·Letter to the Editor·

The short-needle intravitreal injection technique

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Dear Sir,

I am Dr. Zafer Oztas, from the Department of Ophthalmology, Ege University Faculty of Medicine, Izmir, Turkey. I write to present a surgical technique report of the short-needle intravitreal injection technique.

The intravitreal injection of anti-vascular endothelial growth factor (VEGF) agents has become a promising treatment option in several ocular pathologies involving neovascularization. Thus, these injections are the most frequent vitreoretinal procedures particularly in developed countries. Although not considered as major ocular surgery, this simple procedure is associated with serious ocular complications, such as endophthalmitis, lens injury, and retinal detachment[1-3]. Therefore, in our opinion, safety is one of the most important issues for intravitreal injections.

Needle size is one of the significant factors in the safety issue of intravitreal injection procedure. Previous studies have suggested that the needle used for intravitreal injection should be 1/2 to 5/8 inch (12.7 to 16 mm) in length, and no larger than 27 G[3-5]. However, during intravitreal injection, it is necessary to insert the needle into the vitreous to a depth exceeding 6 mm[4]. Accordingly, an updated guideline for the intravitreal injection technique composed by an expert panel reports that needle length should be 5/8 inch (18 mm) or shorter but long enough to allow for complete penetration of the pars plana [6]. This updated guideline did not mention a lower limit for minimum needle length. A technique providing approximately 7 mm injection depth with a short needle is described here.

For the procedure, the patient is placed in the supine position in an isolated operating room that is used only for intravitreal injections. The skin, lids, and lashes are sterilized with 10% povidone iodine. Then, several proparacaine 0.5% and 5% povidone iodine drops are applied in the conjunctival cul-de-sac. A speculum is inserted 2min after the first instillation of 5% povidone iodine drops. Using oral instructions, the patient positions the eye to either the upper right or upper left side based on laterality during the injection. The injection site is determined with surgical calipers, 3-3.5 mm posterior to the limbus in an adult pseudophakic eye, and 4 mm in an adult phakic eye (Figures 1, 2). The needle (30 G×8 mm, BD Micro-Fine Plus 1 mL, Becton Dickinson, USA) is inserted fully through the central vitreous, ensuring an approximately 7 mm standardized injection depth (Figure 3). Then, the drug is administered slowly to reduce the jet effect. We applied tamponade for a few seconds after the procedure with a sterile cotton-tip applicator (Figure 4). Total 1250 consecutive intravitreal anti-VEGF (5% bevacizumab, 95% ranibizumab) injections have been performed with this technique in Department of Ophthalmology, Ege University, Izmir, Turkey between

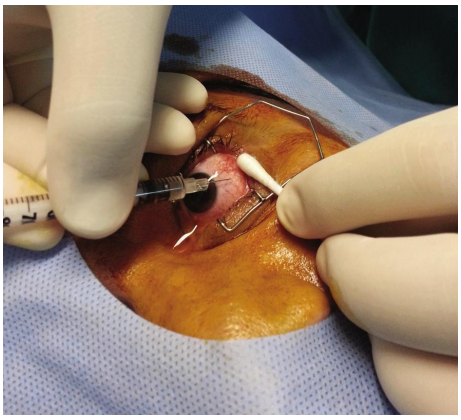

Figure 1 The short needle, a 30 G×8 mm BD Micro-Fine Plus 1-mL insulin syringe (Becton Dickinson, USA).

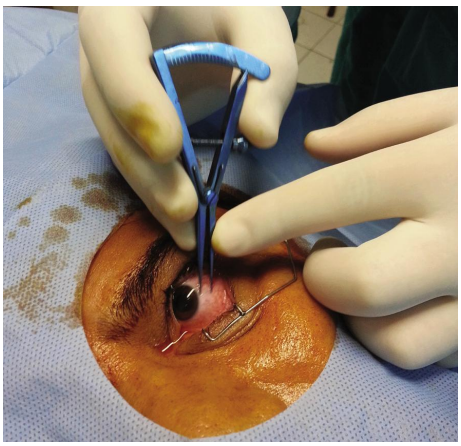

Figure 2 The injection site in the inferotemporal quadrant is located 4 mm from the limbus (phakic eye) with surgical calipers.

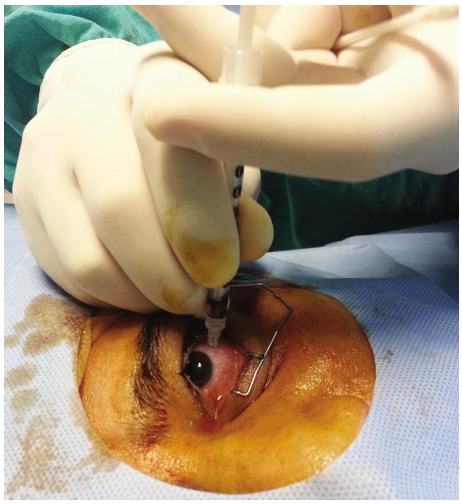

Figure 3 Full insertion of the short needle into the central vitreous.

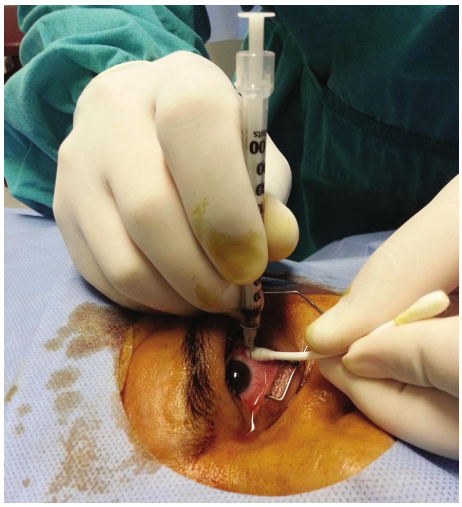

Figure 4 Withdrawing the syringe and applying tamponade with a sterile cotton-tip applicator after administering the drug slowly.

March 2013 and April 2014. Written informed consent was obtained from all patients. No lens damage, retinal breaks, retinal detachment, or endophthalmitis due to the procedure has been detected.

The guidelines for intravitreal injection advise achieving at least 6 mm injection depth into the vitreous during intravitreal injection with longer needles [2]. However, longer needles might increase retinal injury in kinetic patients or with accidental eye movements during the intravitreal injection. Full insertion of a short needle standardizes the injection depth, acts as a stopper, and fixes the eye movements. Therefore, the use of a short needle might reduce the physician's anxiety about retinal injury during an active injection, particularly in kinetic patients. In addition, a short needle might eliminate the possible vitreoretinal traction caused by eye movements. This technique provides a confident and a controlled intravitreal injection.

Finally, two important limitations need to be considered. First, the current study was not a comparative study so we could not make a direct statement about the safety of shorter needle. Second, it also did not assess the effects of needle length on drug pharmacodynamics and therapeutic effect. There is need for more detailed and associated studies to understand better about the both mentioned issues.

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Conflicts of Interest: Oztas Z, None; **Akkin C,** None; **Afrashi F,** None; **Nalcaci S,** None.

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