



## Barriers to the Second Eye Cataract Surgery Amongst the Rural Population of Western Maharashtra, India

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### Authors' contributions

This work was carried out in collaboration between both authors. Both authors jointly designed the study, wrote the protocol, managed literature searches and wrote the first draft of the manuscript. Both authors read and approved the final manuscript.

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### ABSTRACT

**Aim:** To identify the barriers which prevent the uptake for the second eye cataract surgery (SECS), amongst the rural population.

**Study Design:** A hospital based observational study.

**Place and Duration of Study:** Department of Ophthalmology, Pravara institute of medical sciences, Loni, Maharashtra, India, from September 2013 to August 2015.

**Methodology:** 100 patients who had age related senile cataract in second eye and had undergone first eye cataract surgery in past were included in this study. They were clinically examined and interviewed to determine the reasons for delay in seeking SECS.

**Results:** Amongst the 100 patients, majority were female (65%), farmers (60%) and illiterate (78%). Most common age group involved was 61-70 (44%) years. Visual Acuity in the non-operated fellow eye was <6/60 or worse in 84% patients. 60% patients presented with advanced stages of cataract (mature and hypermature cataract) in the second eye, and 12% patients had hypermaturity related complications. The major barriers to the uptake of SECS were 'can see with other eye' in 66% patients and 'cost of surgery' in 54% patients.

**Conclusion:** Can see with other eye and cost of surgery are important barriers that prevent the

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uptake for SECS. Dedicated modifications in ongoing cataract surgery programmes and eye care education camps will be of immense help in overcoming the barriers associated with the second eye cataract surgery.

*Keywords: Barriers; cataract; second eye cataract surgery.*

## 1. INTRODUCTION

Cataract is the most common cause of preventable blindness and visual impairment worldwide, and is responsible for 75% of all blindness cases [1]. The most recent data provided by WHO reveals that in South Asia region including India, 51% of blindness is due to cataract [2]. By 2020, the elderly population is expected to double, thereby further increasing the number of blind people [3]. Management of cataract revolves around the removal of the opacified lens and correction of the resultant hypermetropia with an intraocular lens implant. The cataract surgery procedure is one of the few surgical interventions, wherein the cost benefit analysis has been extensively studied [4].

Cataracts are predominantly bilateral, [5] are known to depress visual field fairly uniformly. Stereo acuity [6] and binocular contrast sensitivity [7,8] is improved by surgery to both cataracts. Available studies in this regard show an improvement in visual function after second eye surgery and suggest that better outcomes are achieved if patients undergo surgery in both eyes [9-11]. With the objective of reducing the rates of visual impairment, large-scale cataract surgery programs have been encouraged worldwide, by both governmental as well as non-governmental organizations. However, despite rapid increase in the availability of quality services, surgical acceptance is still poor in our country especially in the rural areas. People's use of health services is influenced by a range of social, economic, psychological, cultural and practical factors [12].

Even in today's modern era of tremendous advancement in surgical skill and technology and increasing cataract surgery rates globally, we frequently see patients operated for cataract in one eye, presenting with hypermaturity related complications in the second eye. These are the patients who have accessed the eye care facility for the first eye, but have failed to seek it again for the second eye at the appropriate time. Various studies in past have identified and categorized the factors which act as barriers to the uptake of cataract surgery, but they have usually been carried out in relation with the first

eye cataract surgery. Dedicated studies for understanding the barriers that prevent the uptake for the second eye cataract surgery are limited. Ours is a tertiary level, teaching hospital that caters mainly to the rural population with poor socio-economic background in the region of western Maharashtra. Despite the fact that the cost of cataract surgery is very minimal or surgery is even done on charity basis, patients still decline to get operated in the second eye. In this light, this prospective study was carried out for determining the barriers which prevent the uptake for the second eye cataract surgery and lead the patients to preventable sufferings.

## 2. MATERIALS AND METHODS

This was a hospital based observational study conducted at Department of Ophthalmology, Pravara institute of medical sciences, Loni, a tertiary care teaching hospital located in rural area of western Maharashtra. The study was carried out over a period of two years from September 2013 to August 2015 in 100 patients who had undergone cataract surgery in one eye and have age related cataract in the second eye, attending the OPD during the study period, and fulfilled the selection criteria mentioned below.

### 2.1 Selection Criteria

- a. **Inclusion criteria** – Unilateral pseudophakic patients with age related cataract in the second eye coming to pravara ophthalmology OPD.
- b. **Exclusion criteria** – Patients with best corrected visual acuity <6/18 in the first eye, Age < 50 years, other ocular morbidities leading to diminution of vision except age related senile cataract and One eyed patients.

After institutional ethical committee approval, patients were briefed in appropriate local language about the purpose and procedures involved in the study. Information was obtained from the selected patients using a structured proforma about their socio-demographic details that included name, age, sex, occupation, nature and duration of symptoms, history of systemic diseases and addictions if any. A detailed

operative history was obtained regarding first eye surgery, which included place of surgery, time since surgery and if known type of surgery.

Clinical examination include recording of visual acuity, anterior segment examination, grading of cataract using Lens opacities classification system and fundus examination. Retinoscopy was done and refractive status of the patients was recorded and best corrected visual acuity was obtained. Other ocular examinations in the form of ocular motility, ocular position, intra ocular pressure measured using schitzo tonometer, patency of lacrimal passage was also done.

After complete evaluation of the patients, they were asked about the reason for refraining from seeking SECS at an appropriate time (the time when the patient becomes symptomatic, much before reaching the stage of complications) which could have prevented their sufferings.

### 3. RESULTS

This study included 100 unilateral pseudophakic patients (35 men and 65 women) with an operable cataract in the second eye with a mean age of 66.24 years. 44% of the patients were in their 7<sup>th</sup> decade. Majority of the patients were farmers (60%) with an illiteracy rate of 78%. Majority of these patients have undergone small incision cataract surgery (SICS), as their first eye cataract surgery (83%). The socio-demographic data and other characteristics of the study population are presented in Table 1.

During clinical examination, it was observed that 84% of the patients had a visual acuity of <6/60

or worse, in the second eye at the time of presentation. 60% of the patients presented with advanced stages of cataract (mature and hypermature cataract). 12% patients had hypermaturity related complications in the second eye at the time of presentation. The findings of clinical examination are depicted in Table 2.

The major barriers for not seeking surgical intervention for the second eye were 'can see with other eye' in 66% patients and 'cost of surgery' in 54%. Table 3 presents a complete list of barriers observed in the present study.

The time interval between the cataract surgery of first and second eye, as observed in the present study is depicted in Table 4. The average time lag between the first and second eye cataract surgery observed in the present study was 2.64 years. The minimum waiting time in between the two surgeries was 1.5 months.

### 4. DISCUSSION

Second eye cataract surgery improves visual capacity, general health status, and patient's satisfaction. [9,10] Patients are more satisfied after SECS in comparison to the first cataract surgery [13]. There is a greater need for SECS in patients who need binocular vision for maintaining an active occupational, personal and social life [14,15]. SECS has a unique effect on quality-adjusted life years and is an extremely cost-effective procedure. There has been a global increase in the number of cataract surgeries being performed. SECS constitute an important share in this increment [16,17].

**Table 1. Socio-demographic profile of patients**

Characteristic		Number of patients
Gender	Male	35 (35%)
	Female	65 (65%)
Age (years)	50 – 60	33 (33%)
	61 – 70	44 (44%)
	71 - 80	17 (17%)
	≥ 81	6 (6%)
	Mean ± SD	66.24±12.25
Occupation	Farmer	60 (60%)
	Housewife	32 (32%)
	Labourer	5 (5%)
	Maid	3 (3%)
Literacy status	Illiterate	78 (78%)
	Literate	22 (22%)
Type of surgery in first eye	Small incision cataract surgery	83 (83%)
	Extra capsular cataract extraction	11 (11%)
	Phacoemulsification	6 (6%)

**Table 2. Clinical examination details**

Characteristic		Number of patients
Visual acuity of second eye	<6/60 or worse	84 (84%)
	6/60 – 6/24	12 (12%)
	6/18 – 6/6	4 (4%)
Stage of cataract in second eye	Immature senile cataract	40 (40%)
	Mature senile cataract	33 (33%)
	Hyper mature senile cataract	27 (27%)
Hyper maturity induced complications	Lens induced Glaucoma	10 (10%)
	• Phacomorphic	4
	• Phacolytic	6
	Subluxation of lens	1 (1%)
	Dislocation of lens	1 (1%)

**Table 3. Barriers to the uptake of second eye cataract surgery**

Barriers	Number of patients
Can see with other eye	66 (66%)
Cost of surgery	54 (54%)
Ignored by family	15 (15%)
Waiting for maturity	13 (13%)
Fear of surgery	12 (12%)
Distance	10 (10%)
Escort deficiency	9 (9%)
Lack of awareness	8 (8%)

**Table 4. Time interval between first and second eye cataract surgery**

Time interval (years)	Number of patients
0 - 2	56 (56%)
3 to 4	25 (25%)
5 to 6	13 (13%)
7 to 8	5 (5%)
9 to 10	1 (1%)

It is evident from the results of the present study, that the study patients have faced multiple barriers which prevented them from undergoing SECS at an appropriate time. Identification of these barriers and appropriate modification of eye care programmes is prudent in expanding the surgical coverage. The major barriers encountered in our study were – can see with other eye (66%), cost of surgery (54%). Other barriers observed were – Ignored by family (15%), waiting for maturity (13%), fear of surgery (12%), distance (10%), escort deficiency (9%) and lack of awareness (8%).

‘Can see with the other eye’ – the main barrier observed in this study, has also been reported by Malik C et al. [18]. Individual visual demands vary as per individual’s vocational and personal needs. In our study 84% of the patients had a visual acuity of <6/60 or worse, in the second eye at the time of presentation and 27% of the

patients presented with hypermature cataract. This is surprising, as even struggling with such a level of vision, these patients did not feel the need of surgery in the second eye. Such patients tend to develop coping mechanisms depending upon their own visual requirements. They do not realize the fact that by adopting such a behavior they themselves make the situation worse. ‘Cost of surgery’ is the second major barriers noticed in this study. Regular follow-up of patients even after first eye cataract surgery and counseling about the disease process can prevent the second eye from going into complications.

Cost has also been cited as a major barrier in the studies conducted by Malik C et al. [18] and Jadoon Z et al. [19]. The cost of surgery to a patient can be studied in two heads namely, the direct cost and the indirect cost. The direct cost includes the cost of surgery, intra ocular lens, medicines, hospital stay including food and travel expenses. The indirect cost covers the loss of pay days at work, management of household duties, transport and food costs of the escort [20]. Affordability is largely dependent upon an individual’s income, which is a major concern among the rural dwellers of any developing country like ours. Dedicated efforts towards reducing the cost of consumables used during surgery and modification of health programmes by providing special opportunities to the economically weak sections of the society can help in overcoming this obstacle.

Another barrier observed in our study was the patient being ‘Ignored by family’. In a rural area of any developing country, a vast majority of population is financially weak, illiterate and is largely hand to mouth on daily basis. In such a scenario, an individual tends to overlook the perceived need of others. They are unwillingly forced to make compromises with certain necessities of life including health.

'Waiting for maturity' as reported by other researchers, [18,19] is of important concern as a barrier. Quite frequently patients are referred back from hospital with an advice to come at a later date for the surgery, since the lens hasn't completely opacified yet. Economical and educational paucity, in conjunction with an advice to wait for maturity makes matters worse, allowing patients to return only once the complications supervene [18]. Technological advancement now allows treating cataract, even in its early stages. Hence depending upon the situation, an appropriate use of surgical technique should be utilized to treat a preventable suffering.

'Fear of surgery' is attributable to inherent fear of undergoing any surgical procedure and also includes the bad experiences related with the first eye surgery. Bad experiences can be due to surgical complications resulting from either surgeons or patients fault. Detailed discussion about the surgical plan and precautions to be observed by the patient can help in reducing the patient anxiety and hesitation to opt for SECS. 'Distance' and 'Escort deficiency' can be considered as inter-related barriers. A patient has to travel a distance to reach a health care facility and presence of an escort helps in managing the transit difficulties and it also eases the hospital stay by fulfilling the responsibilities as an attendant. The company of an escort also helps in relieving anxiety and psychological fear in a patient. Efforts directed towards establishing health care facilities in close proximity of the settlements and improving the transport facilities would be of immense help in dealing with the problem of distance as a barrier [21].

'Lack of awareness', observed as a barrier in the present study is an indirect result of illiteracy. Awareness about the causation and treatment of disease is a principle of paramount importance in preventive medicine. Role of dedicated eye care health camps arranged in remote rural areas is indispensable. The village level social workers, community health workers from anganwadi / ASHA staff can be trained to spread awareness about blindness and its implications amongst the uneducated rural population [22]. They can also be involved in survey teams to detect early cataracts and motivating people to seek treatment for it [23].

The time of surgery in second eye depends on individual circumstances. A cataract should not

be removed for simply being present. Cataracts that cause blurring, interfere with daily routine activities and prevent an individual from leading an active and productive life needs removal. Modern advances in cataract surgery now permit lens removal at any stage of cataract development. Simultaneous / immediate sequential bilateral cataract surgery can help in overcoming certain barriers like – escort deficiency, lack of awareness, distance, wait for maturity and being ignored by family. A period of blurred vision is normal following any eye surgery. Hence the patient will not be able to see clearly with the first eye before undergoing cataract surgery on the second eye. This goes against patient satisfaction and prevents them from deciding about the second eye. It is very difficult to council illiterate population with rural background whose believes and thought processes are largely evidenced based. In a rural area, where a vast majority population is hand to mouth, arranging funds to get operated in both eyes together is a critical issue. Moreover there is a constant possibility of complications affecting both eyes; the most worrisome is infection (endophthalmitis).

It is the responsibility of a doctor to educate patients about their disease with which they should make an independent and fully informed decision regarding cataract surgery. Doctors should give a definite date for follow up so that second eye is taken up early for cataract surgery. Moreover in today's era of telecommunication revolution, patients can be reminded about their eye checkup via a phone call, message or an email. The advantages of second eye cataract surgery are greater when the time lag between the two surgeries is shorter. The concern with delay in the second eye surgery relates to the complications that might ensue.

## 5. CONCLUSION

The findings of this study are in agreement with other studies from developing regions. Can see with other eye, poverty and ignorance appear to be important barriers that prevent the uptake for SECS. Dedicated community level eye care education campaigns and appropriate modifications in the ongoing mass scale cataract surgery programmes will be of immense help in overcoming the barriers associated with the second eye cataract surgery thereby preventing complications and limiting morbidity.

## CONSENT

All authors declare that a written informed consent was obtained from all patient who participated.

## ETHICAL APPROVAL

This study was approved by the Institutional ethical committee, Pravara institute of medical sciences Loni, Maharashtra, India.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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