalaka* in pupillary aperture, *Kaphaja Linganasha* (Cataract) should be scraped properly to disintegrate the organized material.
- To remove this disintegrated cortical/ nuclear matter, Close the nasal cavity opposite to the operated eye and ask patient to forcefully sneeze out through the open nare (ipsilateral to the eye being operated) while keeping the *shalaka* inside the eye. This will aid drainage of the liquefied cortical matter (by increasing the JVP

and in turn increasing IOP.)

- *Acharya Vagbhata*²⁶ varies in its technique at this step of surgical procedure. He is of the opinion that ask the patient to see towards ground and gently push the cataract downside without any delay, then ask the patient to sneeze (as above) so that cataract goes down enough leaving the pupillary aperture (*Drishti Mandala*) clear.
- If the cataract is not completely scraped and extracted out or if it re-occurs (After-ataract) then irrigate the eye again with mother's milk, apply sudation (asearlier) and rescrap the cataract (in pupillary area).
- When by doing this procedure the pupil become clear of all *kapha*/white material-Cataract (like sky clear of clouds) and patient starts seeing fingers threads like objects then *shalaka* should be slowly removed by rolling out movemnts.
- Apply pure ghee in eye and apply the bandage.

Procedure Of MICS

- To lay down on the operation table, you will ask.
- Your eye will be irrigated with an antiseptic solution by your surgeon.
- During the process, an eyelid holder will be utilized to keep your eyes open.
- At the corneal edge, your surgeon will create incisions as tiny as 1.8 mm.
- Your doctor will initially carry out this procedure in 4 phases.
- "Chopping" - A handheld instrument with variously angled tips is used in conjunction with an ultrasonic machine. A handpiece, foot pad, irrigation system, and aspiration system make up the machine. The lens is broken up into tiny pieces by this instrument, and the pieces are vacuumed away. The word "chopping" refers to this action.
- "Irrigation" -: In this procedure, the lens is broken up into a material that resembles gel and is then drained and irrigated with sterile fluids.
- "Aspiration" -

Compairative Study Between Traditional Cataract Surgery And MICS

Small Incision

The ideal place for puncture or incision for *linganasha*/cataract surgery is the *Daivakrita Chhidra* (Key hole), which is the junction of the medial 2/3 and lateral 1/3 of the region between the limbus and outer canthus in the interpalpebral gap. Using a Vernier calliper, this area's average measurement is 9 mm. As a result, the distance between the limbus and the *Daivkrita Chhidra* (natural point) on the temporal interpalpebral region should be around 6 mm. Due to its paucity of retinal tissue and limited vascularity, Pars plana is the preferred place for retinal surgery, and these results are consistent with that region.

Micro-Incision: - The surgeon creates one or two tiny incisions (usually less than 2.0 mm) in the cornea. These smaller incisions minimize tissue trauma and promote faster healing.

Irrigation

Irrigation of eye with mother's milk

In this procedure, the lens is broken up into a material that resembles gel and is then drained and irrigated with sterile fluids i.e BSS solution.

Scrapping

The *linganasha Vedhani shalaka* resembles the bud of a jasmine flower because it is spherical, spindle-shaped, and has a narrow base that resembles a petiole. This design guarantees that cortical matter will easily and spontaneously exit from the sides of the *Shalaka*'s neck through the wound gap made by the wide spindle-shaped tip of the *shalaka* when scraping is being done.

Continuous Curvilinear Capsulorhexis

The center anterior portion of the lens's capsule is removed from the eye during cataract surgery using the surgical procedure known as continuous curvilinear capsulorhexis (CCC), also known as capsulorhexis or capsulorrhexis. The middle portion of the anterior lens capsule is often removed.

Blow Out Of Nucleus

In order to evacuate this destroyed cortical/nuclear matter, the patient should be instructed to sneeze violently through the open nare (ipsilateral to the operated eye) while maintaining the *shalaka* inside the eye. By raising the JVP and IOP, this will facilitate the drainage of

the liquefied cortical tissue.

Post Operative Procedures

Patient's Regimen:

- Place of patient's rest: In a clean, orderly home or ward that is constructed on suitable land and is free of dust, smoking, blowing wind, and direct sunlight.
- The patient should be able to move about comfortably on the bed, which should have a soft mattress covered by a clean bed sheet and a pillow facing east with a sharp weapon below.
- Patient position in bed: Lie on your right side if the left eye is being operated on, or vice versa, and in the supine position if both eyes are being operated on.
- The patient should hear enjoyable stories, etc.
- Contraindications
- Patients should refrain from excessive activity, eructation, sneezing, coughing, and spitting for three days.
- For seven days, take a head bath, eat a lot of food, and brush your teeth, but you should also take mouthwash.

Wound Care

- Open the bandage after 3 days
- Irrigate eye with decoction of *Vata* pacifying drugs e.g. Milk (or *Ghritha*) cooked with soft leaves of *Ricinus communis*. Milk medicated with *Laghu Pancha moola*.
- Mild sudation of eyes to allay the fear of *Vata*-alleviation.
- Bandage again.
- For 7 days, continue same steps of irrigation and re-bandaging every day.
- Avoid the bandage on 7th or 10th day.

Iatrogenic and Improper post-operative care related complications

- Raga* (Redness).
- Paka* (Inflammation).
- Vridhhi* (Growth).
- Daha* (Burning sensation).
- Granthi* (Cystic swelling).
- Vakra netra* (Squint due to muscle trauma).
- Adhimantha* (Uveitis / Secondary glaucoma etc.)

Measures Taken In Care Of Certain Persistent Problems

If pain and redness persist -

Aschyotana (medicated eye drops):

- Goat's milk medicated with *Glycyrrhiza glabra*, *Vitis vinifera*, *Symplocos racemosa* and *Saindhava lavana*.
- Goat's milk medicated with *Glycyrrhiza glabra*, *Nelumbo nucifera*, *Saussurea lappa*, *Vitis vinifera*, *Laakh* and *Khaand*.
- Goat's milk mixed with *sandhava lavana*. *Lepa* (paste-application on head and face):
- Ghritha* mixed with paste of *Geru*, *Hemidesmus indicus*, *Cynodon dactylon*, *Yava*.
- Lemon juice mixed with roasted *Sesamum indicum* and *Brassica campestris*.
- Hemidesmus indicus*, *Glycyrrhiza glabra*, *Rubia cardifolia*, *Cinnamon tamala*, *Ipomoea digitata*, ground with goat's milk.
- Zingiber officinale*, *Cedrus deodara*, wood of *Prunus cerasoides*.

Use of medicated *ghrita* orally, as nasal drops and for irrigation. *Ghritha* medicated with "*Vatsakadigana*".

Siravedha (Venae puncture).

Treat like *Adhimantha*- acute angle closure glaucoma and acute iridocyclitis.

MANAGEMENT

- Lepa* on the eye (Enointing): To soothe discomfort and redness.
- Hemidesmus indicus*, *Cynodon dactylon*, and red ochre powder, ground finely in *ghrita* and milk, are combined to make a lukewarm paste.
- Mildly roasted *Sesame indicum* and *Brassica campestris* are ground into a paste and mixed with citrus medica juice.
- Hemidesmus indicus*, *Cinnamomum tamala*, *Glycyrrhiza glabra*, and *Rubia cardifolia* are mashed into a lukewarm paste and combined with goat's milk.
- Milk-ground *Berberis aristata*, *Zingiber officinale*, and *Prunus cerasoides* paste.

- Goat milk is added to a paste of *Vitis vinifera*, *Glycyrrhiza glabra*, *Saussurea lappa*, and *Saindhava* (Salt).
- Seka* (ocular irrigation):

To Reduce Discomfort And Redness

- Boiling goat milk in a paste or decoction made from *Glycyrrhiza glabra*, *Saindhava*, and *Symplocus*) Wound care 11 & 20
- Open the bandage after 3 days
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DISCUSSION

One of the main causes of blindness is *Linganasha*, which, according to its form, can either be curable or irreversible. The only type of *Kaphaja Lingana* that can be surgically treated; the other types are all incurable. *Daivakrita Chhidra* (Key hole), which is the intersection of the medial 2/3 and lateral 1/3 of the area between the limbus and outer canthus in the interpalpebral gap, is the recommended site of puncture or incision for *linganasha*/cataract surgery. The average measurement of this area using a Vernier calliper is 9 mm. Therefore, the *Daivakrita Chhidra* (natural point) on the temporal interpalpebral area should be around 6 mm away from the limbus. These values are in line with *Pars plana*, which is the most desirable location for retinal surgery due to its lack of retinal tissue and low vascularity. An approach to the eye that enters the posterior segment of the eye. The *linganasha Vedhani shalaka* is round, spindle-shaped, and has a narrow base resembling a petiole, just like the jasmine flower bud. When scraping is being done, this shape ensures that cortical matter will spontaneously and easily exit from the sides of the *Shalaka*'s neck through the wound gap created by the wide spindle-shaped tip of the *shalaka*. Extracapsular cataract extraction is very similar to the method described in the *Sushruta Samhita*, which was adapted from the *Nimitantra*.

However, the description of this surgical step in the *Vagbhatta Samhita* is different and resembles the couching procedure.

After performing the proper *lekhana karma* (scrapping), the JVP raising maneuver, which involves closing the nostril opposite the operated eye, is performed. and violently sneezing out from the ipsilateral nostril causes the IOP to rise and makes it easier for scraped or liquefied lens debris to naturally exit via the incision.

In Ayurvedic literature, a thorough and critical account of postoperative care and management of various complications (if they arise) of cataract surgery is provided. This account makes it clear that the patient selection process, surgical procedure, pre- and post-operative care, and management of complications, if any, have all been done with the utmost care.

CONCLUSION

In contemporary medical science, the term "*Kaphaja Lingana*" appears to be the correct one to describe the eye condition known as cataract. The credit that *Rajarishi Nimi*, the king of *Videha*, rightfully deserves for being the first to contribute to the field of ophthalmology since the inception of *Ayurveda*, should be given.

According to the *Sushruta Samhita*'s detailed description of the surgical procedure, which was written from the perspective of the King of *Videha-Rajarishi Nimi*, a small incision extra-capsular cataract extraction by temporal approach is suggested. On the other hand, couching was a later advancement in cataract surgery during the time of *Acharya Vagbhatta*. Due to its simplicity and time-saving benefits,

the couching technique was used until the 20th century in many of the nation's tribal regions.

According to some surgeons, this treatment should have been called an extraction rather than a pars plana lensectomy, in which case Punaḥ lingaṣha (cataract following lensectomy) would not have been included as a potential consequence.

The ancient surgeons provided a thorough and organized account of preoperative planning, surgical technique, and postoperative care of the patients and the surgical wound. In addition, numerous issues associated to iatrogenic and postoperative care have been comprehensively described, along with their therapy. As a result, since the surgical treatment of cataract was recognized in the literature of Ayurveda as a significant tragedy, it was selective, systematic, and in constant transition.