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RESEARCH ARTICLE

Incidence of endoththalmitis after cataract surgery in tertiary care centre in India

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Abstract

PURPOSES/ OBJECTIVES:
1. to study the incidence of endophthalmitis in patients operated for cataract surgery by phacoemulcification and manual small incision cataract surgery
MATERIALS AND METHODS :Total of 1800 eyes were operated during DEC 2013 to MAY 2015 and were allocated into two groups phacoemulcification and manual small incision cataract surgery. These patients were followed up after 1st , 7th ,14th and 40th post operative days .At completion of the study, data was analysed for 92.07 % patients.

INTRODUCTION

The reported incidence of endophthalmitis after cataract surgery varies across studies, depending on factors such as preoperative prophylactic, surgical techniques, occurrence of intraoperative complications, postoperative antibiotic regimen, and so on (Olson 2004). Temporal and geographic variations also exist (Morlet et al. 2003). In a systematic review of the literature from 1963 to 2003, Taban et al. (2005) reported an overall rate of 0.128% for postcataract endophthalmitis during that period. Only a few large-scale, multicentre studies on the incidence of endophthalmitis after cataract surgery have been carried out since this review, with varying results (Wejde et al. 2005; West et al. 2005; Barry et al. 2006). West et al. (2005) analysed US Medicare data for 1994−2001 and found a prevalence of postcataract surgery endophthalmitis of 0.215%. The national prospective survey in Sweden reported an incidence of 0.0595% for postoperative endophthalmitis in 1999–2001 (Wejde et al. 2005). The most recent European multicentre study indicated that the rate of endophthalmitis following cataract surgery was 0.204% on average (Barry et al. 2006). These incidence rates, however, are significantly higher than the prevalences of postoperative endophthalmitis reported in recent, large, single-centre studies, which range from 0.04% to 0.076% (Wong & Chee 2004; Lalitha et al. 2005; Miller et al. 2005). Considering the increasing emphasis on the prevention of endophthalmitis after cataract surgery and the great variation in the few data that exist, we conducted a prospective study to estimate the rate of endophthalmitis following modern cataract surgery in tertiary care centre, India . Endophthalmitis is the infection of the intraocular tissues.It may be exogenous or endogenous . the exogenous endophthalmitis forms the bulk with the post operative endophthalmitis is most common .The improvement in preoperative prophylactic measures , improved steriization measures , and good postoperative care and follow up has helped in reducing the incidence of this devastating condition .

Purpose and objectives:

This study was done to investigate the incidence, microbiological profile and final outcome of patients of endophthalmitis following phacoemulcification and manual small incision cataract surgery.

To compare incidence of endophthalmitis in manual small incision versus phacoemulcification cataract surgery.

Materials and methods :

We performed prospective type of study during the period Dec 2013 to May2015. In smt .kashibai navale hospital nahre pune.

Total of 1800 eyes were operated during DEC 2013 to MAY 2015 . 1800 patients. were allocated into two groups of for phacoemulcification and manual small incision cataract surgery . These patients were followed up after 1st , 7th ,14th and 40th post operative days .At completion of the study, data was analysed for 92.07 % patients. All patients were from rural areas, as the hospital is charity based no charges are taken for manual small incision or phacoemulcificaion cataract surgery.All surgeries were done by expert surgeons. Superior site manual small incision cataract surgery and clear corneal superior incision was taken for phacoemulcification. All operated for cataract surgery . 8% patients did not turn up for follow up .

Data was studied for patient demography . preoperative visual acuity , cataract grading ,reoperative risk factors systemic condition and medications , type of cataract surgery,surgical complications,postoperative VA, time interval between surgery,and endophthalmitis,microbiological profile,treatment given, and final VA.

The patients who presented with suspected enophthalmitis within 6 weeks following surgery were included in the study group.Endophthalmitis is defined as intraocular inflammation involving both vitreous and anterior chamber. The diagnosis of endophthalmitis was based on patients presenting with symptoms of pain redness,dimunition of vision and signs of circumcorneal congestion,anterior chamber reaction,hypopyon,corneal infiltration, vitritis,and loss of red reflex. Direct vitreous and aqueous samples were obtained in all cases using 26 gauge needles and sent to the microbiology the samples were inoculated directly onto blood agar chocolate agar and sabouraud dextrose agar.the patents diagnosed with endophthalmitis were treated with intravitreal aantibiotics and sutureless vitrecomy .The intravitreal antibiotics administered were Inj .vancomycin (1mg in 0 .1ml) and Inj (cefotaxime 2.25mg in 0.1 ml)

RESULT

The total number of patients who underwent cataract surgery from Dec 2013 to May 2015 were 1800. Hard , mature , traumatic and subluxated catraracts were operated with small incision cataract surgery and rest were operated with phacoemulcification cataract surgery. 3 cases were presented with suspected endophthalmitis after the surgery.They were 2 females and 1 male. 2 patients presented after 1 week and 1 patient after 6 weeks. Of those 3 patients 2 patients had posterior capsular rent with vireous loss . and 1 with zonular dialysis.on investigation it is confirmed that only 1 patient had endophthalmitis rest 2 had post operative uveitis. Patient with endophthalphitis was operated with small incision cataract surgery.

AGE	SEX F/M	EYE R/L	SYST. CONDITION	CAT GR&SURGERY	VA	CULTURE	T/T	FINAL VA
67yrs	F	R	Diabetes mellitus	Senile mature Manual Small incision cataract surgery	FC 2 mts	Streptococcus pyogenes	Intravitreal antibiotic	6/36

The culture sensitivity report of patient showed positive for streptococcus pyogenes treated with The intravitreal antibiotics administered were Inj .vancomycin (1mg in 0 .1ml) and Inj (cefotaxime 2.25mg in 0.1 ml).The final visual acuity was 6/36.

The incidence of endophthalmitis was found to be 0.06% after cataract surgery in tertiary care centre.

Discussion

The main purpose of this study was to estimate the incidence of endophthalmitis in India.

In this study, the overall incidence of endophthalmitis after cataract surgery was approximately 0.06%. Previous large-scale, multicentre studies have tended to report higher prevalences of postcataract surgery endophthalmitis (West et al. 2005; Barry et al. 2006), whereas recent large-scale, single-centre studies have reported similar incidences of postoperative endophthalmitis, ranging from 0.04% to 0.076% (Wong & Chee 2004; Lalitha et al. 2005; Miller et al. 2005). In the most recent European study, the group that was treated with the most effective prophylactic regimen yielded an incidence rate of 0.058% (Barry et al. 2006). Thus, given incidence rates following modern cataract surgery in developed countries, the rate obtained in the current study seems reasonable.

Controversy exists regarding the relationship between the risk of endophthalmitis after cataract extraction and type of incision. Some authors report that clear corneal incisions are associated with an increased incidence of postoperative endophthalmitis (Schmitz et al. 1999; Lertsumitkul et al. 2001; Cooper et al. 2003; Nagaki et al. 2003), whereas others have shown an equal distribution of endophthalmitis incidence between surgeries using different types of incision (Colleaux & Hamilton 2000; Miller et al. 2005). Interestingly, there are no reports indicating that clear corneal incision is associated with a lower incidence of postoperative endophthalmitis than scleral incision. In a systematic review of the literature, Taban et al. (2005) indicated that the incidence of endophthalmitis associated with cataract extraction had increased over the last decade, and this upward trend in endophthalmitis frequency coincided temporally with the development of sutureless clear corneal incisions. In a survey of 340 633 cataract surgeries performed in Germany, Schmitz et al. (1999) used multivariate analysis to identify clear corneal incision as a risk factor for postoperative endophthalmitis. Corneoscleral incision was associated with a 65% reduction in relative risk of developing endophthalmitis after cataract surgery (Schmitz et al. 1999). In a retrospective case-control study in Australia, logistic regression showed an increased risk of endophthalmitis with clear corneal temporal incisions (Lertsumitkul et al. 2001). In another retrospective case-control study, Cooper et al. (2003) reported a three-fold higher risk of endophthalmitis after cataract surgery with clear corneal incision compared with superior scleral tunnel incision. In a prospective, randomized study, Nagaki et al. (2003) demonstrated a 4.6-fold higher relative risk of endophthalmitis with clear corneal incision against superior scleral tunnel incision. Miller et al. (2005) reported the incidence of acute-onset endophthalmitis after temporal clear corneal incision phacoemulsification to be higher (0.05%) than that after phacoemulsification by other types of incision (0.02%), but the difference was not statistically significant. Colleaux & Hamilton (2000) found that the incidence of endophthalmitis was higher in clear corneal (0.129%) versus scleral tunnel (0.05%) incision, although the difference was not statistically significant.

In our study, incidence rates of postoperative endophthalmitis was seen with small incision cataract surgery.

Fang et al. (2006) also reported that provider volume (hospital and surgeon volume) was associated with risk for postoperative endophthalmitis. Patients who underwent cataract surgery at low-volume hospitals or with low-volume surgeons had a significantly higher risk of postoperative endophthalmitis than those undergoing treatment at high-volume hospitals or with high-volume surgeons. The authors postulated that the lower risk of postoperative endophthalmitis in the high-volume hospital group may be due to a greater proportion of younger patients than in the low-volume hospital group. Younger patients may tend to seek out high-volume hospitals for surgery in the belief that such hospitals produce better outcomes. Fang et al. (2006) also mentioned that the lower risk of postoperative endophthalmitis in the high-volume surgeon group may be due to a lower proportion of patients undergoing surgery carried out by doctors who are under 35 years old than in the low-volume surgeon group.

Our results indicate that ECCE is associated with a significantly higher incidence of endophthalmitis than phacoemulsification. Conflicting reports exist on this issue. Some argue that ECCE is associated with increased risk of endophthalmitis relative to phacoemulsification (Kalpadakis et al. 2002; Haapala et al. 2005; Lalitha et al. 2005), but others claim that phacoemulsification is associated with a higher risk (Wong & Chee 2004). Some reports have found no difference in rates of endophthalmitis between ECCE and phacoemulsification (Somani et al. 1997; Semmens et al. 2003; Trinavarat & Atchaneeyasakul 2005). Our study population included only a small number of cases treated with ECCE, and this group presumably comprised both planned and unplanned procedures, a fact that

reflects one of the drawbacks of our study, as mentioned below. We would therefore like to withhold any conclusion on this issue.

There are potential limitations to the present study, some of which are inherent to any postal survey and some of which are particular to our study. Firstly, definitions of endophthalmitis may be inconsistent. Surgeons were requested to report all endophthalmitis cases, including culture-proven cases and presumed cases with a negative culture. In some cases, cultures were not performed. Inaccurate coding of endophthalmitis is not unusual in practice, which represents a serious concern for the data quality of any epidemiological analysis (Li et al. 2003). Secondly, in order to achieve a high response rate, our study form was so simple that many important data were not collected. For instance, ECCE may include both planned and unplanned procedures, which may involve cases that converted from phacoemulsification due to intraoperative complications. No data are available on pre-, peri- or postoperative prophylactics. Thirdly, this was a retrospective, survey-based study and thus control of data quality was not easy. The quality of the outcome depends on the quality of the inputs (Taban et al. 2005). Fourthly, it is possible that surgeons who experienced higher rates of endophthalmitis were disinclined to respond to the survey. It is not possible, however, to trace those who did not return the survey.

Nonetheless, the high response rate of the current survey is an advantageous feature of this study. The prevalence of postoperative endophthalmitis obtained in this study is at the lower end of the spectrum of incidence currently reported in the developed world. Wejde et al. (2005) reported a low nationwide incidence of postcataract surgery endophthalmitis in Sweden and attributed the results to the administration of intracameral antibiotics. In Japan, administration of intracameral antibiotics is not common practice. Thus, further studies are needed to determine the factors associated with increased or decreased rates of endophthalmitis and to establish an effective regimen to prevent the occurrence of this harmful complication.

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