A calipers-free intravitreal anti-VEGF injection technique

Técnica de injeção intravítrea de anti-VEGF sem compasso

Dear Editor,

Intravitreal injection of drugs such as anti-vascular endothelial growth factor (anti-VEGF) agents and corticosteroids has shown encouraging results in the treatment of many ocular diseases. In developed countries, this type of injection is probably the most frequently performed vitreoretinal procedure. However, it has the potential for serious complications, such as endophthalmitis, lens injury, and retinal detachment[1]. To avoid these unfortunate complications, it is important to assess the safety and cost-effectiveness of intravitreal injection. A safe, cost-effective, calipers-free intravitreal injection technique is presented here.

The patient is placed in the supine position in the operating room. The skin, lids, and lashes are sterilized using 10% povidone iodine, and then, several drops of proparacaine 0.5% and povidone iodine 5% are instilled in the conjunctival cul-de-sac. A speculum is inserted 2 min after the first instillation of 5% povidone iodine drops. An oral instruction is given during the injection to position the eye to either the upper-right or upper-left side on the basis of laterality. The injection site is marked from the limbus by using a sterile polypropylene needle (30G x 13 mm, BD Microlance 1 mL; Becton Dickinson, USA) cap until a circular track appears in the sclera (Figures 1 A, B). Subsequently, the needle cap is removed, and a needle is inserted through the point of intersection of the circle and a tangent parallel to the limbus. The point of intersection is 3.5 mm from the limbus (Figures 2 A, B). To avoid lens damage in phakic patients, the needle can be inserted just behind the marked area or 3.5-4 mm from the limbus. Then, the drug is gently administered. We applied tamponade for a few seconds after the procedure by using a sterile cotton-tip applicator. In the first 100 consecutive intravitreal injections, the injection site was checked by using calipers to ensure a distance of 3.5 mm from the limbus. No lens damage, retinal breaks, retinal detachment, or endophthalmitis due to the procedure were detected.

The recommended injection site for intravitreal anti-VEGF injection is 3.5-4 mm posterior to the limbus in the inferotemporal quadrant of the globe for pseudophakic and phakic eyes[2,3]. Ophthalmic surgical calipers are useful for determining the in-

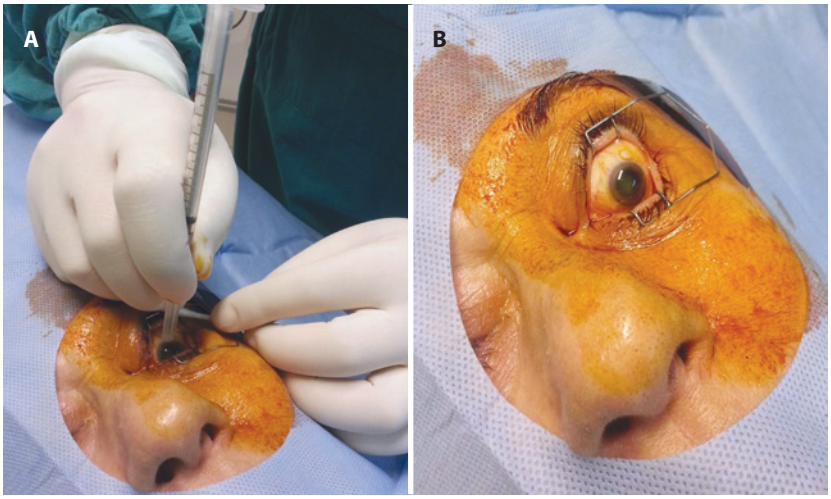

Figure 1. Marking the injection site by using the sterile needle cap; (A) marked area in the sclera (B).

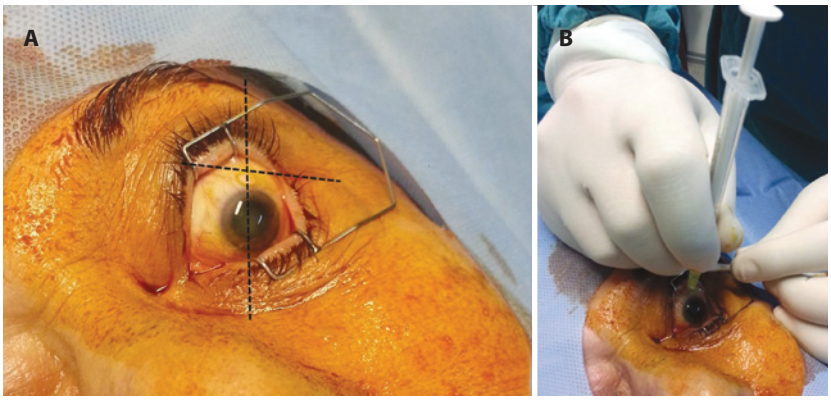

Figure 2. The point of intersection of the circle and a tangent parallel to the limbus (A) is 3.5 mm from the limbus, and the needle is inserted towards the center of the eye from that point (B).

jection site. However, this technique is expensive when multiple intravitreal anti-VEGF injections are performed because individually sterilized sets must be used for each patient. Our technique using a sterile needle cap that covers and protects the needle from debris or contamination does not require the use of surgical calipers. Therefore, our technique is cost-effective. Although Wilson and Scott[4] mentioned the use of the hub of a sterile tuberculin syringe for marking the injection site, they did not describe the technique. In addition, the proposed technique ensures adequate anesthesia before administering the injection. Our technique can be used for both superior and inferior temporal intravitreal injections. However, to avoid iatrogenic inferior retinal breakage or detachment, we prefer superior intravitreal injections.

In our study, we used Becton Dickinson BD Microlance 1-mL 30G x 13-mm caps, which are found in various international markets. Using different needle caps may lead to different distances from the limbus. Therefore, when using needles of different types, we recommend that the distance should be measured first with surgical calipers before the needle cap is used.

In conclusion, our calipers-free technique enables safe and cost-effective intravitreal injections.

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