Ancient Science of Life, Vol No. XI No.3 & 4, January – April 1992, Pages 169 - 173

CATRACT SURGERY IN SUSRUTA SAMHITA

B. MUKHOPADHYAY AND K R SHARMA

Department of Salya-Salakya, Institute of Medical Sciences, Banaras Hindu University, Varanasi – 221 005.

Received: 06 May, 1991 **Accepted: 25 December, 1991**

ABSTRACT: *The authors present in this article a brief account of cataract surgery described in Susruta Samhita.*

The story of the evolution of the surgical relief of cataract is long and full of interest. To earliest authentic record comes from ancient Hindu medicine, long before the Christian era. The happiest history of ophthalmology is the origin of Indian ophthalmology from vedic times. The greatest exponent of this school was Acharya Sushruta, the father of Indian Surgery, who taught the foundation of surgery based on anatomical dissection and practiced aseptic surgery.

The term "cataract", a greek work meaning a "water fall" simply defined as any opacity in or on the lens. It is the most common and fortunately, one of the most easily remedied cause of visual incapacity and blindness. In Ayurveda, cataract is called *Lingnash.* The term *Lingnash* is formed by the combination of two words *Linga* and *Nash.* Here *Linga* means the visual power and *nasha* means destruction. So *linganash* is a condition where the visual power of perception of light is lost.

Acharya Sushruta in the *Uttar Tantra* of his treatise, enumerated fourteen types of *Dristimandalagata Roga* (diseases originated from papillary area (anterior) to the retina (Posterior). Out of which 8 types are lingnash and out of 8 types of lingnash, 2 types are caused by external reasons *Sanimitta* and *Animitta lingnash* and rest 6 types of *lingnash* are caused by de-arrangement of three *dosas* (Bodily humours). He also explained that these six types of *Lingnash* only occur when the aggravated dosas involve the fourth *patala* of the ye ball proper and the individual partially loses his visual power (*Indriya Shakti)* and can perceive the existence of bright light and glare of Sun, Moon lightning and Gems etc, until the *lingnash* becomes very thick and opaque. This is nothing but probably the stage of mature cataract where the patient can feel the perception and projection of rays only. This stage of *lingnash* is also termed as *Neelika* or *Kach.*

The clinical features of *Kafaja Lingnash* is that the patient sees all the objects too thick, white in colour and soothing in nature. Clear sky seems to overcast with cloud and all the visual materials seems to be hazy and non ambulatory. The colour of the *Kafaja lingnash* was also described and it is white in colour. (Sus:ut: 7/21 – 22).

It is a matter of great surprise, that while describing the treatment of *Lingnash* and *timira* in chapter 17, *Uttar Tantra.* He described the surgical management of *Kafaja Lingnash* very elaborately with Keen attention, and described the medical management only for the rest types of *lingnash* so it seems that *Kafaja Lingnash* can only be considered with matured cataract which is operable only, event to-day considering its treatment, and rest types of *Lingnash* may not be related with cataract, where there is loss of visual power and not cured even by medical treatment (*yapya)* according to Ayurveda. But it is very difficult to correlate the different types of *lingnash* except *Kafaja Lingnash* with the diseases of modern ophthalmology. It is also interesting to note that all sorts of *Kafaja Lingnash* are not operatable. Acharya Sushruta has given specific contra indication of *Kafaja linganasha* for surgical intervention. If the *Kafaja lingnash* is like the shape of half moon, drop of sweat, or pearl, firm, rough surface, thin in the centre portion, having striation over it, multicoloured and if it is associated with pain and congestion. Then the lingnash should not be operated (Sus : Ut: 17/56).

These conditions may be considered with, complicated cataract or dislocated or subluxated matured cataract with secondary Glaucoma. Where probably his technique of operation is not satisfactory. That's why he gave no indication for operation in this sorts of *Kafaja Lingnash.* He also pointed out that the individuals those who are contra indicated for sira vyadhan (Vene section), they should be undergo for cataract operation.

The original description of operation by Sushruta has a taste of scientific description of that time and it is interesting to enumerate the steps he has described so precisely, in Sushruta Samhita about the surgery of cataract.

In good weather, neither not nor in cold season, after giving oleation and sudation therapy as pre-operative procedures, the selected *Kafaja Lingnash* patient is being sitted with steady head held by assistants (*Yantrita)* and is adviced to look towards his own nose, so that outer portion of sclera becomes exposed properly and the intelligent surgeon after gripping the "*Yababaktra Salaka*" (probe with the tip like *yaba)* firmly with middle, index and thumb finger of left hand for left eye or with right hand for right eye, (Imagine how precise the approach to surgery was even in those ancient days) should puncture (*vyadhan*) the eye ball confidently and with great care, through the *Daibakrita Chhidra,* where there is no blood vessels. Puncturing should be done from the outer canthus at the junction of lateral one third and medial third of the line joining the limbus and outer canthus, and the puncturing point should not be tool low or too high of *Daiba Kritta.*

It is very difficult to locate the actual site of *Daiba kritta chhidra* from the modern anatomical counter part. Probably this site may corresponds to the pars plana, a part of uveal tract which lies 4 – 6 mm, away from the limbus having very less blood supply, through which probe can easily pass to posterior chamber of the anterior compartment of the eye ball without bleeding. Just after puncturing, the eye ball has to be washed with breast milk followed by sudation, after closing the eye lids without any movement of the probe. Breast milk probably gives an local analgesic, vaso constricting and soothing effect and sudation helps to reduce the intra ocular pressure in this surgical procedure.

If puncturing is perfect, water comes out and there is production of sound. It indicates that the probe perfectly enters into the posterior chamber and water is nothing but aqueous humour, and sound produces as the aqueous comes out from high intra ocular pressure to atmospheric pressure through fine puncturing spot.

In case of imperfect puncturing, there is Haemorrhagia and no production of sound occurs, probably here the probe damages the blood vessels of uveal tract or ciliary body and damages the vitreous body their by no release of aqueous humour.

After puncturing the eye ball, the papillary area of the lens has to be scrapped and curreted with the tip of probe (*Salaka*) and with the help of induced sneezing by closing the opposite nostril, *kapha* of *Dristimandala* (probably the cortical matter with the nucleus of the lens) is to be evacuated until the papillary area becomes clear and after that the probe is to be removed gradually.

Sushruta also pointed out the signs of perfect operation, such as *Dristi* (pupillary area) will be shining like the dazzling sun in cloudless sky and eye ball will be painless and the patient will be able to see the object (Roopa), (Sus. Ut. 17/64).

Even now-a-days, after cataract operation the anterior chamber becomes dip with zet black pupil and with shining cornea, as there is no opaque lens matte in the visual axis and the patient can be able to count the finger at a distance of one to two meteres. He also pointed out that *lingnash* should be operated only in matured condition when the lens matter (*lingnash*) easily comes out on simple touching or scrapping with the tipe of salaka as like the wind quickly vanishes the thin cloud. (Sus. Ut 17/80).

As post operative measures, the eye is to be bandaged by clear cloth after applying ghee to the eye and the patient is advised to lie in supine condition (probably to form the anterior chamber properly) and every three days milk mixed with the decoction of errand mula followed by the application of sudation to the eye ball, probably to control any infection and to control the post operative inflammation, swelling and pain. Light diet should be given to the patient according to the digestive power. This strict regime should be maintained for atleast ten days as like the patient who undergone *Snehapana* followed by application of some specific measures such as *Taparna, sirovasti, Nashya* probably to increase the visual power, proper maintaining of intraocular pressured etc.

He also advised to take precaution during scrapping so that the patient should suppress eructation, coughing sneezing, vomiting etc. probably to prevent the vitreous prolapses and expulsive haemorrhagia and puncturing should not be done other than in Daiba Kritta Chhidra ‘Acharya Sushruta was also aware about some immediate complications due to improper puncturing that’s why he enumerated some signs and symptoms due to different types of defective puncturing along with their specific management. He also pointed out some delayed complications due to defective operations such as *Raktima* (Hyperaemia or Hyphaema), *Sotha* (Swelling due to panophthalmitis?) *Arbuta* (iris cyst?) *osha* (Burning sensation) *Bud Bud* (conjunctival cyst or granulation tissue ?), *Shuka rakshi* (convergent squint due to damage of insertion of lateral rectus muscle while puncturing?), and *Adhimantha* (Aphakicglaucoma ?). Sus. : Ut. 17/85. He also pointed out that if operation is done in case of immatured state of *Lingnash*, it will again reappear associated with excessive pain, less of vision and appearances of white membrance (*Suklarma)* (Su.ut. 17/85).

Probably these conditions are nothing but appearance of after cataract with secondary glaucoma and cyclitic membrane followed by total loss of vision. He also adviced to treat the complication according to the predominance of *Dosas* and at least he described some collyriums to apply in the operated eye for stabilizing of vision. Considering the steps of the technique of operation of *Lingnash* as described by Sushruta, some scholars are in favour to consider this operation as couching or Reclination of the lens, where, the matured lens is fallen or pushed back to posterior chamber, by a probe puncturing at the limbal area and to make clear the visual axis. But here Sushruta told to evacuate, probably the cortical and nuclear matter of the matured lens by proper scrapping (*Lekhan).* Some scholars are in favour to consider it as Extract capsularlens extraction by sub-conjunctival incision. Few scholars are in favour to consider it as discussion operation with curette and evacuation operation (linearextraction). But none of these techniques fit fully with the methods as described by Acharya Sushrutta rather Sushruta's technique can be correlated more or less with parslanalenscetomy with fragmentation which is practiced now-a-days with great success, where with the help of probe (cutting with irrigation aspiration) puncturing through the pars – plana (parts of choroids), the cortical matter and nuclear matter is kept out by fragmentation. The *Daiba Kritta Chhidra* as described by Sushruta may corresponds with the pars plana, and he described to remove the cortical and nuclear matter *(Kapha)* with the help of Salaka by proper scrapping (*lekhan*). The question still may arise that the cortical matter may come out through puncturing spot. But how a simple probe *(Yababaktra Salaka)* can help to fragment the nuclear part of the lens to come out. Of course he has given very vivid description about the *Salaka*, which should be eight *anguli* in length, and two ends should be like the bud *(Mukulakriti)* (probably helps to fragment the nuclear part?) and made of gold, iron or copper (Probably for aseptic surgery ?). He was also aware about the good qualities of instrument, and that's why he described various types of complication arrived due to defective salaka (probe).

Considering the prognosis of cataract in modern ophthalmology, the visual result after perfect cataract operation is very good by using an optical appliance (Spectacle of approx. + 10.00 D with 3.00 DCYL – 180 o), in front of the aphakic eye or by applying contact lens or by intra ocular lens implantation, otherwise a good operated at a distant of approx. 2 meteres only. It is also true that the only treatment of cataract is operation and there is no medicine in modern era which can change the obaque lens (Cataract) to a transparent of *Kafaja Lingnash* Sushruta considered it as *Yapya* (not curable by can be maintained by proper management), inspite of describing elaborate and successful operative procedure, so it is very difficult to explain why Sushruta considered *Kafaja Lingnash* as *Yapya* probably, the optical appliance specially the spectacle which is used now a days for aphakic eye to increase the visual acuity as a supplementation of original lens, was not available or in vogue in ancient era, and *Kafaja Lingnash* patient after perfect operation, could see at a distance of only two-to-three meters prominently. So the patient of *Kafaja Lingnash* in those days could not get back their vision as before inspite of having good operation due to non availability of spectacle in those days.

In another sense, Acharya Sushruta considered *Kafaja Lingnashi* as *Yapya,* probably in those days also there was no

medicine to clear the opaque lens into a transparent lens (anticataract drug).

But whatever Sushruta has enumerated considering the management of *Kafaja lingnash* is no doubt, as admirable account of the technique of the treatment of cataract in modern era and lay ample scope for extensive research in this field.

REFERENCES

1. Susruta Samhita (Uttar Tantra)

2. Ashtanga Hridaya (Uttar Tharam)