

ANCIENT CATARACT SURGERY (LINGANASH) AND IT'S EVOLUTION: A REVIEW

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ABSTRACT

Ayurveda is the indigenous system of medicine in India. Ayu means life and veda means knowledge. It is generally accepted that Jacques Daviel introduced in the 18th century the extra capsular technique of extraction of the lens while the couching method of cataract operation had already been practiced since ancient times. Present study Analyses the First known cataract surgery was Maharshi Sushruta who lived in the sixth century BCE was an ancient Indian surgeon, venerated as the. "The father of surgery". In the ophthalmology field, he is the first who gave accurate descriptions of different varieties of cataract and the first who described "the cataract surgery" In his medical thesis Sushruta Samhita and Uttar Tantra¹. (Ca.600 BCE) Sushruta means "Well heard" as he was a renowned surgeon who was mentioned even in the ancient Indian epic text the Mahabharata even if his technique was rudimentary one, he practiced cataract surgery by couching even before the Egyptians, Arabs, Greeks & Romans²

Keyword: Ancient history, couching technique, extra capsular cataract Mahabharata, Linganash.

INTRODUCTION

Meaning: "Something that falls form above", such as a water fall³

The first successful cataract (Linganash) surgery was done by Indian eye surgeon in India only. After going through the ancient literatures, it seems that thoughts of various authors on Shalaky Tantra are takes into consideration and came to one conclusion.

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On other hand Sushruta's thoughts have been miss interpreted by some critics and they labeled as it is a couching system, but it is not true, such interpretation is made by middle one critic i.e. Sattayaki, and this Sattayki sampradya called it is couching system. After Sushruta and wahbhata Sattayki Sampradaya came into existence and this man is the pioneer of couching system, this system is also called as satiya and was continuously in practice upto the 18th century, not only in India but also in Asia, Europe, Arab countries and all has accepted this system. This system runs up to 1745 by French surgeon Jacques Daviel formed the first reported cataract extraction (Paris, 8 April 1747). Daviel making a minor surgical correction i.e, he advised and did the lens extraction in spite of pushing back word (couching) and same procedure is described by the Sushruta also, it means Daviel

follows the Sushrutas basic principle. Now a day's same principle was adopted by allover world only technique is different because of sophisticated high level instrumentation and post operative visual prognosis is increased, it almost above 90% It was the first significant advance in cataract surgery since couching was invented. His technique marked the beginning of modern era in cataract surgery. The increasing importance of the "Extraction versus Traditional "Couching" of the lens made both entered in competition. Thus in 1750, the famous German composer Johann Sebastian Bach (1685-1750), underwent bilateral cataract surgery by the British Surgeon John Taylor (1703-1772) who employed the standard Couching. A week later, Bach was reported due to cataract recurrence. Nevertheless, the musician was blind and died four months later.

Aims and Objectives:-

- 1) To review the literature on Ancient cataract surgery and its evolution to establish their relation.
- 2) To explore method and procedure by ancient scholars and modern scholars.

Material and Methods:

Classical literature on the subject from Ayurvedic and modern system of medicine were explored. The data was collected from Ayurveda text book, *vaidyas* and through Internet & from some modern text.

Maharashi Sushruta is an ancient Indian Surgeon. Sixth century BCE and is the author of the book Sushruta Samhita he describes over 120 surgical instrument and 300 surgical producer and classifies human surgery in 8 categories. Chedya (excision), Lekhya (Scarification), Vedhya (Puncturing), Esya (Exploration), Ahrya (extraction), Vsraya (Evacuation) and Sivya (suturing).

The doctor warmed the patient's eye with the breath of his mouth. He rubbed the closed eye of the patient with his thumb and then asked the patient to look at his knees. The patient's head was held firmly. The doctor held the lancet between his fore-finger, Middle-finger and thumb and introduced it into the patient's eye towards the pupil, half a finger's breadth from the black of the

eye and a quater of a fingers breadth from the outer corner of the eye. He moved the lancet gracefully back and forth and upward. There was a small sound and a drop of water came out. The doctor spoke. a few word to comfort the patient and moistened the eye with milk. He scratched the pupil with the tip or the lancet, without hurting, and then dre the slime towards the nose. The patient got rid of the 'slime' by drawing it into his nose. It was a matter of joy for the patient that they could see objects through his operated eye. Then, laid cotton soaued in fat on the wound & the patient lay still with the operated eye bandaged. It was the patient's left eye and the doctor used his right hand for operation.⁴

Primitive technique of cataract surgery in ancient Babylon:

The cataract surgery is one of the oldest surgeries documented from the 5th century BC by using the technique called couching. Performed in those times when it was perfectly opaque, rigid, tough and the Zonulas were extremely fragile^{5,6} the patient was hit on his eyeballs with a blunt object, strong enough to determine in the vitreous cavity. The code of Hammurabi created in 1970 BC by the Babylonian sixth king mentioned the couching technique and the costs per patient. "The Surgeon, who has successfully operated on a patrician's eye with a bronze lancet, shall charge 10 shekels of silver. The fee will be only five shekels and two shekels in the case of a plebeian and owned salve, respected."⁷

Emergence of the new human eye anatomy & Improvements in cataract surgery

A new human anatomy has emerged especially after Vesalius 'Dehumani corporis fabrica' was printed, & proofs was obtained about the existence of some differences with what was known centuries. Regarding the eye anatomy, Vesalius' contribution however, was minimal because the simple dissection available to him did not allow a detailed examination of this organ. Chevalier John Taylor (1703-1772) is mentioned as being the first British eye Surgeon who carried out the extraction of opaque crystalline by its fragmentation.

Albrecht Von Graefe (1828-1870) had an important contribution in ophthalmology, as some author gave to him the honour of opening the present era of cataract surgery⁸, he improved the surgery technique for cataract as he designed a knife for ab interno cataract surgery inclusion.⁹ & become famous for his incision on the cornea in 1867, he presented at the “3rd international congress of ophthalmology” in Paris, “The modified linear extraction” a new technique for the cataract surgery.

Cataract Surgery in Modern Era

a. In the 20th century sir Nicholas Lloyd Ridley (1906-2001) was the first British Ophthalmology who created the artificial intraocular lens (IOL) for the patients operated of cataract.

- b. In 1949, at the “St. Thomas” Hospital in London, he succeeded in implanting the first IOL of PMMA (Polymethylmethacrylate lens) that was made by Reyner Company of Brighton & Hore, East sussex¹⁰.
- c. The modern techniques of phacoemulsification in ICCE with IOL implant of anterior chamber, the opaque lens was extracted, using a crioda and an enzyme alpha-chymotrypsin that dissolved the zonulus¹¹.

The femtosecond laser – assisted cataract surgery (FLACS) technique was, introduced in 2012 by the American society of Refractive & cataract surgery, using the laser femto second technology, introduced from 2001 for the LASIK Surgery.

Evolution of Various techniques for cataract surgery

Technique	Author / surgeon	Year
Ancient technique lekhana	Videha / Sushrut	Before 800 (500-600)
Couching	Sattayki	800
ECCE (inferior incision)	Daviel	1745
ECCE (Superior incision)	Von Graefe	1860
ICCE (Tumbling)	Smith	1880
ECCE with PC-IOL	Ridley	1949
ECCE with AC-IOL	Strampelli	1951
Foldable IOLs	Mazzocco	1967
Phacuemulsification	Kelmon	1984
Capsular surgery	Apple/ Assia	1992
Accommodating IOLs	Cummings / Kammae	1997
Phaconit	Agarwal	1998
Dye. Enhanced cataract surgery	Pandey / wener / Apple	2000

DISCUSSION

Cataract is one of the major causes of blindness, which can be either reversible or Irreversible depends on type. Sushruta advocated some form of extra ocular evacuation of lens material through a corned puncture. After scratching the pupil (Drishti) the liquefied milky lens contents were disrupted, & at least partially expelled from the capsular bag through the small incision by a valsalva manoeuvre. He only described a limbal puncture (paracentesis), but not a large enough incision which could enable the extraction of the entire lens. Thus in immature cataracts, the only way to remove the lens from the visual axis was to subluxate it into the vitreous

cavity (couching procedure). In fact Sushruta recommended to repeat the puncture if the cataract reappeared, considering the possibility that the lens, after being dislocated down words could float up again.

CONCLUSIONS

Cataract surgery is the most commonly performed surgical procedure in the world, which has developed continuously and has evolved from the rudimentary couching intervention in ancient times, to the current laser femtosecond technology, which makes this surgery safer & allows patients to heal faster. Perhaps a kind of extracular evacuation of lens material was described by Sushruta.

Anyhow, It did not receive any widespread acceptance, as couching remained the dominating procedure until the classical daviel's operation.

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