

# Intraocular lens removal or not during vitrectomy for acute infectious endophthalmitis after cataract surgery

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## Abstract

• At present, the incidence of infectious endophthalmitis after cataract surgery has been significantly reduced, but it is still a serious complication. Removal or not of the intraocular lens (IOL) during vitrectomy in cases with a moderate or severe inflammation is controversial. In order to call upon more discussion, we publish the article entitled "Timely vitrectomy without intraocular lens removal for acute endophthalmitis after cataract surgery" written by Guo *et al* in this issue. With recent advanced vitrectomy techniques, and critical measures for management of risk factors related to occurrence of infection, IOL remaining during timely vitrectomy for acute endophthalmitis can possibly be safe and effective in selected cases.

• **KEYWORDS:** intraocular lens removal; endophthalmitis; vitrectomy; cataract surgery

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The infectious endophthalmitis is a rare but the most serious complication after cataract surgery. Removal or not of the intraocular lens (IOL) during vitrectomy in such case is controversial, without an expert consensus. In this issue, we publish an article entitled "Timely vitrectomy without intraocular lens removal for acute endophthalmitis after cataract surgery" written by Guo *et al*<sup>[1]</sup>. In the paper, they presented 10 eyes of 10 patients with acute endophthalmitis that occurred one to three days after cataract surgery. The causative organisms were confirmed by positive isolation of

*Staphylococcus epidermidis* in 5 eyes, *S. aureus* in 2 eyes, and *Enterococcus* in one eye. From the photos of a representative case, corneal edema, hypopyon, and fibrin exudates in the anterior chamber were obvious with dense vitreous opacity in the infected eye. They remained IOL during vitrectomy and filled the vitreous cavity with silicone oil after thoroughly repeated irrigation. Silicone oil was removed in 9 eyes 3-6mo after vitrectomy but remained in one eye previously with *Enterococcus* infection. No retinal detachment or ocular atrophy was observed after 25.5 months' follow-up. The visual acuity improved remarkably in 9 eyes, while one eye remained with no light perception. They concluded that their management was safe and effective<sup>[1]</sup>.

While the article was reviewed, one of our reviewers did not agree with the authors' method that without IOL removal. And one concerned that the method could mislead the surgeon's decisions in similar situation. In order to acquire more opinions on IOL removal or not in those cases at the present time, we did a simply investigation *via* WeChat. We sent a questionnaire with photos of the representative case to 42 the most experienced vitrectomy surgeons in Chinese mainland. Surprisingly, there were 31 (73.8%) responses agreed with no IOL removal in the case, and 10 (23.8%) responses considered IOL removal for completely clear of pathogens. The last one responded as uncertain. They also provided with their experience and emphasized several points on the technique. We thereafter decided to publish the paper as a brief report in order to call upon more comment and discussion on this technique.

From Guo *et al*'s<sup>[1]</sup> report, we could summarize their successful management for control of the infection without recurrence in all 10 cases mainly due to the following elements. First, they did the earliest intervention for the acute infection. An emergency procedure was conducted within 24h after initial diagnosis. Second, they used viscoelastics to free the capsular bag from IOL and irrigated the anterior chamber, capsular bag, front and back IOL surfaces thoroughly and repeatedly. Complete and early clearance of purulence, pathogens and toxins is the most critical procedure in the operation. Third, recent advanced micro-incision vitrectomy instruments and panoramic microscopy facilitate the manipulation to be

more accurate and efficient. However, they neither mention intraocular antibiotics use and the posterior capsule cut, nor explain the necessity of silicone oil injection<sup>[1]</sup>. In regards to systemic and intracameral antibiotics use, as Althiabi *et al*<sup>[2]</sup> pointed out, the role of systemic antibiotics and vitrectomy is unclear and practice patterns vary widely. But intracameral moxifloxacin has become more widely accepted and intracameral vancomycin has been shown to be associated with retinal vasculitis<sup>[2]</sup>.

The severity of an acute intraocular infection can be a main consideration for strategy of various treatment. Early diagnosis and prompt surgical treatment can improve the prognosis in the affected eyes. In general, a mild inflammatory reaction in the anterior chamber can be treated with frequent eye drops and subconjunctival antibiotics. A moderate inflammation with fibrin exudates in the anterior chamber and subtle vitreous opacity can be treated with intracameral antibiotic lavage and intravitreal injection. A severe inflammation with corneal edema, hypopyon and fibrin exudates in the anterior chamber, and dense vitreous opacity or suppuration, can be treated with vitrectomy and antibiotic lavage<sup>[3]</sup>. The cases in Guo *et al*'s<sup>[1]</sup> series could be classified as the severe inflammation in terms of severity. Moreover, the characteristics, treatment and prognosis of the endophthalmitis vary due to different pathogens with various virulence and its reaction to antibiotics. If visualization is good enough for appropriate manipulation during vitrectomy after irrigating the anterior chamber and capsule bag, IOL may not be extracted at the surgeon's discretion. In cases with very severe inflammatory reaction, including corneal swelling and obscure, small pupil, and unclear capsule bag, it is necessary to extract IOL for subsequent appropriate vitrectomy. In a chronic or fungi infectious endophthalmitis after cataract surgery, IOL removal can be performed in most cases<sup>[4-5]</sup>.

The necessity of silicone oil use in the case series is questionable. Several of our experienced surgeons believe that silicone oil can be used in the presence of retinal breaks, severe retinal swelling or damage, and chronic or recurrent endophthalmitis. They did not agree with silicone oil use in the reported cases. Therefore, it is important to avoid iatrogenic retinal hole during vitrectomy.

At present, the incidence of infectious endophthalmitis after cataract surgery has been significantly reduced, but it is still a serious complication. A Meta-analysis of 39 studies including 5 878 114 eyes yielded a 0.092% incidence of endophthalmitis after cataract surgery<sup>[6]</sup>. The incidence appeared to decrease with time (0.097% before 2000, 0.063% after 2010) and with

the use of intracameral antibiotics (0.045%)<sup>[6]</sup>. In consideration of risk factors related with occurrence of infection, several techniques need to be emphasized, including reducing the probability of lens posterior capsule rupture, behind-the-lens washout, *i.e.*, clear the capsular bag for complete viscoelastics removal, and prophylactic use of antibiotics, especially in diabetic patients<sup>[2,6-9]</sup>.

In Guo *et al*'s<sup>[1]</sup> report, they believed that one advantage of their management without IOL removal was that it could retain uncorrected visual acuity after control of the infection and avoid secondary IOL implantation, so that reduced unnecessary medical dissension. However, the risk of endophthalmitis after cataract surgery can't be entirely eliminated, both physicians and patients should always beware and prepare for this rare but severe complication.

#### ACKNOWLEDGEMENTS

**Conflicts of Interest:** Hui YN, None.

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