

## **An Observational Study of Perioperative Cataract Surgery Associated with Hepatitis C Complications**

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### **Abstract**

**Background:** One of the most popular surgical procedures is small incision cataract surgery (SICS), and the Hepatitis C virus infection is a growing health risk in our country. Asymptomatic HCV sero-positive cases that have not been diagnosed outnumber those who have. Hepatitis-related hypocoagulability can have a negative impact on cataract surgery.

**Methods:** The Department of Ophthalmology, Katihar Medical College, Katihar conducted this prospective observational study for one year. 100 individuals were enrolled in the study after receiving approval from the ethical committee and informed written agreement from the participants. Of these patients, 58 had unilateral cataracts and 21 had bilateral cataracts. Incidentally, 21 of these patients also had HCV infection.

**Results:** Out of 100 eyes, 24 experienced no difficulties, whereas 76 (76%) had one or more of the following issues: intraoperative bleeding (68%), difficulty healing a wound, post-operative AC response (61.5%), delayed

healing (49%), hyphema (48%), leaky wound (37%) and keratitis (34%).

**Conclusion:** Peri-operative problems occurred in a significant number of asymptomatic HCV sero-positive patients having cataract surgery. All cataract patients should have pre-operative viral marker screening, and precautions should be taken to deal with any problems that may arise both before and after the procedure.

**Keywords:** HCV positive, Peri-Operative, Cataract Surgery

### **Introduction**

Cataract is the second most common cause of vision loss and visual impairment in the globe, with a frequency of 33% in the general population [1]. The ability to care for oneself and quality of life are impaired by cataract, which is linked to an increase in the frequency of traffic and fall accidents. The rising costs of related medical care make cataracts a significant public health issue. The main cause of cataract is ageing. In contrast, cataract can also be inherited or occur from other eye disorders,

trauma, prior eye surgery, long-term steroid usage, and a number of other conditions, including diabetes.

A number of factors contribute to the aetiology of cataracts, including protein misfolding and aggregation, DNA damage, polyol formation, oxidative stress, photochemical production of reactive oxygen species, and oxidative stress [2]. Numerous investigations on experimental animals have demonstrated that oxidative stress plays a crucial role in cataract pathogenesis and that topical antioxidants such as caffeine, ascorbate, and vitamin E effectively inhibit the development of cataracts [3].

Globally, the prevalence of the hepatitis C virus (HCV) infection is estimated to be 2.2%, and it is a significant public health issue [4]. Hepatocellular carcinoma, cirrhosis of the liver, and hepatic decompensation are all caused by HCV. The extrahepatic manifestations of HCV infection also include renal failure, cardiovascular problems, and metabolic syndromes; these extrahepatic manifestations are thought to be linked to the hyperinsulinemia and oxidative stress that HCV causes in the body.

The relationship between cataract risk and HCV infection hasn't been thoroughly studied very often, despite the fact that cataract is likewise a sign of oxidative stress and has long-term implications that include vision impairment. Patients with age-related cataract exhibited considerably higher seropositivity for HCV than an age-matched general population, according to Yoshida et al. [5]. This study investigated if cataract risk is associated with HCV infection.

### Methods

This was a one-year prospective observational study carried out at the Department of Ophthalmology of Katihar Medical College, Katihar. In total, 100 patients,

regardless of gender, with cataracts (58 unilateral and 21 bilateral) and incidentally confirmed HCV positive cases over the age of 20 were enrolled in the study. All patients underwent testing for HCV, HBsAg, and HIV serological markers. To rule out any evident cause for peri-operative problems, careful slit lamp and fundus examinations of the eyes were performed. Patients with cataracts of any grade who had recently been diagnosed with HCV positivity but not HIV or HBV met the inclusion criteria. Patients with complex cataracts, atrophic irises, rubeosis iridis, or other pre-existing bleeding diseases were not included in the study. With the consent of the attending physician, patients using acetylsalicylic acid tablets (Aspirin) or warfarin (Coumadin) were requested to discontinue taking the medicine 1 week before to surgery.

### Observations

100 newly diagnosed HCV positive patients who attended the Ophthalmology OPD had Small Incision Cataract Surgery (SICS). Out of 79 patients, 36 (45.56%) were male and 43 (54.43%) were female, with patients ranging in age from 20 to 80.

A problem in one or both of the operated eyes occurred in either the intra-operative or post-operative phase in 79 out of 100 patients who had only one eye operated, and in 37 out of 42 patients who had both eyes done. Intraoperative haemorrhage was the most common side effect, affecting 57 (54%) of the patients and being mostly brought on by the scleral tunnel. Stopping the continuous oozing in these situations was similarly challenging. Blood seepage into the anterior chamber persisted despite wound closure or air injection, necessitating cautery inside the tunnel in 4 (3.5%) eyes. A 100 mg/ml intra-operative injection of tranexamic acid

was used in 18 (22%) of the instances to halt the bleeding (Table-1).

Table 1: Corrective and preventative measure for treatment

Methods to correct the complications		
Sn.	Corrective Measures	Patients
1.	Post-operative suture	13
2.	Post-operative Pressure Patch	8
3.	Cautery in-side tunnel	4
4.	Injection Tranexamic acid	18
5.	Intra-operative suture	57

Due to excessive movement, problems with wound closure and repeated fluid or air outflow as well as post-operative pressure patch were noted in 8 (5.5%) of the cases. In 13 (15%) cases, suture was used to close the entrance incision (Table-1).

Table 2: Post- and intra-operative complications

Complications				
Sn.	Post-operative	No. of Eyes	Intra-operative	No. of eyes
1	Hyphema	13	Difficulty in wound closure	61
2	Delayed Healing	17	Bleeding	39
3	Leaking Wound	11		
4	Keratitis	16		
5	AC reaction	43		

On the first post-operative day, 16 (28%) eyes had keratitis of severities, 13 (14%) eyes had hyphema, and 11 (6.5%) eyes had leaking wounds. In 43 (51.5%) eyes, the anterior chamber reaction was observed (Table 2).

A delayed healing of the surgical site was visible in 56 of the 100 eyes tested, including the development of sub conjunctival blebs, conjunctival congestion, and conjunctival chemosis. 25 eyes had their wounds sutured to stop the leakage at the one-week visit. When a pressure patch was put, these patients still developed sub conjunctival blebs. On the first post-operative day, hyphema was found in 44 of the eyes; 23 of these eyes also had intraoperative haemorrhage, and in 8 of the eyes, hyphema was found despite having a simple surgery.

### Results

100 newly diagnosed HCV-positive individuals with cataracts of any grade were included in this investigation. SICS was performed, and the effect of the HCV on the procedure and its results was noted. The formation of sub-conjunctival blebs, conjunctival congestion, and conjunctival chemosis were among the signs of a delayed healing of the surgical site in 56 of the 100 eyes examined.

At the one-week visit, 25 eyes had their wounds sutured to halt the leakage. These patients continued to have sub conjunctival bleb development after using a pressure patch. 44 of the eyes had hyphema on the first post-operative day; 23 of these eyes also had intraoperative haemorrhage, and in 8 of the eyes, hyphema was discovered despite undergoing an uncomplicated surgery. Although the end result was not significantly impacted, these patients had more difficulties managing complications and had longer periods of morbidity, which presented a challenge to the operating surgeon.

### Discussion

Population-based HCV studies are obviously lacking in India. Hepatitis C virus infection is thought to affect between 122 million and 185 million people worldwide,

or around 2-3% of the world's population. [6-11] In patients with acute HCV-induced liver disease, chronicity is documented in 80% of cases. [5] Numerous studies have been conducted in the past to examine the peri-operative complications in patients with chronic liver disease undergoing various types of major procedures, aside from ocular surgery. Chronic liver illness has been shown to have negative impact on surgical results. [12-15]

Previous research has not been done to determine the effects of HCV-related liver illness during cataract surgery using a tiny incision (SICS). From the development of the conjunctival flap until the wound was closed at the conclusion of the surgery, several sets of problems were observed in the majority of instances in this study. The development of blood clots may have been hampered by a coagulation problem. More instances than we typically see showed anterior chamber reactivity on the first post-operative day. The battle to control the bleed, the excess instrumentation, and the longer than usual time needed to complete the surgery could be to blame for this AC reaction. It was also considered that the causes of leaking wound and keratitis were similar.

### Conclusion

Patients who have HCV infection face a special set of difficulties during cataract surgery. All positive cases must undergo a thorough pre-operative work-up due to the likelihood of irregular bleeding and sluggish recovery. Prior to cataract surgery, precautions should be taken to reduce the risk of complications during and after the procedure, such as evaluation of the coagulation profile and LFT.

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