



## Cataract Surgery in Leprosy: Quest for Perfection

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**Purpose:** The aim of the study was to find the most suitable approach for cataract surgery in leprosy affected people and compare the visual outcome in camp based approach in such patients with non-leprosy patients.

**Methods:** prospective case control study.

**Results:** In Non IOL cases (1996 to 2000), vision improved to 6/12 in 120/160 cases in short term. IOL Cases (phaco and SICS done during 2005-2010), 210/250 cases improved to vision more than 6/12. Worse in "cases" with Phaco.

SICS with IOL (2010- 2014) 235/242 cases vision improved to >6/12. Results were similar in both PALs and non-leprosy controls.

**Conclusion:** With this study we conclude that post-operative outcome of small incision cataract surgery shows better outcome than phaco, also more accessible in areas with low socioeconomic areas where leprosy has high prevalence.

**Keywords:** Cataract Surgery; Leprosy; Non-Leprosy

**Introduction**

Cataract is the leading cause of blindness in leprosy patients [1]. In addition to being at risk for blindness due to typical age related cataract, leprosy patients are also at risk of complicated cataract due to chronic or acute uveitis [2,3]. While the magnitude of this excess risk has not been adequately defined, it is estimated that uveitis increases the risk of cataract threefold [4]. There is evidence from India and Philippines that multibacillary patients on multidrug therapy (MDT) continue to develop chronic uveitis during and after successful anti-leprosy treatment.

Globally, there are approximately 1.5 million people on MDT for leprosy. The trends show an overall gradual decline from 265 661 in 2006 to 210 758 in 2015. Marginal increases in new cases were observed in 2015 in AFR from 18 597 (in 2014) to 20 004 (in 2015) and in SEAR from 154 834 (in 2014) to 156 118 (in 2015). SEAR accounted for 74% of the global new case load; this was followed by AMR with 14% and AFR with 9%. WPR and EMR contributed 2% and 1% of the global new case load, respectively. The trends in new case detection showed an overall slow decline in all WHO regions.

According to the 2015 survey under the national leprosy eradication program (NLEP), Jharkhand contributed to roughly 4% of India's fresh leprosy case load during 2014-15. Jharkhand ranks seventh in the country. Leprosy prevalence rate in children is high in Jharkhand with 444 children in 2014-15.

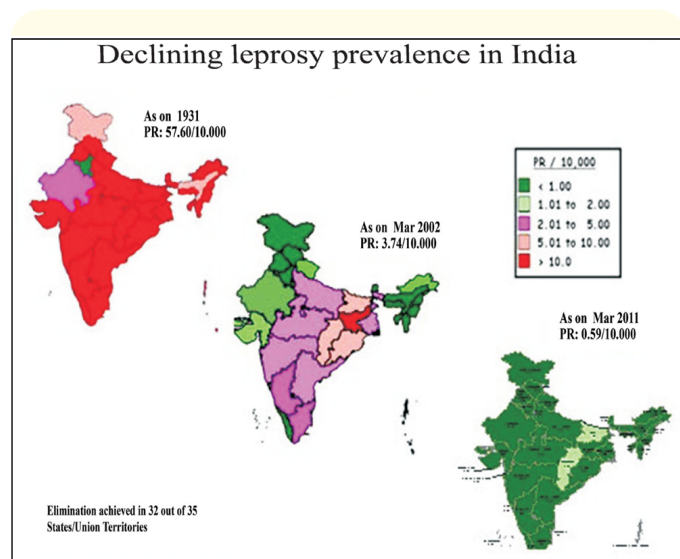
There are several reasons why it is important to understand cataract in leprosy patients. Firstly, cataract in both cured and uncured leprosy patients can be expected to increase in the coming years, primarily due to increased life expectancy. All ageing leprosy patients are at risk for age related cataract and many of the multibacillary patients are at risk for complicated cataract. Secondly, leprosy patients, who often have anaesthetic digits, are doubly disadvantaged when they lose their sight. Thirdly, leprosy patients in most parts of the world are extremely poor as well as being stigmatised, and thus are the least likely among those with cataract to receive eye services.

Among ophthalmologists who work with leprosy patients, there has been discussion about the feasibility and safety of using intraocular lenses (IOLs) for cataract. Even a decade ago there was concern about the safety of removing cataract at all in this population.

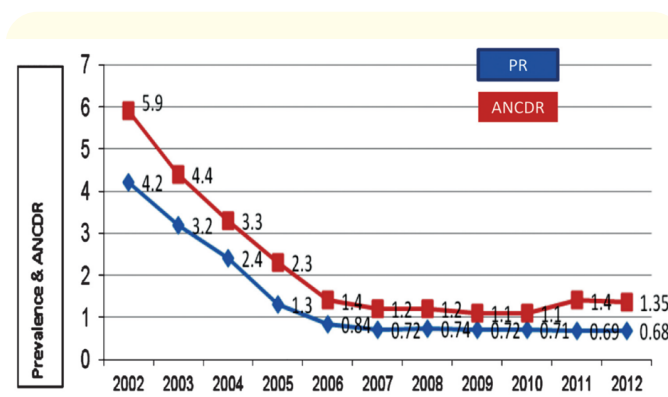
The concern is due to the fact that a large percentage of cataract in multibacillary leprosy patients is the complicated type, with dense synechiae and extreme miosis, and surgery can be difficult. Furthermore, there is probably an increased potential for anterior chamber inflammation in this population, even among cured patients. The risk of poor outcome is further increased by the fact that many patients may receive surgery in less than ideal circumstances. Previous case series reports of the outcome of cataract surgery have shown variable success rates.

The issue of the barriers that keep general cataract patients from receiving surgery has received increasing attention in the past few years. It has become apparent that many cataract patients do not take advantage of services because of cost, distance to service, fear of surgery, fear of poor outcome, sex discrimination, and other factors. The barriers to the use of cataract surgery among a population of leprosy patients may differ from those in non-leprosy populations and have not been investigated before. This information would help leprosy control and blindness prevention programmes create interventions aimed at increasing access to and uptake of cataract surgery.

In this paper we sought to determine the most suitable approach for cataract surgery in leprosy affected people. We also studied and compared the visual outcome in camp based approach among leprosy affected patients and normal patients.



**Figure 1**



**Figure 2**

### Study Design

Prospective case control study.

### Study Site

Bokaro district, Jharkhand.

### Study population

Cases include cataract surgery in leprosy affected patients; non-leprosy people undergoing surgery at Camps are taken as controls.

### Study duration

Camps conducted between the years 1996 till year 2014.

### Materials and Method

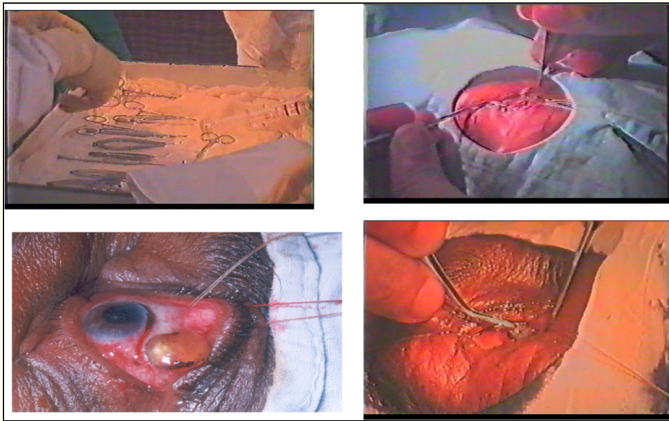
Patients attending yearly camp organized by our hospital are registered and followed up during the successive years.

Visual acuity was measured with Snellen's E chart.

External examination was done with torch light and portable slit lamp. Undilated fundus examination along with refraction was done in all the cases. Intraocular pressure was seen digitally and if in doubt Schiottz tonometer was used. Corneal sensation was seen in all the cases with a cotton wisp introduced from below. Fundus examination and lenticular opacity were assessed after dilatation with Tropicamide and phenylephrine combination. Ocular findings were recorded under the following headings: Visual acuity uncorrected and corrected, lid: blinking, Lagophthalmos, margins, trichiasis. Pupil: size, shape, reaction. Cornea: lusture, opacity, keratitis, sensation. Iris: synechia, nodules, atrophic patches. Lens: cataract, aphakia or pseudophakia, after-cataract. Demography along with non-ocular clinical data was collected.

**All cases were grouped under 3 categories:**

- Group 1 included leprosy cases during 1996 to 2000. (Total160). 160 controls were taken from non-leprosy cataract surgery camps. ICCE, ECCE with/or without IOL,Phaco/SICS with IOL.
- Gr2: 2005-2009: 250 cases; IOL Cases (phaco and SICS).
- Gr3: 2010 to 2014: Small incision cataract surgery with IOL was done in 242 cases.

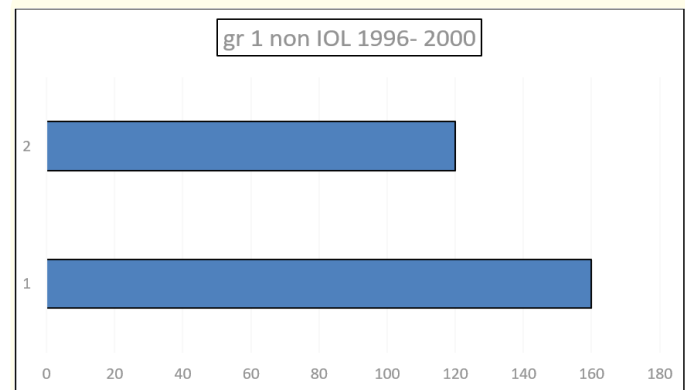
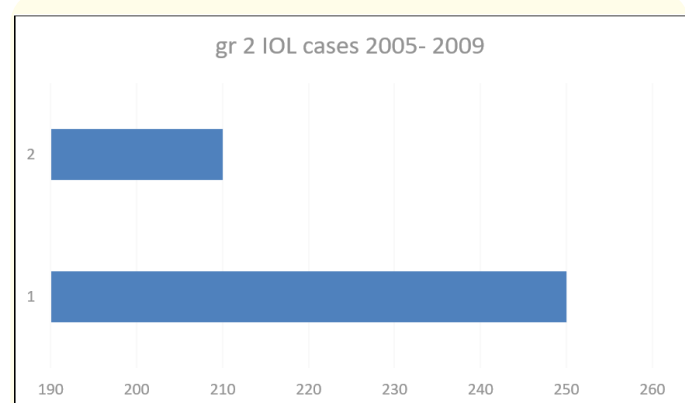
**Figure 3****Figure 4****Statistical evaluation**

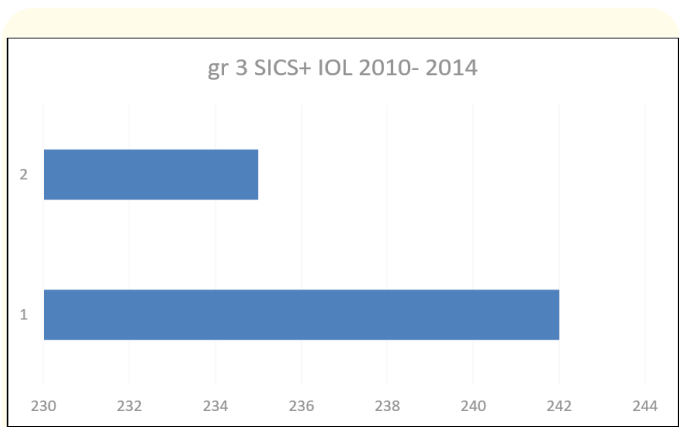
1. Mean and standard deviation was computed for quantitative variables like age and visual loss or gain.
2. Paired T-test was used to compare Mean  $\pm$  SD BCVA pre and post cataract surgery.

3. Irrespective of methods used, differences between various parameters among different group or sub groups were considered significant if the p value was  $< 0.05$ . If p value was  $> 0.05$  then the differences were considered insignificant.

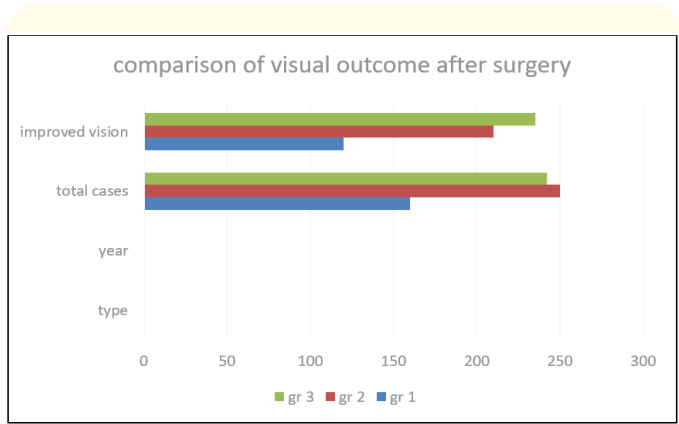
**Results**

- Group 1: Non IOL cases (1996 to 2000). Vision improved to 6/12 in 120/160 cases in short term.
- Group 2: 2005-2009: IOL Cases (phaco and SICS). 210/250 cases 210 had more than 6/12. Worse in "cases" with Phaco.
- Group 3: 2010 to 2014: SICS with IOL was done in 242 cases. Vision in 235 "cases"  $> 6/12$ . Results were similar in both PALs and non-leprosy controls.

**Graph 1:** Graph showing outcome between 1996-2000.**Graph 2:** Graph showing outcome between 2005-2009.



Graph 3: Graph showing outcome between 2010-2014.



Graph 4

|      | Type      | Year        | Total cases | Improved vision |
|------|-----------|-------------|-------------|-----------------|
| Gr 1 | Non IOL   | 1996 - 2000 | 160         | 120             |
| Gr 2 | IOL cases | 2005 - 2009 | 250         | 210             |
| Gr 3 | SICS+ IOL | 2010 - 2014 | 242         | 235             |

Table

Discussion

In our study it was observed that visual outcome has improved in majority of patients after cataract surgery. Long term follow-up reveals SICS with IOL has shown better outcome in leprosy. The main finding of this study is the fast rate of visual recovery after SICS with close to half of the patients having uncorrected visual acuity of 6/18 or better five days after surgery.

Cataract constitutes almost half of the causes of diminution of vision in leprosy affected people which not only increase their financial burden but also is major cause of their disability.

This study conducted over 18 years of campaign in our district demonstrated by the number of camps held, patients treated, surgeries performed, IOLs implanted and spectacle distributed clearly shows improvement in quality of life of leprosy affected people after camp based approach.

The number of leprosy affected people with decreased vision in our country is huge but the resources and facilities fell short of need.

In addition to restoration of vision in leprosy affected people bringing up infrastructure, training local workers, motivation and encouragement of government and non-government sectors as well as creating public awareness of factors leading to blindness and disability are major contributors in improving quality of life of leprosy affected people.

Conclusion

In leprosy endemic areas like Jharkhand where incidence rate is still high, it is important to be aware of the outcome of cataract surgery. With this study we conclude that post operated outcome of small incision cataract surgery shows better outcome than phaco, also more accessible in areas with low socioeconomic areas where leprosy has high prevalence.

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