

## COMMENT

# Infection control in cataract surgery

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India has the world's largest cataract backlog, with approximately 7 million individuals in need of cataract surgery (1). This is after the launch of the National Programme for the Control of Blindness, and of Vision 2020 – the right to sight programme – which lead to a considerable improvement in the situation. Currently, 5 million cataract surgeries are performed every year, up from only 0.5 million in 1976. This is a big achievement, particularly with the scarce human resources and poor physical infrastructure available in the country. But though the number of operations has gone up, the quality still needs improvement. Still, surgical complications arising from cataract surgery are the cause of just a fraction of blindness according to surveys conducted across the country (1).

Due to the huge backlog, we try to do as much work as possible, and as fast as possible. And every now and then, we hear about cluster infections. Recently, four episodes of cluster infections were reported. One was reported from a government hospital in Assam in January 2008, and another from Valsad district, Gujarat, at an NGO hospital in February 2008. The third was reported from a surgical camp conducted by an NGO in Barabanki district, Uttar Pradesh, in February 2008 and the fourth occurred at an NGO hospital in Trichy, Tamilnadu, in September 2008.

These incidents should not have occurred and everything should be done to ensure that they do not occur in the future, particularly with the recent advances in science. Yet it is a fact that we hear this kind of news every now and again (2-4). The perception of the layperson is that the doctors were not careful enough. This perception is natural. Here, we present the flip side of the same coin – the story from the doctor's perspective.

To prevent infections in the course of any operation is the job of the science of asepsis and anti-sepsis. Our understanding of this science has progressed rapidly and the rate of infection in eye operations in western countries has come down to 1 in 10,000 or 15,000 operations (5-8). We do not know the rate of infection in India because the true rate of infection does not get reported. However, we believe the rate to be 1 in 1,000 operations in the Indian context. The question is: Why is the rate of infection ten times higher in India as compared to the West?

### How does the patient get infected post-operatively?

Most post-operative infections are part of hospital acquired infection which is a major problem even in developed countries. The infection control guidelines from the Joint

Commission International states that almost 25% of patients who are admitted to a hospital develop hospital acquired infection and this rate is nearly 50% in developing countries (9).

Hospital acquired infection means the patient gets the infection after being admitted in the hospital. And, most often, hospital staff spread this infection. The guidelines state that maintaining cleanliness of hands (hand hygiene) plays a crucial role in preventing the spread of infection (10). But it is difficult to develop the habit of maintaining cleanliness of hands even in developed countries. Thus, one can imagine how much more difficult the situation is in a developing country like India (11,12).

### Why is the rate of infection in higher in India?

India has the largest cataract backlog in the world. But it has only 11,000 ophthalmologists. According to official figures, 2.5 crore people need cataract surgery, but every year only 45 lakh surgeries take place (1). More get added every year to the pool of existing cataract blinds. On an average, an ophthalmologist in India performs barely 400 cataract surgeries a year. This figure is much higher among ophthalmologists in NGOs - 1,000 (1). The need to perform more surgeries is evident. It takes an experienced surgeon 10-15 minutes to perform a cataract surgery. Ophthalmologists try to increase their output but when we try to perform more surgeries in less time, there are more chances of an accident occurring. It is like driving on an expressway where many vehicles get involved in an accident at the same time.

Doctors affiliated to NGO hospitals work under pressure because of the high volume of work, compromised infrastructure and paucity of funds. They are the major contributors to achieving targets set by the government. They report sporadic incidence of post-operative cluster infections of not more than 1:1,000 though this may be explained by the difficult working conditions.

It is a painful fact that our medical curriculum lacks training for doctors in infection control measures. As students, we did not know that infection control is a subject in itself. We learnt scrubbing, gowning and gloving, and other important aspects, by observing our seniors, but nobody ever talked about the science of infection control.

How can we expect doctors to practise a science that they have never learnt? All that we are trained to do is cataract surgery – to become cataract surgeons. A famous saying from our teacher, Dr

R N Mathur, was: "It is easy to become a good cataract surgeon, but it is very difficult to become a good ophthalmologist." He was right. We consider the patient as one more cataract – a pathology; we do not look at the patient as a whole.

Not just that, we get to perform only about 30 cataract operations during three years of our residency. We get a degree at the end of the three years, but we are not confident enough to perform good operations by ourselves (13-15). We need more doctors but the training infrastructure is not capable of taking the load (16-23).

### How can we reduce post-operative infection in eye surgeries?

Focusing on post-operative infections in eye operations, some of the following can be done:

- Revise the infection control guidelines under the national programme (24-25).
- Spread information among all the players in the country – larger level action.
- Add infection control as a separate subject in the medical curriculum.
- Increase quality consciousness by conducting workshops and training programmes for all categories of staff.
- Enforce implementation of the guidelines through various supervisory inputs.

Most important, laymen must understand that medical science has limitations and doctors don't have all the answers. Second, occasionally accidents will occur even if all precautions are taken. In the given circumstances in India, the chances of accidents are naturally slightly higher. If harsh steps are taken against doctors and staff without proof that they were negligent, fewer people will want to work in the medical profession.

### References

1. Directorate General of Health Services, Government of India. *National programme for control of blindness in India*. New Delhi: Ministry of Health & Family Welfare; 2004 Oct.
2. Korah S, Braganza A, Jacob P, Balaji V. An "epidemic" of post cataract surgery endophthalmitis by a new organism. *Indian J Ophthalmol*. 2007 Nov-Dec;55(6):464-6. Cited in PubMed; PMID 17951908.
3. Malhotra S, Mandal P, Patankar G, Agarwal D. Clinical profile and visual outcome in cluster endophthalmitis following cataract surgery in Central India. *Indian J Ophthalmol*. 2008 Mar-Apr; 56(2):157-8. Cited in PubMed; PMID 18292632.
4. Swaddiwudhipong W, Tangkichot T, Silarug N. An outbreak of pseudomonas aeruginosa post operative endophthalmitis caused by contaminated intraocular irrigating solution. *Trans R Soc Trop Med Hyg*. 1995 May- Jun;89(3):288. Cited in PubMed; PMID 7660437.
5. Arsan AK, Adi\_en A, Duman S, Aslan B, Koçak I. Acute endophthalmitis outbreak after cataract surgery. *J Cataract Refract Surg*. 1996 Oct;22(8):1116-20.
6. Eifrig CW, Scott IU, Flynn HW Jr, Miller D. Endophthalmitis caused by Pseudomonas aeruginosa. *Ophthalmology*. 2003 Sep;110(9):1714-7.
7. Kattan HM, Flynn HW Jr, Pflugfelder SC, Robertson C, Forster RK. Nosocomial endophthalmitis survey. Current incidence of infection after intraocular surgery. *Ophthalmology*. 1991 Feb;98(2):227-38.
8. Javitt JC, Vitale S., Canner JK, Street DA, Krakauer H, McBean AM, Sommer A. National outcomes of cataract extraction. Endophthalmitis following inpatient surgery. *Arch. Ophthalmol*. 1991 Aug;109(8):1085-9. Cited in PubMed; PMID 1867549.
9. Soule BM, Memish ZA, editors. *Best Practices in Infection Control - an international hand book*. [Place unknown]: Joint Commission International; 2007. 224p.
10. Boyce JM, Pittet D; Healthcare Infection Control Practices Advisory Committee; HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. Guideline for hand hygiene in health care settings. Recommendations of the healthcare infection control practices advisory committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. Society for healthcare epidemiology of America/ Association for professionals in infection control/ Infectious diseases society of America. *MMWR Recomm Rep*. 2002 Oct 25;51(RR-16):1-45, quiz CE1-4. Cited in PubMed; PMID 12418624.
11. Kelkar U, Kelkar S, Bal AM, Kulkarni S, Kulkarni S. Microbiological evaluation of various parameters in Ophthalmic operating rooms. The need to establish guidelines. *Indian J Ophthalmol*. 2003 Jun;51(2): 171-6. Cited in PubMed; PMID 12831148.
12. Kelkar A, Kelkar J, Amuaku W, Kelkar U, Shaikh A. How to prevent endophthalmitis in cataract surgeries? *Indian J Ophthalmol*. 2008 Sep-Oct;56(5):403-7. Cited in PubMed; PMID 18711270.
13. Thomas R, Dogra M. An evaluation of medical college departments of Ophthalmology in India and change following provision of modern instrumentation and training. *Indian J Ophthalmol*. 2008 Jan-Feb; 56(1):9-16.
14. Mendis L, Adkoli BV, Adhikari RK, Muzaherul HM, Qureshi AF. Post graduate medical education in South Asia. *BMJ*. 2004 Apr 3;328:779-81.
15. Murthy GV, Gupta SK, Bachani D, Sanga L, John N, Tiawri HK. Status of speciality training in Ophthalmology in India. *Indian J Ophthalmol*. 2005 Jun;53(2):135-42.
16. Gogate P, Deshpande M, Dharmadhikari S. Which is the best method to learn Ophthalmology? Resident doctor's perspective of ophthalmology training. *Indian J Ophthalmol*. 2008 Sep-Oct;56(5):409-12.
17. Lee AG, Boldt HC, Golnik KC, Arnold AC, Oetting TA, Beaver HA, Olson RJ, Zimmerman MB, Carter K. Structured Journal club as a tool to teach and assess resident competence in practice based learning and improvement. *Ophthalmology*. 2006 Mar; 113(3):497-500.
18. Prinz A, Bolz M, Findl O. Advantage of three dimensional animated teaching over traditional surgical videos for teaching ophthalmic surgery: A randomized study. *Br J Ophthalmol*. 2005 Nov; 89(11):1495-9.
19. Khalifa YM, Bogorad D, Gibson V, Pfeiffer J, Nussbaum J. Virtual reality in Ophthalmology training. *Surv Ophthalmol*. 2006 May-Jun;51(3):529-73.
20. Glittenberg C, Binder S. Using 3D computerized simulations to enhance ophthalmic training. *Ophthalm Physiol Opt*. 2006 Jan;26(1): 40-9. Cited in PubMed; PMID 16390481.
21. Lippa LM, Boker J, Duke A, Amin A. A novel 3 year longitudinal pilot study of medical students' acquisition and retention of screening eye examination skills. *Ophthalmology*. 2006 Jan;113(1): 133-9. Cited in PubMed; PMID 16310854.
22. Binenbaum G, Volpe NJ. Ophthalmology resident surgical competency. A national survey. *Ophthalmology*. 2006 Jul;113(7): 1237-44. Cited in PubMed; PMID 16725202.
23. Romano PE. Measuring surgical skills and proclivity in ophthalmology residency training programme applicants using the American Dental Association Dental Admission (sample) test (DAT). *Binocul Vis Strabismus Q*. 2002;17(2): 143-6. Cited in PubMed; PMID 12067272.
24. Montan PG, Koranyi G, Setterquist HE, Stridh A, Philipson BT, Wiklund K. Endophthalmitis after cataract surgery: risk factors relating to technique and events of the operation and patient history: A retrospective case control study. *Ophthalmology*. 1998 Dec;105(12): 2171-7. Cited in PubMed; PMID 9855143.
25. Norregaard JC, Thoning H, Bernth-Peterson P, Anderson TF, Javitt JC, Anderson GF. Risk of endophthalmitis after cataract extraction: results from the international cataract surgery outcomes study. *Br J Ophthalmol*. 1997 Feb;81(2):102-6.
26. Brusaferrero S, Rinaldi O, Pea F, Faruzzo A, Barbone F. Protocol implementation in hospital infection control practice: An Italian experience of pre operative antibiotic prophylaxis. *J Hosp infect*. 2001 Apr;47(4):288-93.
27. Anderson OA, Lee V, Keegan D, Vafidis G. A model for the management of an atypical endophthalmitis outbreak. *Eye*. 2005 Sep;19(9):972-80.
28. Allardice GM, Wright EM, Peterson M, Miller JM. A statistical approach to an outbreak of endophthalmitis following cataract surgery at a hospital in the West of Scotland. *J Hosp Infect*. 2001 Sep;49(1): 23-9.