Surgical Technique

Technique modifications in manual small-incision cataract surgery for left-handed cataract surgeons

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Learning manual small-incision cataract surgery (SICS) is essential for ophthalmic surgeons as it provides an alternative to phaco-emulsification in complicated cases. Nearly 10% of ophthalmic surgeons are left-handed. Left-handed surgeons do face more difficulties because of their laterality, which have been highlighted in various surveys even in other surgical specialities. Surgical training programs, residency programs, and fellowships have traditionally been designed considering the right hand as the dominant hand. Left-handed surgeons (LHSs) are at disadvantage as they are trained by right-handed surgeons (RHSs), which may result in more initial intra-operative errors. Intra-ocular lenses are also designed such that dialing into the bag is relatively difficult for LHSs. Developing customized training modules for LHSs can help them overcome the laterality challenges and enhance their surgical capabilities. In this article, we herein present a brief description of the SICS technique for LHSs, elaborating the crucial steps and customized maneuvers that, if performed differently, may make surgeries easier for them.

Key words: Left-handed, manual SICS, technique

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Website: www.ijo.in

DOI: 10.4103/ijo.IJO_1560_22

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Phaco-emulsification is the gold standard for cataract treatment. However, learning manual small-incision cataract surgery (SICS) is also essential for ophthalmic surgeons as it provides an alternative to phaco-emulsification in complicated cases such as subluxated cataracts, rock hard nuclei, and significant corneal opacities and is also a 'bail-out' procedure whenever the phaco-emulsification procedure gets complicated.

In this article, we herein present a brief description of the SICS technique for left-handed surgeons (LHSs), elaborating the crucial steps and customized maneuvers that, if performed differently, may make surgeries easier for them.

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Step-wise description of the procedural modifications (Video 1).

Bridle rectus suture: Hold the superior rectus forceps in the right hand to grasp the rectus muscle and the needle holder in the left hand to pass the suture (no need to switch hands). The reverse is performed by a right-handed surgeon (RHS).

Peritomy: Hold the conjunctival scissor in left hand and toothed forceps in the right hand and start peritomy from left to right, that is, from 1 o' clock to 11 o' clock (instead of right to left as performed by RHS) [Fig. 1a].

Scleral incision: Hold the no. 11 blade in the left hand and toothed forceps in the right hand and start from 11 to 1 o' clock instead of 1 to 11 o' clock, which is routinely performed by RHSs [Fig. 1b].

Scleral tunnel: Hold the crescent knife in the left hand and toothed forceps in the right hand and start making the tunnel at the extreme left corner of the incision and by wiggling motion extend the tunnel to the right side (some surgeons find it difficult to extend on the left side, and hence, it is easier on the right side because of easy movement of the wrist). This technique reduces the need of left side movement [Fig. 1c].

Side port: Making the side port at 3 or 4 o' clock would help surgical maneuvering in an LHS as opposed to the conventional side port at 9 o' clock.

Injecting dye and visco-elastics: Stabilize the cannula with the right hand and press the plunger with the left hand. (Reverse of what an RHS would do).

Capsulorhexis: Initiating a rhexis from the center of the capsule toward the 4-5 o' clock position with clockwise movement of the flap unlike anti-clockwise movement by an RHS makes CCC easier for the LHS.

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Received: 30-Jun-2022 Revision: 02-Sep-2022
Accepted: 16-Sep-2022 Published: 25-Oct-2022

Cite this article as: Mukherjee A, Kalamkar C, Rao R, Patel B. Technique modifications in manual small-incision cataract surgery for left-handed cataract surgeons. Indian J Ophthalmol 2022;70:4076-8.

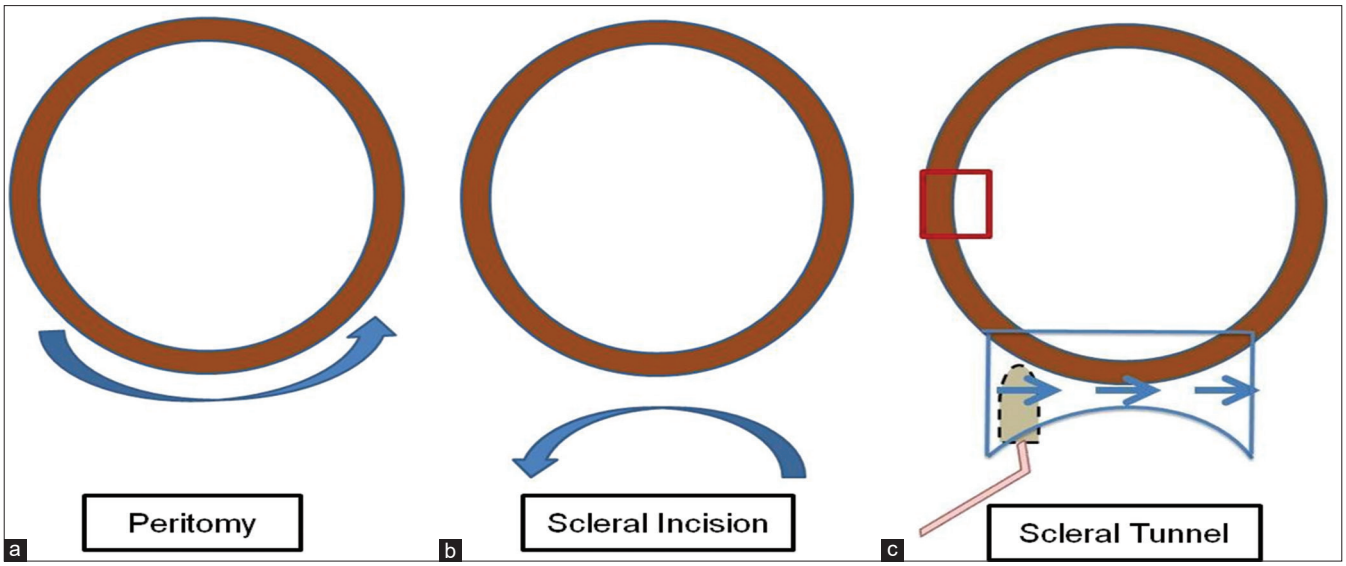

Figure 1: (a) Peritomy. (b) Scleral incision. (c) Tunnel

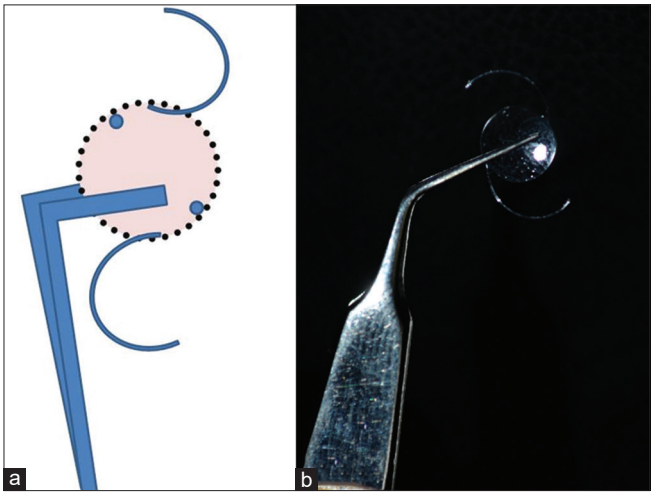

Figure 2: (a and b) IOL holding

Keratome entry and hydro procedures are similar to RHS except for the difference in holding the syringe.

Nucleus prolapse and delivery: The RHS starts hydro-dissection on the right side, leading to prolapse of the left-sided nuclear pole. In contrast, the LHS has to start hydro-dissection on the left side with resultant prolapse of the right-sided pole. Once one of the nuclear poles has prolapsed into the AC, using a dialer, the RHS dials the nucleus anti-clockwise, while the LHS will find it easier to dial clockwise.

Holding the intra-ocular lens: Hold the Kelman forceps in the left hand and hold the intra-ocular lens (IOL) in such a way that the limbs of the forceps are directed toward right [Fig. 2a and b].

IOL dialing: After inserting the leading haptic in the bag, the RHS directly dials the trailing haptic into the bag either by hooking the optic–haptic junction or by using dialing holes in PMMA IOLs. The LHS faces a distinct challenge in dialing the trailing haptic initially as they need to dial in the clock hours which are below their side port. The risk of haptic going into sulcus is more in such a case. The technique of first inserting the leading haptic into the bag, followed by rotation of trailing haptic to the 6 o' clock position, with haptic still above iris, followed by dialing of haptic into the bag (i.e., start dialing the trailing IOL haptic from the 6 o' clock position after rotation, in contrast to the RHS, where dialing starts from the 12 o' clock), assists the LHS in proper placement of the IOL in the bag [Fig. 3a and b].

Discussion

With nearly 10% of the world`s population being left-handed, we believe that an equal proportion of ophthalmic surgeons would be left-handed. Ideally all ophthalmic surgeons should learn to be ambidextrous as equal use of both hands is essential for intra-ocular manipulations during surgical procedures. However, the left-handed surgeons do face more difficulties because of their laterality, which have been highlighted in various surveys even in other surgical specialities.[1,2] Surgical training programs, residency programs, and fellowships have traditionally been designed considering the right hand as the dominant hand. Moreover, textbooks, articles, and other literature describing surgical steps and techniques also favor RHSs. Thus, the scarcity of literature along with mentoring by an RHS puts the LHS at a distinct disadvantage, resulting in intra-operative errors and eventually compromising surgical quality.[3] IOLs are also designed such that dialing into the bag is relatively difficult for LHS. Developing customized training modules for LHS can help them overcome the laterality challenges and enhance their surgical capabilities.

Conclusion

Left handed surgeons face problems at various stages of learning and performing SICS. Minor modifications in various steps of SICS by LHS will improve ease of doing surgery.

Financial support and sponsorship

Nil.

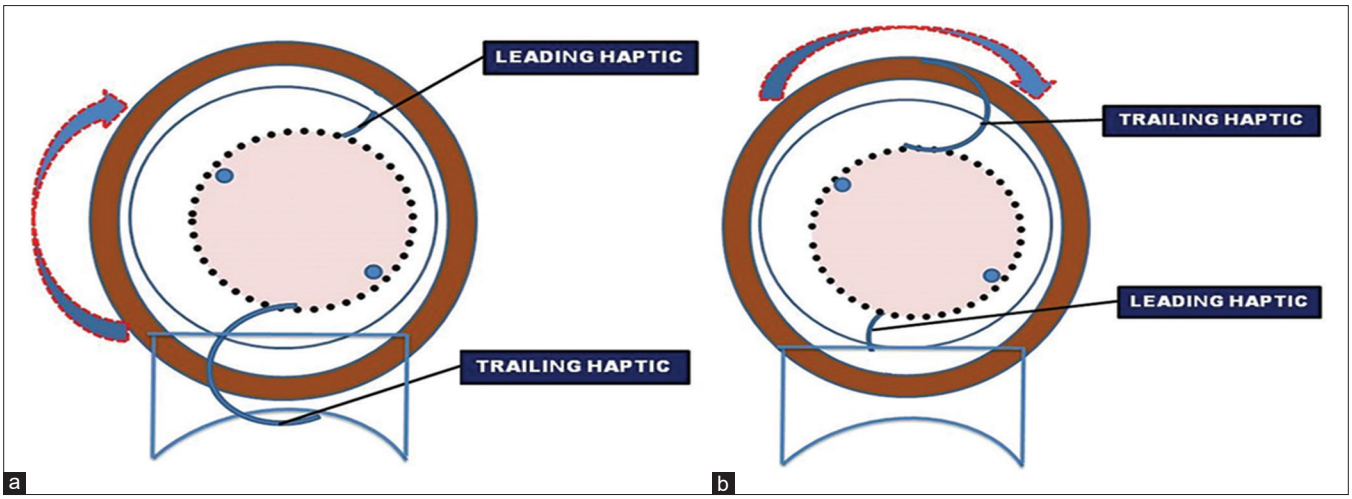

Figure 3: (a) IOL insertion with leading haptic in bag. (b) Rotating the trailing haptic to 6 o' clock

Conflicts of interest

There are no conflicts of interest.

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