

Endophthalmitis Vitrectomy Study: Effectiveness of Guidelines in Cases of Endophthalmitis Following Manual Small Incision Cataract Surgery

Research Article

Shah M*, Shah S, Shah A, Kalyani P

Drashti Netralaya, Nr. GIDC, Chakalia Road, Dahod-389151, Gujarat, India.

Abstract

Objective: To validate Endophthalmitis vitrectomy study guidelines in cases of post-operative endophthalmitis following Manual small incision cataract surgery.

Setting: Tertiary eye care centre in western central India

Participants: 36 eyes with endophthalmitis following Manual small incision cataract surgery.

Methods: We enrolled all post cataract endophthalmitis patients following manual small incision cataract surgery with specific inclusion and exclusion criteria. Treatment planned according to severity as in Endophthalmitis vitrectomy study, all eyes are given intra vitreal vancomycin+ceftazidim injection using standard protocol and dosages. Patients who have visual acuity more than hand motion were treated only with intravitreal injections and patients who had only perception of light undergone vitrectomy. Patients who were not ready for surgical intervention excluded from analyses of visual outcome. Patients were followed up according to standard schedule and protocol.

Results: Our cohort consisted of total 36 cases of acute post-operative endophthalmitis following manual small incision cataract surgery within six weeks. Our cohort consisted of 20(55.6%) male 16(44.4%) female; the age range was 44 - 85 years with mean age of 56.9 +/- 19.5 years. The mean duration of presentation and duration following cataract surgery was 6.7 +/- 8.1 days and 7.1 +/- 10.9 days respectively.

Visual outcome 11 eyes (42.3%) regained vision more than 20/40 and 15 eyes (57.7%) regained more than 20/60, 20 eyes(76.9%) regained more than 20/200 and 23 eyes (88.4%) regained more than 20/400

Conclusion: Results and recommendations of Endophthalmitis Vitrectomy Study are very effective and useful in treatment post cataract surgery endophthalmitis by manual small incision cataract surgery

Keywords: Endophthalmitis; Manual Small Incision Cataract Surgery; Vitrectomy For Endophthalmitis; Endophthalmitis Vitrectomy Study

*Corresponding Author:

Mehul Shah,
Drashti Netralaya, Nr. GIDC,
Chakalia Road, Dahod-389151, Gujarat, India.
Tel: 00-91-2673-645364; Fax: 00-91-2673-221232
E-mail: omtrust@rdiffmail.com

Received: April 23, 2014

Accepted: June 12, 2014

Published: June 30, 2014

Citation: Shah M, Shah S, Shah A, Kalyani P. (2014). Endophthalmitis Vitrectomy Study: Effectiveness of Guidelines in Cases of Endophthalmitis Following Manual Small Incision Cataract Surgery, *Int J Ophthalmol Eye Res*, 2(3), 30-33. doi: <http://dx.doi.org/10.19070/2332-290X-140006>

Copyright: Shah M[©] 2014. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

Introduction

Cataracts are responsible for 47% of all cases of blindness worldwide. The epidemiological impacts of cataracts are uneven among

different countries, and the rate is associated with economic conditions. In developed countries, where healthcare is good, cataracts account for only 5% of cases of blindness, whereas cataracts are still responsible for 50% of such cases in developing countries. After a brief overview of historical, clinical, and therapeutic aspects, this article presents an update on global epidemiological cataract data. It also provides insight into political, socioeconomic, and cultural factors that adversely affect the availability of healthcare in developing countries, making cataracts a major public health problem and an obstacle to development [1].

Blindness has been recognised as an important public health problem in India, [2,3] recently, a nationwide survey was undertaken (1999–2001) to document the current situation, trends over the past three decades, and to evaluate the impact of the World Bank-supported Cataract Blindness Control Project in the country [4].

Estimated cataract blindness rate in India is 1.38% during 2010. As a cataract blindness elimination initiative IAPB and WHO launched VISION 2020 program resulting in increase in Cataract Surgery Rate globally as well as in India [5].

Cataracts are cured by surgery, but this is not equally available, and the surgical methods that are available do not produce equal

outcomes. A total of 5,906,016 cataract surgeries were performed worldwide during 2009–2010. The number of cataract surgeries in India was 5156/million during the same period [5].

Monitoring of outcome of surgical treatment of cataract is important and is possible [6].

Surgical techniques used cataract surgery is performed mainly by phacoemulsification, but manual small incision cataract surgery is important technique is being used in developing countries, surgical outcome safety and efficacy also found comparable [7,8].

Cataract surgery may result in to complications, hampering visual improvement. Post-operative endophthalmitis is one of the most serious complications of cataract surgery. [9,10] Incidence of Post cataract surgery Endophthalmitis varies from 0.05 to 0.17 [11,12,13] Variations may be according to transition in surgical techniques and minimal reported with injectable intra ocular lens [12]

Treatment of post-operative endophthalmitis varies may be in form of intravitreal injection, topical treatment or surgery. [14,15,16,17]

Treatment of acute post-operative endophthalmitis is standardized following Endophthalmitis Vitrectomy Study [18]. Are many studies favouring [19,20] or opposing Endophthalmitis Vitrectomy Study [21,22].

Endophthalmitis vitrectomy study has standardized treatment for post cataract endophthalmitis but did not specify about surgical techniques, since surgical technique is different pathophysiology and results of complications also different.

We would like to validate results of Endophthalmitis Vitrectomy Study in case of manual small incision cataract surgery. [18]

Method

Objective: Evaluate treatment guidelines of Endophthalmitis vitrectomy study how much effective for manual Small incision cataract surgery which is being performed in large number of cases.

Methods: Inclusion post cataract surgery patients presenting with acute post-operative infection causing severe visual impairment within six weeks.

Exclusion: Any other surgery, previous treatment of endophthalmitis done.

Our institution is a referral tertiary centre we keep getting referrals from various secondary centers, we have enrolled cases from 2009 to 2012.

When patient with similar criteria presented enrolled for study. Detailed history and examination done.

Anterior segment examination done with slit lamp and documented in online pre tested format. Specific documentation about main incision, side port, aqueous flare, aqueous cells, exudates in anterior chamber, membrane over intraocular lens, hypopyon, corneal condition including edema and infiltrate studied and documented. Posterior segment examination performed indirect ophthalmoscopy, Fundal glow evaluated if possible if no glow found patient

subjected to B scan and findings evaluated. [23]

Treatment planned according to severity as in Endophthalmitis vitrectomy study, all eyes are given intra vitreal vancomycine and ceftazidim injection using standard protocol and dosages. Patients who have visual acuity more than hand motion were treated only with intravitreal injections and patients who had only perception of light undergone vitrectomy. Patients who were not ready for surgical intervention excluded from analyses of visual outcome. Patients undergoing surgeries treated by pars plana vitrectomy using 23 or 20 g vitrectomy and wide angle non-contact viewing system.

Eyes grouped according to immediate surgical intervention done or not.

Data Collection done in excel sheet after exported from online pre tested format. Data opened in spss is 15 and using descriptive analyses frequency counted statistical analyses done using cross tabulation and chi square test.

Results

Our cohort consisted of total 36 cases of acute post-operative endophthalmitis following manual small incision cataract surgery within six weeks. Our cohort consisted of 20(55.6%) male 16 (44.4%) female; the age range was 44 - 85 years with mean age of 56.9 +/- 19.5 years. The mean duration of presentation and duration following cataract surgery was 6.7 +/- 8.1 days and 7.1 +/- 10.9 days respectively.

Mean follow up duration was 6 months.

17(47.2%) undergone pars plana vitrectomy 10(27.8%) did not agree for further intervention 9(%) treated only with intra vitreal vancomycine injection.

We have studied clinical finding specific to manual small incision cataract surgery and found infiltration of main wound and side port. (Table.1)

We have done comparative study of different variables and did not find making significant difference in post treatment outcome. (Table.2)

Visual outcome 11 eyes (42.3%) regained vision more than 20/40 and 15 eyes (57.7%) regained more than 20/60, 20 eyes (76.9%) regained more than 20/200 and 23 eyes (88.4%) regained more than 20/400. (Table.3)

We have done comparative study of pre and post treatment visual outcome we found significant difference concluding our treatment has done significant difference. (Table.3) When we studied comparatively two groups we found group with surgical intervention has better outcome. (Table.4 P=0.000)

We have also studied reason for no improvement in visual acuity. Our patients presented with very poor visual acuity 95% patients presented with vision of perception of light.

Discussion

Manual small incision cataract surgery is a popular surgical technique for high volume cataract surgeries in developing countries

Table 1 Specific Clinical features found following manual small incision cataract surgery

No	Finding	Incidence
1	Main wound infiltration	7(19.4%)
2	Side port infiltration	11(30.5%)
3	Cornea	Clear (20,55.6%)Edema(11,30.6), Ring infiltrate(2,5.6%) Central infiltrate (3,8.3%)
4	Exudates in AC	Nil (10,27.8%) Yes (22,61.1%) No view (4,11.1%)
5	Aqueous Flare and Cells	No view (20,55.6%),Present(16,44.4%)
6	Pupil	No view (26,72.2%), Round(9,25%), Irregular(1,2.8%)
7	Hypopyon	Present (33, 91.7%), No view(3,8.3%)
8	Membrane over IOL	Present (21, 58.3%), No view (11,11.1%) Nil (11,30.6%)
9	Vitreous	No view (27,75%), Hazy(9,25%)
10	Vitreous cavity on B scan	Clear (9,25%), Anterior and mid vitreous cavity(11,30.6%), Full(15,41.7%)
11	Presenting vision	95% cases only perception of light

Table 2 Specific Clinical features found following manual small incision cataract surgery

No	Variable	P value
1	Main wound infiltration	0.373
2	Side port infiltration	0.531
3	Cornea	0.047
4	Exudates in AC	0.098
5	Hypopyon	0.469
6	Membrane over IOL	0.075
7	Vitreous	0.383
8	Vitreous cavity on B scan	0.855
9	Presenting vision	0.000
10	Detection day	0.451
11	Type of surgery	0.581
12	Time of intervention	0.130
13	Surgical intervention	0.024
14	Only Medical Intervention	0.704

Table 3 Comparative study of pre-operative and post-operative vision following surgical treatment

Post op vision	pre operative vision				Total
	<1/60	1/60 to 3/60	6/60 to 6/36	lost f/u	
<1/60	3	0	0	0	3
1/60 to 3/60	3	0	0	0	3
6/60 to 6/36	5	0	0	0	5
6/24 to 6/18	4	0	0	0	4
6/12 to 6/9	9	1	1	0	11
	0	0	0	10	10
Total	24	1	1	10	36

P=0.000

Table 4 Comparative study whether surgical intervention done or not

Post Operative Vision	Treatment category			Total
	Medical	Surgical	Excluded	
<1/60	2	1	0	3
1/60 TO 3/60	2	1	0	3
6/60 TO 6/36	1	4	0	5
6/24 TO 6/18	0	4	0	4
6/12 TO 6/9	5	6	0	11
	0	0	10	10
Total	10	16	10	36

P=0.000

Table 5 Reasons for not improving vision

Reason for Not improving vision	Number (n)	Percent
Inflammation as	2	5.6
Iol malposition	2	5.6
Glaucoma	1	2.8
Inflammation total	6	13.9
Lost follow up	9	25.0
Prephythysical	1	2.8
Inflammation posterior segment	3	8.3
Retinal Detachment	1	2.8
Trauma	1	2.8
NA	11	30.5
Total	36	100.0

with comparable safety and efficacy [7,8]

Endophthalmitis vitrectomy study has been studied for treatment for post cataract endophthalmitis but did not specify about surgical techniques, since surgical technique is different pathophysiology ocular and visual outcome may differ.

Wongreported incidence of endophthalmitis increased with phacoemulsification [13] Strmen, P., K. Hlavackova reported reduced after injectable intra ocular lens [14]

When we have followed guidelines of endophthalmitis vitrectomy study for manual small incision cataract surgery We have performed pars plana vitrectomy in 47% of our patients and regained 20/400 in 88.4% of cases at end of 6 months.(Table.3) thapa reported improvement in 67.7%[25], malhotra reported improvement in 33%[26], Strmen, P., K. Hlavackova[14] reported 6/36 in 50% eyes, Doft, B. H., S. F. Kelsey At the 9-month visit, visual acuity was 20/50 or better in 49% of all eyes, 20/200 or better in 79%, and 5/200 or better in 91%.[27]

We observed specific findings in endophthalmitis following manual Small Incision Cataract Surgery infiltration of main wound and side port which is not reported till now but has not caused significant difference in visual outcome(Table-2).

We reported central corneal infiltrates and ring infiltrates causing significant difference in visual outcome, Malhotra reported similar finding not causing significant difference in visual outcome. [26]

Kodjikian, L., A. Salvanet-Bouccara, reported presenting visual acuity 5/200 or more in 18.9% compared to only perception of light in 95% eyes in our study, may reduce number of vitrectomies according to Endophthalmitis vitrectomy study [28]

Versteegh, M. F., J. M. Hooymans, reported After treatment a visual acuity of 0.1 or more was achieved in 62% of the patients. The best final results were achieved in the patients with an initial visual acuity of 1/300 or more [15]

Strmen, P., K. Hlavackova, reported the final visual acuity was better than 2/60 in 70% of the eyes and better than 6/36 in 50% of the eyes without vitrectomy. [14]

Doft, B. H., S. F. Kelsey Bermig, J., P. Meier, Meier, P. And P. Wiedemann, , Talley, A. R., D. J. D'Amico, reported that intravitreal antibiotics and pars plana vitrectomy according to Endophthalmitis vitrectomy study guidelines has better visual outcome and functional success in cases of post cataract surgery endophthalmitis, Which are supporting our results.[27,29,30,31]

Conclusion

Results and recommendations of Endophthalmitis vitrectomy study are very effective and useful in treatment post cataract surgery endophthalmitis by manual small incision cataract surgery.

References

[1] Lawani R, Pommier S, Roux L, Chazalon E, Meyer F (2007) Magnitude and strategies of cataract management in the world. *Med Trop (Mars)* 67:644-50.
[2] Dandona L, Dandona R, Naduvilath TJ (1998) Is current eye-care-policy

focus almost exclusively on cataract adequate to deal with blindness in India? *Lancet* 351:312-16.
[3] Thulasiraj RD, Nirmalan PK, Ramakrishna R (2003) Blindness and vision impairment in a rural south Indian population: the Aravind Comprehensive Eye Survey. *Ophthalmology* 110:1491-8.
[4] Jose R, Bachani D (1995) World Bank assisted cataract blindness control project. *Indian J Ophthalmol* 43:35-43.
[5] Murthy G, Gupta SK, John N, Vashist P (2008) Current status of cataract blindness and Vision 2020: the right to sight initiative in India. *Indian J Ophthalmol* 56:489-94.
[6] (1999) *Bulletin of the World Health Organization* 77 (6)
[7] Hennig A, Kumar J, Yorston D, Foster A (2003) Sutureless cataract surgery with nucleus extraction: outcome of a prospective study in Nepal. *Br J Ophthalmol* 87:266-270.
[8] Gogate PM, Kulkarni SR, Krishnaiah S, Deshpande RD, Joshi SA, Palimkar A, et al. (2005) Safety and efficacy of phacoemulsification compared with manual small incision cataract surgery by a randomized controlled clinical trial: six-week results. *Ophthalmology* 112: 869-74
[9] Bourne RR, Dineen BP, Ali SM, Huq DM, Johnson GJ (2003) Outcomes of cataract surgery in Bangladesh: results from a population based nationwide survey. *Br J Ophthalmol* 87: 813-9.
[10] Mathenge W, Kuper H, Limburg H, Polack S, Onyango O, Nyaga G, et al. (2007) Rapid assessment of avoidable blindness in Nakuru district, Kenya. *Ophthalmology* 114: 599-605.
[11] Norregaard J. C., H. Thoning (1997) Risk of endophthalmitis after cataract extraction: results from the International Cataract Surgery Outcomes study. *Br J Ophthalmol* 81(2): 102-6.
[12] Mayer E, D. Cadman (2003) A 10 year retrospective survey of cataract surgery and endophthalmitis in a single eye unit: injectable lenses lower the incidence of endophthalmitis. *Br J Ophthalmol* 87(7): 867-9.
[13] Wong T. Y., S. P. Chee (2004) The epidemiology of acute endophthalmitis after cataract surgery in an Asian population. *Ophthalmology* 111(4): 699-705
[14] Strmen P, K. Hlavackova (1998) Endophthalmitis after lens surgery. *Cesk-SlovOftalmol* 54(3): 141-7.
[15] Versteegh M. F. J. M. Hooymans (2000). Acute bacterial endophthalmitis after cataract extraction: results of treatment. *Doc Ophthalmol* 100(1): 7-15.
[16] Bermig J, P. Meier (1997) Primary vitrectomy in endophthalmitis. *Ophthalmologie* 94(8): 552-6.
[17] Ozer-Arasli A, O. Schwenn (1997) Endophthalmitis after cataract surgery: long-term follow-up. *Klin Monbl Augenheilkd* 211(3): 178-82.
[18] (1995) Results of the Endophthalmitis Vitrectomy Study. A randomized trial of immediate vitrectomy and of intravenous antibiotics for the treatment of postoperative bacterial endophthalmitis. Endophthalmitis Vitrectomy Study Group. *Arch Ophthalmol* 113(12): 1479-96.
[19] Doft B. H., S. F. Kelsey (1994) Treatment of endophthalmitis after cataract extraction. *Retina* 14(4): 297-304.
[20] Doft B. H. (1991) the endophthalmitis vitrectomies study. *Arch Ophthalmol* 109(4): 487-9.
[21] Siddiqui F. C. Crippen (2002) Do we heed the endophthalmitis vitrectomy study in Canada. *Can J Ophthalmol* 37(7): 395-8.
[22] Kaynak S, F. H. Oner (2003) surgical management of postoperative endophthalmitis: comparison of 2 techniques. *J Cataract Refract Surg* 29(5): 966-9
[23] Huang J, Z. Wang (2004) Diagnostic ultrasound and pars plana vitrectomy in endophthalmitis. *Yan Ke Xue Bao* 20(3): 149-54.
[24] Wong T. Y., S. P. Chee (2004) the epidemiology of acute endophthalmitis after cataract surgery in an Asian population. *Ophthalmology* 111(4): 699-705.
[25] Thapa R, G. Paudyal (2011) Clinical profile and visual outcome following pars plana vitrectomy in acute post-operative endophthalmitis. *Nepal J Ophthalmol* 3(2): 102-8.
[26] Malhotra S, P. Mandal (2008) Clinical profile and visual outcome in cluster endophthalmitis following cataract surgery in Central India. *Indian J Ophthalmol* 56(2): 157-8.
[27] Doft B. H., S. F. Kelsey (1994) Treatment of endophthalmitis after cataract extraction. *Retina* 14(4): 297-304.
[28] Kodjikian L, A. Salvanet-Bouccara (2009) Postcataract acute endophthalmitis in France: national prospective survey. *J Cataract Refract Surg* 35(1): 89-97.
[29] Bermig J, P. Meier (1997) Primary vitrectomy in endophthalmitis. *Ophthalmologie* 94(8): 552-6.
[30] Meier P, P. Wiedemann (1997) Endophthalmitis--clinical picture, therapy and prevention. *Klin Monbl Augenheilkd* 210(4): 175-91.
[31] Talley A. R., D. J. D'Amico (1987) The role of vitrectomy in the treatment of postoperative bacterial endophthalmitis. An experimental study. *Arch Ophthalmol* 105(12): 1699-702.