CORRESPONDENCE

Transconjunctival sutureless intrascleral fixation of 3-piece intraocular lenses using a curved needle

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Yamane technique revolutionized sutureless intrascleral fixation of intraocular lenses (IOLs).[1] In this technique, a scleral tunnel is formed using a 27-gauge hypodermic needle, and IOL haptics are positioned inside the scleral tunnel by inserting the haptics inside the needle. We describe a new modification of Yamane technique with curved needles to overcome potential complications that arise due to the straight structure of the scleral tunnel in conventional Yamane technique. The distal part of a 27-gauge hypodermic needle is bent manually using a needle holder (designed to hold 5-0 or 6-0 sutures) to match the curvature of the limbus (Figure 1, a). The bevel of the needle is directed upward and slightly inward (Figure 1, b). The proximal part of the needle is further bent around 90 degrees for easier rotation of the instrument (Figure 1, c and d). The preparation steps of the curved needle are available in Video 1 (available at http://links.lww.com/JRS/A531).

A curved scleral tunnel is formed with the curved needle at the 2-o'clock position (Figure 2, a). The needle is inserted through the sclera transconjunctivally 1.5 to 2 mm posterior to the limbus, and the needle is further advanced into the vitreous cavity by a rotational movement until the needle tip became visible in the pupillary area. A 2.8 mm clear corneal incision is performed at the 11-o'clock position, and anterior chamber is filled with a dispersive ophthalmic viscosurgical device. A foldable 3-piece IOL is inserted into the anterior chamber. The leading haptic of the IOL is placed into the anterior chamber and the trailing haptic of the IOL remained outside the eye (Figure 2, b and c). A vitreoretinal forceps is inserted into the anterior chamber through the corneal incision, and the leading haptic of the IOL is grasped and placed inside the curved needle. The haptic is externalized while removing the curved needle with a rotational movement. The curved needle is again inserted through the sclera transconjunctivally 1.5 to 2 mm posterior to the limbus at the 8-o'clock position. The needle is advanced into the eye by a rotational movement until the tip of the needle is visible in the pupillary area. The trailing haptic is grasped by a vitreoretinal forceps approximately 2 to 2.5 mm away from the tip of the haptic, inserted into the anterior chamber, and placed inside the curved needle. The haptic is externalized through the scleral tunnel with a rotational movement of the needle. The tip of the haptic is held by a tying forceps and is flanged using a low temperature cautery. The same process is repeated for the second haptic. The flanged haptics are tucked into the curved

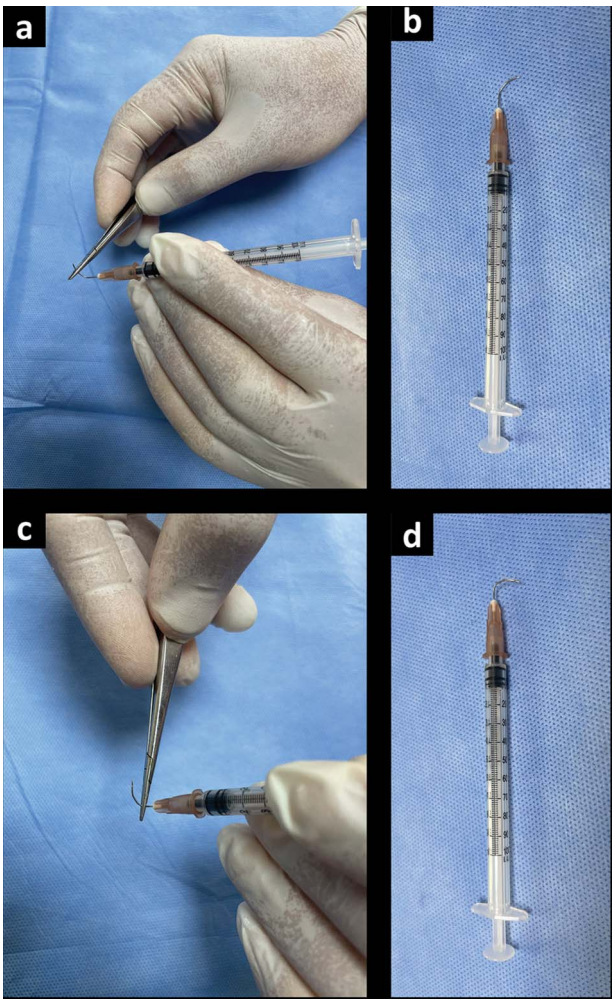

Figure 1. The preparation steps of the curved needle. The tip of a 27-gauge hypodermic needle was curved manually using a needle holder to match the curvature of the limbus (*a*). The bevel of the needle was directed upward and slightly inward (*b*). The bottom of the needle was further bent around 90 degrees for easier rotation of the instrument (*c* and *d*).

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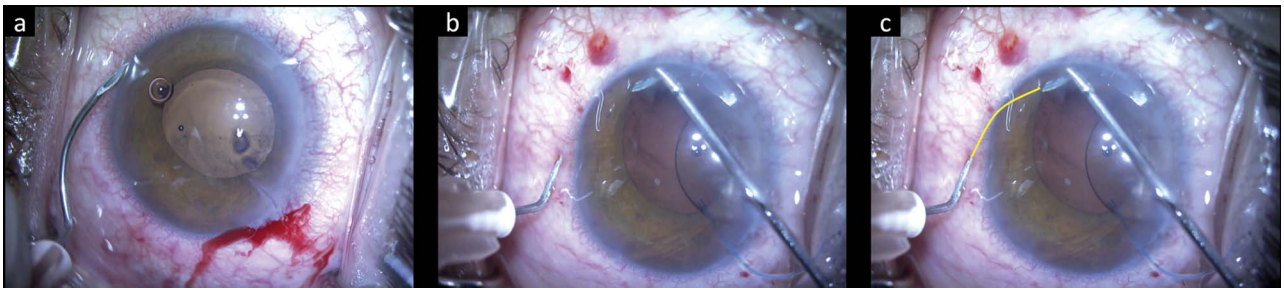

Figure 2. Surgical images describing the use of the curved needle. The curved design of the needle tip matches the limbal curvature (*a*). The needle is inserted with a rotational movement through the sclera, and this movement directly ends in the pupillary area without requiring extensive surgical manipulations that can potentially damage ocular structures (*b*). A microforceps is used to place the haptic of a 3-piece IOL inside the curved needle that the fits the curvature of the haptic (*c*).

scleral tunnel. Ophthalmic viscosurgical device is washed by irrigation/aspiration. Corneal incisions are closed by stromal hydration or 10-0 nylon sutures. A subconjunctival steroid was injected to both control postoperative inflammation and raise the conjunctiva to ensure that IOL haptics remained under the conjunctiva. These surgical steps are available in Video 2 (available at http://links.lww.com/JRS/A532).

The shape of the straight needle does not fit the anatomy of the eye; hence, intraoperative manipulations become relatively hard. Extensive surgical manipulations to insert IOL haptic inside the needle may result in small tears at the internal opening of the scleral tunnel. In addition, the shape of the scleral tunnel becomes straight when formed with straight needles or trocars, which does not fit the curved shape of the IOL haptic. The IOL haptics are straightened in such scleral tunnels, and this change in the haptic shape can result in more posterior positioning of the IOL optic compared with the capsular bag, which was suggested as a potential cause of hyperopic shift after sutureless scleral fixation.[2]

These shortcomings can be prevented by using curved needles to form curved scleral tunnels and guide IOL haptics. The curved needle is inserted with a rotational movement through the sclera, and the needle tip reaches pupillary area with this simple rotational movement without requiring extensive surgical manipulations. This simpler insertion helps the surgeon to reduce surgical time and avoid trauma to the inner opening of the scleral tunnel and ocular structures. We performed seven surgeries with this technique, and none of the patients had vitreous hemorrhage from the ciliary body or iris base, which could occur in some of the patients operated with Yamane technique. In addition, the curved shape of the needle better fits the shape of IOL haptics and preserved their original shape. In conclusion, we believe that this modification made the Yamane technique easier for the surgeon and reduced surgical trauma to both the eye and IOL haptics.

REFERENCES

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Disclosures: *S. Genç and F. Esen have a pending patent application for this special needle design to be used in sutureless intrascleral fixation of intraocular lenses and other implants. No other disclosures were reported.*

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