International Surgery Journal
Alswaina NF. Int Surg J. 2019 Feb;6(2):608-610
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20190414

Case Report

Sever inadvertent globe perforation during supplemental peribulbar anesthesia injection

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Received: 12 December 2018
Accepted: 08 January 2019

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ABSTRACT

A globe perforation is a well-known serious complication during peribulbar anesthesia. A second supplement injection may further increase the risk of this complication. Retrobulbar hemorrhage and brainstem injection are other serious complications have been reported following peribulbar injections. Although there is an increasing popularity for needle-free procedures of local anesthesia such as sub-tenon's injection and topical anesthesia, peribulbar anesthesia remains one of the favorite techniques for providing anesthesia in ophthalmic procedures. The risk for inadvertent globe perforation is increased if the patient has long axial length or posterior staphyloma. However, careful attention should be done to all patients and not only those with risk factors for globe perforation. Here we report a 69-year-old male patient referred to vitreoretinal surgeon with a vitreous hemorrhage due to a sever globe perforation during peribulbar anesthesia, in which early diagnosis and management helped in achieving a good final visual outcome. Also, in this case we discussed the safety of peribulbar anesthesia supplements, and how to avoid such complication. Using of balloon compression for adequate time to spread the local anesthesia around the globe and giving the injection with a shorter needle syringe may reduce the risk for inadvertent globe perforation following a supplemental peribulbar anesthesia injection.

Keywords: Globe perforation, Peribulbar anesthesia complication, Supplement peribulbar injection

INTRODUCTION

Local anesthesia is used very commonly in ophthalmology procedures. It has high success rate with a good safety margin.[1] Also, it ensures quick patient recovery, low cost, and minimal systemic complications.[2] Retrobulbar anesthesia has been used widely before but has been replaced now by much safer techniques such as peribulbar, sub-Tenon's and topical anesthesia.

Peribulbar anesthesia remains one of the favorite techniques for providing anesthesia in ophthalmic procedure, although there is an increasing popularity for needle-free procedures (e.g. sub-Tenon's and topical anesthesia). Retrobulbar hemorrhage, globe perforation, and brainstem injection are serious complications have been reported following peribulbar injections.[3]

Here author report a case of sever inadvertent globe perforation following a supplemental superonasal peribulbar anesthesia injection that required vitreo-retinal surgery. Though there are previous reports about globe perforation following peribulbar anesthesia, the unique about this case that it ends with good vision despite the exposure to sever injury during the supplemental injection in which emphasize the importance of early recognition and management of such complication. As well as, because is not mention before, we will discuss more details about the safety of peribulbar anesthesia supplements, and how to avoid such complication.

CASE REPORT

A 69-year-old male was booked for routine cataract surgery. The patient received a peribulbar anesthesia by the regular 1-inch long needle at inferotemporal area, followed by 10-minute compression using Honan balloon. The eye was not completely frozen, so the surgeon attempted a second supplemental injection using the same needle length at the superonasal area, in which they noticed blood on aspiration before injection. They removed the needle and re-inserted it slightly away from the first superonasal site but in the same area. The supplemental anesthesia was fine and the globe was frozen, then the operation was proceeded. The primary surgeon noticed diminishing of the red reflex at the end of cataract operation. The vitreoretinal surgeon was called, and on fundus examination, there was a vitreous hemorrhage with two retina breaks. One break was small and located in superonasal area, and the other was larger and located at posterior pole with injury to superior arcade vessel. Diagnosis of globe perforation was confirmed and decision for pars plana vitrectomy was made. The patient did not feel pain during perforation of supplemental injection, probably because the anesthesia effect of first injection. The surgery was done the next day in the form of pars plana vitrectomy with endolaser to the breaks and silicone oil tamponade. On last visit examination, best corrected vision of right eye was 20/50 and retina was flat under silicon oil tamponade (Figure 1).

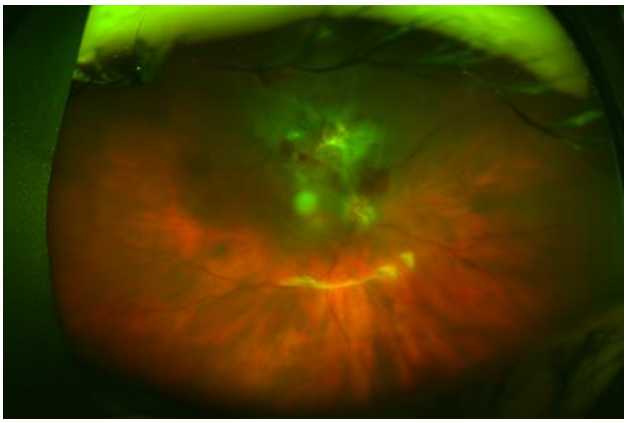

Figure 1: OPTOS ultra-wide field (UWF) retinal imaging showed flat retina under silicon oil with a large retina break with scar superior to retina arcade.

DISCUSSION

The frequency of globe perforation from peribulbar injections was previously reported to be at a frequency between 1 in 874, and 1 in 16 224.[3,4] The main risk factors for inadvertent globe perforation are posterior staphyloma, long axial length and inexperienced personnel.[5-7] Although globe perforation is a rare complication of peribulbar anesthesia, proper teaching and training and careful attention to all patients and not only those with risk factors are mandatory.

In present case, the patient received an inferotemporal injection of local anesthesia at the junction of the medial two-thirds and lateral third of the orbital rim. This was followed by a second supplemental injection of same needle length given in the superonasal space. Because of the alteration of the orbit volume following the inferotemporal compartment injection, that may cause the globe to be displaced medially and superiorly. The second injection placed on the opposite side of the globe may have less space to pass safely, and at least doubles the risk for globe perforation.[8]

Pain from perforated globe is masked due to local anesthesia coming into action when giving supplemental injection. Taking care and early recognition is crucial and not to wait for patient feeling of pain.

Using of balloon compression for sufficient time help to spread the local anesthesia around the globe, this may allow the globe to return to its anatomical position and facilitating the passage of a supplemental injection.[8] Furthermore, using a short needle syringe (5/8 inch or 1/2 inch long) instead of the regular 1 inch long needle may further decrease the risk of globe perforation. In one study, using a 1/2 inch long needle for peribulbar blockade was effective and produced satisfactory results.[9]

Early diagnosis and prompt referral for management are recommended to improve the visual prognosis. Depending on the severity of the perforation (vitreous hemorrhage, retinal detachment, vitreoretinal proliferation), surgical management should be considered.[10] In studied patient, the complication was recognized on the operating table by observing red reflex diminishing at the end of cataract surgery and directly referring the patient to vitreo-retinal surgeon. On examination, media was not clear due to vitreous hemorrhage and two retinal breaks were identified. One break was in the superonasal quadrant representing the site of needle penetration, and the other was a large break in posterior pole mostly due to movement of needle inside the globe. The decision for pars plana vitrectomy was made because of vitreous hemorrhage and presence of large posterior pole retinal break.

CONCLUSION

In conclusion, supplemental injection may increase the risk of globe perforation during peribulbar anesthesia. Using of balloon compression for adequate time and supplementation with short needle syringe may decrease the risk. Early recognition and management are a cornerstone for good visual recovery. Sub-Tenon's anesthesia considered to be a safer alternative with same effect.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Alswaina NF. Sever inadvertent globe perforation during supplemental peribulbar anesthesia injection. Int Surg J 2019;6:608-10.