

Cataract Surgery on Leprosy Patients¹

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Leprosy produces damage to peripheral nerves in the extremities. Insensitivity and muscle paralysis lead to deformities in the hands and feet. If sight is also impaired or lost, one can imagine the hardships these unfortunate victims of this much stigmatized disease undergo. Just as anybody in the general population, leprosy patients can also get cataracts leading to blindness. However, leprosy patients may be prone to get cataracts early and also may have more complications following cataract surgery.

This paper reports the results of a study of cataract surgery on leprosy patients compared with nonleprosy cases.

MATERIALS AND METHODS

A total of 291 leprosy patients were operated upon for cataract extraction between January 1979 and April 1985. During this period, 89 nonleprosy cases also underwent the same operation under similar conditions. The patients were mostly drawn from the Gudiyatham Taluk of North Arcot District in Tamil Nadu, India, which is the catchment area of the Schieffelin Leprosy Research and Training Centre, where the cataract surgery was done.

Table 1 gives the type of leprosy of the cases who had cataracts compared to the type of leprosy among the general patients living in Gudiyatham Taluk. Nearly two thirds of the cataract cases (68.4%) were lepromatous. This is in contrast to the general pattern in Gudiyatham Taluk (during 1985) in which only 27.4% of the patients were lepromatous (¹). Thirty-nine of the leprosy patients (13.4%) had positive skin smears for leprosy bacilli at the time of their cataract operation.

A large proportion of the patients (59.8% leprosy and 47.2% nonleprosy) were in the age group 55 to 64 (Table 2). The age distribution of the leprosy cases differed significantly from that of nonleprosy cases ($p < 0.05$). It should also be noted that six patients (2.1%) among the leprosy group and none in the nonleprosy group belonged to the relatively young age group (aged up to 44). Males were more numerous in leprosy cases (82%) than in nonleprosy cases (55%). This is due to a higher incidence of leprosy among males in this region.

In the leprosy group, 79 (28.2%) had corneal opacities of varying extent and location; there were only five (7.8%) among the nonleprosy group. Among the leprosy patients, eight had mild active iridocyclitis of a chronic variety (Table 3) and 11 (3.9%) had neurotrophic plantar ulcers which were free of secondary pyogenic infection. All of these patients with ulcers were given a course of systemic antibiotic during the immediate postoperative period of 7 days. Among the leprosy patients 63.6% had preoperative ocular and general complications compared to 37.1% of the nonleprosy patients.

Statistical significance was determined using the chi-square test and the test for differences between proportions (normal distribution).

RESULTS

Complications in the immediate postoperative period occurred in 38.5% of leprosy and 21.3% of nonleprosy patients ($p < 0.001$) (Table 4). In the immediate postoperative period, 10.7% of the leprosy patients had mild iridocyclitis, but only 4.5% of the nonleprosy patients had it (Table 5). Among the leprosy patients, 10% had lens matter left behind in the anterior chamber; 1.1% of the nonleprosy group showed this complication. On the whole, lepromatous leprosy patients had more postoperative complications (Table 6).

Visual recovery on the ninth or tenth postoperative day obtained with a +10 diopter sphere lens showed that 38.8% of

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TABLE 1. *Type of leprosy.*

Leprosy type	Cataract operated cases		All patients in Gudiyatham Taluk ^a	
	No.	%	No.	%
Lepromatous leprosy	199	68.4	1018	27.4
Borderline lepromatous	13	4.5	517	13.9
Borderline tuberculoid	26	8.9	1123	30.2
Tuberculoid	48	16.5	865	23.2
Indeterminate	4	1.4	196	5.3
Neuritic	1	0.3	—	—
Total	291	100.0	3719	100.0

^a Cases refer to 1985.

the leprosy patients and 11% of the nonleprosy patients had visual acuities limited to counting fingers. Moreover only 24.1% of the leprosy patients had 6/36 vision compared to 40.4% in the nonleprosy group (Table 7). Both of these differences are significant ($p < 0.001$). The visual outcome of the patients, excluding the cases with corneal opacity and optic atrophy preoperatively, is given in Table 8. A follow-up study of visual acuity up to 1–3 years on some of these patients after accurate refraction is given in Table 9. Visual acuity with +10 diopter lens only was recorded earlier since a majority of the patients were illiterate and could not cooperate well for accurate refraction because of poor understanding.

DISCUSSION

There could be a slightly higher incidence and an earlier onset of cataract among leprosy patients due to the chronic ocular inflammation of iridocyclitis. Prabhakaran⁽⁵⁾ has postulated that guinones, which are known to be cataractogenic, are produced due to the oxidation of DOPA by leprosy bacilli present in the iris and ciliary body.

All of the patients presented themselves in the matured stage of cataract with preoperative vision of light perception only. Chatterjee⁽²⁾ reported a negligible number of cataracts below the age of 30 years among nonleprosy cases in Punjab, India. The majority of the leprosy patients with cataracts (68.4%) suffered from lepromatous leprosy.

According to flytche⁽³⁾, the main cause of visual loss among leprosy patients is the combined effects of corneal and lens opacities. He also adds the effect of the small size of the pupil, due to chronic iris changes. In his study, as in the present series, corneal opacities were the most frequent preoperative complication.

For complicated cataracts following uveitis, pars plana lensectomy and vitrectomy or conventional intracapsular cataract extraction with pars plana vitrectomy have been suggested by Namperumalswami⁽⁴⁾. Such a sophisticated technique was, however, not used on any of our leprosy patients who had chronic uveitis. Lepromatous leprosy produces gross damage to the iris tissue due to frequent attacks of iridocyclitis. Iris atrophy, polycoria, pinpoint pupil, and thick

TABLE 2. *Age and sex distribution.*

Age (yr)	Leprosy patients						Nonleprosy patients					
	Male		Female		Total		Male		Female		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Up to 44	6	2.5	—	—	6	2.1	—	—	—	—	—	—
45–54	28	11.7	5	9.5	33	11.3	10	20.4	7	17.5	17	19.1
55–64	137	57.6	37	69.8	174	59.8	23	46.9	19	47.5	42	47.2
65–74	58	24.5	11	20.7	69	23.7	14	28.6	12	30.0	26	29.2
75–80	9	3.7	—	—	9	3.1	2	4.1	2	5.0	4	4.5
Total	238	100.0	53	100.0	291	100.0	49	100.0	40	100.0	89	100.0
%	82%		18%		100%		55%		45%		100%	

TABLE 3. Details of preoperative complications.

Complication	Leprosy patients		Nonleprosy patients	
	No.	%	No.	%
Active chronic iridocyclitis	8	2.9	—	—
Secondary glaucoma	17	6.1	3	7.7
Hypermatured cataract	41	14.6	16	41.0
Corneal opacity	79	28.2	5	12.8
Pterygium	19	6.8	2	5.1
Posterior synechiae	41	14.6	—	—
Optic atrophy	13	4.6	1	2.6
Iris atrophy	27	9.7	—	—
Brown cataract	22	7.9	12	30.8
Plantar ulcer	11	3.9	—	—
Pulmonary tuberculosis	2	0.7	—	—
Total	280	100.0	39	100.0

posterior synechiae are common in the eyes of these patients. Therefore, a significant number of extractions inevitably became extracapsular, accidentally.

Usually intraocular surgery such as cataract extraction is not undertaken in leprosy patients for fear of precipitating an attack of iridocyclitis, or generalized erythema nodosum leprosum reactions if the skin smears are positive for leprosy bacilli. In this study, extractions were performed even on patients with positive skin smears on the basis of urgency, such as lens-induced glaucoma or cataract blindness in both eyes. It is remarkable that these patients did not show any major postoperative complications. A few patients who had active chronic iridocyclitis were also operated upon with sim-

TABLE 4. Immediate postoperative complications.

	Leprosy patients		Nonleprosy patients	
	No.	%	No.	%
No complications	179	61.5	70	78.7
Complications	112	38.5	19	21.3
Total	291	100.0	89	100.0

ilar indications. These operations were done under an umbrella of systemic and topical corticosteroid therapy. The rest of the patients received only topical corticosteroids.

In patients whose pupils were not dilating with any of the mydriatics, a conventional section (complete) iridectomy was performed. In one case, during an iridectomy the entire atrophic iris tissue was torn off, producing an aniridia. In such cases, a peripheral iridectomy at 12 o'clock followed by an iridotomy through the buttonhole peripheral iridectomy is preferred. This produces minimal trauma to the iris and reduces pigment dispersion in the eye. The pupil is maintained small, thereby reducing glare postoperatively.

Many patients developed corneal blindness in addition to the cataracts. Corneal blindness occurs due to lack of effective and simple treatment in the early stages. Among leprosy patients lagophthalmos occurs commonly, and this predisposes corneas to exposure keratitis and corneal injuries which leave behind permanent opacities. The presence of these opacities gave an overall poor visual recovery even after successful cataract extractions.

TABLE 5. Details of complications during immediate postoperative period.

Complication	Leprosy patients		Nonleprosy patients	
	No.	% ^a	No.	% ^b
Blood in anterior chamber	17	5.8	1	1.1
Iridocyclitis	31	10.7	4	4.5
Iris prolapse	7	2.4	—	—
Choroidal detachment	14	4.8	2	2.2
Retinal detachment	3	1.0	—	—
Lens matter in anterior chamber	29	10.0	1	1.1
Shallow anterior chamber	13	4.5	6	6.7
Vitreous loss	1	0.3	1	1.1
Reactive psychotic episode	6	2.1	3	3.4

^a Percentage out of all 291 cases.

^b Percentage out of all 89 cases.

TABLE 6. *Immediate postoperative complications by type of leprosy.*

Complication	Lepromatous leprosy		Borderline lepromatous		Borderline tuberculoid		Tuberculoid		Indeterminate	
	No.	%	No.	%	No.	%	No.	%	No.	%
Blood in anterior chamber	9	4.5	2	15.4	1	3.8	5	10.4	—	—
Iridocyclitis	22	11.1	1	7.7	1	3.8	6	12.5	1	25.0
Iris prolapse	4	2.0	—	—	1	3.8	2	4.2	—	—
Choroidal detachment	12	6.0	—	—	—	—	2	4.2	—	—
Retinal detachment	1	0.5	—	—	1	3.8	1	2.1	—	—
Lens matter in anterior chamber	23	11.6	1	7.7	3	11.5	2	4.2	—	—
Shallow anterior chamber	11	5.5	—	—	2	7.7	—	—	—	—
Vitreous loss	1	0.5	—	—	—	—	—	—	—	—
Reactive psychotic episode	5	2.5	—	—	1	3.8	—	—	—	—
Total no. complications	88		4		10		18		1	
Patients with no complications	116	58.3	9	69.2	16	61.5	34	70.8	3	75.0
Total no. cases	199	100.0	13	100.0	26	100.0	48	100.0	4	100.0

SUMMARY

All patients who had cataract surgery at the Schieffelin Leprosy Research and Training Centre, Karigiri, India, between January 1979 and April 1985 were studied to find out the outcome of that surgery. These patients included 291 leprosy cases and 89 nonleprosy cases. Postoperative complications were slightly higher among leprosy patients compared to the nonleprosy cases. Visual recovery was marred by preoperative corneal opacities in some of the leprosy patients. Eyes with chronic insidious type of iridocyclitis did not produce any devastating results postoperatively. Patients whose skin smears were still positive for leprosy bacilli did not show any major complication. All leprosy patients should be offered the benefit of cataract surgery for restoring

sight because blindness in leprosy would mean a double handicap if they are already suffering from insensitive, deformed hands and feet.

RESUMEN

Todos los pacientes que habían sido sometidos a cirugía de cataratas en el Centro de Entrenamiento e Investigación para la lepra Schieffelin, en Karigiri, India, entre Enero de 1979 y Abril de 1985, fueron estudiados para establecer el resultado de la cirugía. Estos pacientes incluyeron 291 casos de lepra y 89 casos no leproso. Las complicaciones post-operativas fueron ligeramente mayores entre los pacientes con lepra que entre los casos no leproso. La recuperación visual estuvo estorbada por opacidades corneales pre-operatorias en algunos de los pacientes con lepra. Los ojos con iridociclitis insidiosa crónica no mostraron resultados devastadores después de la operación. Los pacientes cuyos extendidos de linfa cutánea fueron aún

TABLE 7. *Postoperative visual acuity.*

Visual acuity	Leprosy patients		Nonleprosy patients	
	No.	%	No.	%
Light perception	2	0.7	—	—
Hand movement	14	4.8	1	1.1
Counting fingers	113	38.8	10	11.2
6/60	28	9.6	5	5.6
6/36	70	24.1	36	40.5
6/24	36	12.4	29	32.6
6/18	20	6.9	6	6.8
6/12	5	1.7	1	1.1
6/9	2	0.7	1	1.1
6/6	1	0.3	—	—
Total	291	100.0	89	100.0

TABLE 8. *Postoperative visual acuity excluding optic atrophy and corneal opacity.*

Visual acuity	Leprosy patients		Nonleprosy patients	
	No.	%	No.	%
Light perception	2	0.9	—	—
Hand movement	7	3.0	—	—
Counting fingers	75	32.2	8	9.6
6/60	24	10.3	4	4.8
6/36	65	27.9	36	43.5
6/24	32	13.7	27	32.5
6/18	20	8.6	6	7.2
6/12	5	2.1	1	1.2
6/9	2	0.9	1	1.2
6/6	1	0.4	—	—
Total	233	100.0	83	100.0

TABLE 9. *Visual acuity with refraction at 1-3 years follow-up.*

Visual acuity	Leprosy patients		Nonleprosy patients	
	No.	%	No.	%
Counting fingers	1	1.8	—	—
6/60	1	1.8	1	4.0
6/36	2	3.5	—	—
6/24	8	14.0	1	4.0
6/18	18	31.6	4	16.0
6/12	12	21.1	11	44.0
6/9	10	17.5	5	20.0
6/6	5	8.7	3	12.0
Total	57	100.0	25	100.0

positivos en bacilos de la lepra, no mostraron mayores complicaciones. Todos los pacientes con lepra deberían recibir el beneficio de la cirugía de cataratas para restaurar la visión porque la ceguera en lepra constituye una desventaja adicional sobre todo si los pacientes sufren ya de insensibilidad y deformación de pies y manos.

RÉSUMÉ

En vue d'évaluer les résultats de la chirurgie de la cataracte, on a étudié tous les malades ayant subi cette intervention entre janvier 1969 et avril 1985 au Schieffelin Leprosy Research and Training Centre, à Karigiri en Inde. Ces malades comprenaient 291 cas de lèpre et 89 individus non atteints par la maladie. Les complications post opératoires étaient légèrement plus fréquentes chez les malades de la lèpre, par rapport aux

sujets non atteints par cette la maladie. Chez quelques-uns des malades de la lèpre, la récupération visuelle a été compromise par des opacités cornéennes préopératoires. Les yeux atteints d'iridocyclite insidieuse de type chronique n'ont pas montré de résultats catastrophiques après l'opération. Les malades dont les frottis cutanés étaient encore positifs pour les bacilles de la lèpre n'ont pas présenté de complication majeure. On devrait pouvoir offrir à tous les malades de la lèpre le bénéfice de la chirurgie de la cataracte en vue de restaurer la vision avant que la cécité ne vienne, lorsqu'ils souffrent déjà de mains et de pieds insensibles et déformés, s'ajouter à la lèpre pour entraîner une infirmité double.

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REFERENCES

1. *Annual Report 1985*. Karigiri, South India: Schieffelin Leprosy Research and Training Centre, p. 35.
2. CHATTERJEE, A. and MILTON, R. C. Prevalence and aetiology of cataract in Punjab. *Br. J. Ophthalmol.* **66** (1982) 35-42.
3. FFYTCHÉ, T. J. Cataract surgery in the management of the late complications of lepromatous leprosy in South Korea. *Br. J. Ophthalmol.* **65** (1981) 243-248.
4. NAMPERUMALSWAMY, P. and DAS, T. Surgical treatment of complicated cataract following chronic uveitis. *Indian J. Ophthalmol.* **30** (1982) 87-89.
5. PRABHAKARAN, K. Cataract in leprosy—a biochemical approach. *Lepr. Rev.* **42** (1971) 11-13.