

Comment on bilateral same-session intravitreal injections

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Dear Editor,

We have read the article by Abu-Yahgi *et al*^[1] with great interest. The authors share their experience with bilateral same-session intravitreal injection of anti-vascular endothelial growth factors (anti-VEGF). They report a single case of endophthalmitis in a series of 342 injections of 74 patients and compare their results with their 3634 cases of unilateral injections with 2 cases of endophthalmitis^[1]. There are some issues related with the article that may benefit from further discussion.

The authors describe the intravitreal injection procedure of their study in detail. But we could not extract the data, whether they used surgical masks during the procedure. A Meta-analysis of endophthalmitis after intravitreal injection of anti-VEGF has shown that Streptococcus species are three times more common after intravitreal injections compared to intraocular surgery cases^[2]. Following these observations, an *in vitro* study demonstrated that the use of a surgical mask and avoiding of talking significantly decreased the dispersion of bacteria to blood agar plates placed 30 cm below the mouths of surgeons^[3]. A similar study in Japan, suggested that the rate of endophthalmitis can be minimized by 0.25% povidone-iodine irrigation and the use of surgical masks and reported the absence of endophthalmitis in a series of 15 144 cases^[4]. Another very recent study reported no endophthalmitis among 20 293 cases of intravitreal injections in operating room setting; this group also wore surgical masks during the procedure^[5]. Strategies to minimize oropharyngeal droplet transmission (avoiding of talking, coughing and sneezing, or wearing of surgical masks) are

suggested for the prevention of endophthalmitis.

The authors did not mention in the article whether they used drapes during the intravitreal injection technique and whether they changed drapes between injections. There is conflicting data about the use of drapes during intravitreal injection procedure. An office based study reported that their rate of endophthalmitis was similar to the previously published studies in the absence of drapes^[6]. The Diabetic Retinopathy Clinical Research Network did compare the endophthalmitis incidence in their two randomized controlled trials and other previous studies, and showed that the absence of sterile draping did not change the incidence of endophthalmitis in their study^[7]. On the other hand, both of the above mentioned studies with no endophthalmitis preferred the use of drapes in their study and described it as a component of their strict infection control policy leading to success^[4,5].

A similar controversy exists in the practice of bilateral simultaneous cataract surgery. In such cases, the preferred same-day approach is immediate sequential cataract surgery, which is stricter when compared to the old-fashion bilateral simultaneous cataract surgeries. In this approach, after the end of the first surgery all preparations are repeated from the beginning as if a new patient came^[8]. The surgeon repeats the scrubbing procedure, the second eye is prepared and draped with a new drape and the surgery is started with a new kit. All of the four reported simultaneous bilateral endophthalmitis cases had a breach of this protocol^[8]. Considering the repeated nature of intravitreal injections, the lifetime risk of endophthalmitis is higher for intravitreal injections (0.02%-0.03% per injection, 0.7% for 24-injection course)^[9] compared to cataract surgery (0.029% per surgery)^[10]. Therefore, a similarly strict approach may be useful when performing bilateral same-day intravitreal injections.

The possibility of type 2 error cannot be excluded in this work. A calculation by the use of an online sample size calculator software by Decision Support Systems (<https://www.dssresearch.com/KnowledgeCenter/toolkitcalculators/statisticalpowercalculators.aspx>) indicated that 792 cases are needed to show 1% difference with a statistical power of 80%. While the rate of endophthalmitis reported here and in the literature are much lower than the generous 1% that we have used in this calculation, this study could not even meet this number.

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REFERENCES

- 1 Abu-Yaghi NE, Shokry AN, Abu-Sheit RH. Bilateral same-session intravitreal injections of anti-vascular endothelial growth factors. *Int J Ophthalmol* 2014;7(6):1017-1021
- 2 McCannel CA. Meta-analysis of endophthalmitis after intravitreal injection of anti-vascular endothelial growth factor agents: causative organisms and possible prevention strategies. *Retina* 2011;31(4):654-661
- 3 Doshi RR, Leng T, Fung AE. Reducing oral flora contamination of intravitreal injections with face mask or silence. *Retina* 2012;32(3):473-476
- 4 Shimada H, Hattori T, Mori R, Nakashizuka H, Fujita K, Yuzawa M. Minimizing the endophthalmitis rate following intravitreal injections using 0.25% povidone-iodine irrigation and surgical mask. *Graefes Arch Clin Exp Ophthalmol* 2013;251(8):1885-1890
- 5 Pilli S, Kotsolis A, Spaide RF, Slakter J, Freund KB, Sorenson J, Klancnik J, Cooney M. Endophthalmitis associated with intravitreal anti-vascular endothelial growth factor therapy injections in an office setting. *Am J Ophthalmol* 2008;145(5):879-882
- 6 Brynskov T, Kemp H, Sørensen TL. No cases of endophthalmitis after 20,293 intravitreal injections in an operating room setting. *Retina* 2014;34(5):951-957
- 7 Bhavsar AR, Googe JM Jr, Stockdale CR, Bressler NM, Brucker AJ, Elman MJ, Glassman AR; Diabetic Retinopathy Clinical Research Network. Risk of endophthalmitis after intravitreal drug injection when topical antibiotics are not required: the diabetic retinopathy clinical research network laser-ranibizumab-triamcinolone clinical trials. *Arch Ophthalmol* 2009;127(12):1581-1583
- 8 Li O, Kapetanakis V, Claoué C. Simultaneous bilateral endophthalmitis after immediate sequential bilateral cataract surgery: what's the risk of functional blindness? *Am J Ophthalmol* 2014;157(4):749-751
- 9 Yu CQ, Ta CN. Prevention and treatment of injection-related endophthalmitis. *Graefes Arch Clin Exp Ophthalmol* 2014;252(7):1027-1031
- 10 Friling E, Lundström M, Stenevi U, Montan P. Six-year incidence of endophthalmitis after cataract surgery: Swedish national study. *J Cataract Refract Surg* 2013;39(1):15-21

Author Reply to the Letter

Dear Editor,

We thank Dr. Karabas and his colleagues for their interest in our article regarding *Bilateral same-session intravitreal injections of anti-vascular endothelial growth factors*^[1], and we are grateful for their thoughtful remarks. In

our study, surgical masks were not routinely used while administering the intravitreal injections. Although we encouraged minimum talking during performing the procedure, this has sometimes proven very difficult to implement especially with injection-naïve patients or patients with poor hearing, where clear and unequivocal instructions were required during the procedure. Furthermore, we did not use drapes routinely during our injection process. Updated guidelines by an expert panel for intravitreal injection technique and monitoring were recently published by Avery *et al*^[2], and this report merits careful consideration. Apart from the unnecessary use of post-injection antibiotics, we think that the most caution-worthy detail is related to bilateral injections of anti-vascular endothelial growth factors after compounding from a single source bottle. In our practice, we draw bevacizumab on the spot in the operating room to use for fifteen consecutive injections under sterile conditions. This may be the most important step in the injection technique for us to adopt a change. Further large-scale reports from different practices administering simultaneous bilateral intravitreal injections will continue to add to our experience in this regard, as the balance between safety, convenience and efficacy will fuel this ever-interesting interplay of factors concerning one of the most important procedures in ophthalmology practices all over the world.

REFERENCES

- 1 Abu-Yaghi NE, Shokry AN, Abu-Sheit RH. Bilateral same-session intravitreal injections of anti-vascular endothelial growth factors. *Int J Ophthalmol* 2014;7(6):1017-1021
- 2 Avery RL, Bakri SJ, Blumenkranz MS, Brucker AJ, Cunningham ET Jr, D'Amico DJ, Dugel PU, Flynn HW Jr, Freund KB, Haller JA, Jumper JM, Liebmann JM, McCannel CA, Mieler WF, Ta CN, Williams GA. Intravitreal injection technique and monitoring: updated guidelines of an expert panel. *Retina* 2014;34 Suppl 12:S1-S18

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