Five Signs of Unintended Initial Dissection of the Posterior Plane During SMILE

To the Editor:

After several years of development, small incision lenticule extraction (SMILE) has achieved somewhat stable efficacy and is seeing increasing popularity among refractive surgeons.\(^1\)\(^2\) It is advised to dissect the anterior plane first before the posterior plane. However, unintended initial dissection of the posterior plane is a common problem for surgeons who are newly acquainted with SMILE. This increases the difficulty of lenticule dissection and can even lead to complications such as tearing and rupture of the corneal cap or lenticule.\(^3\)\(^4\) It is essential for surgeons who are learning SMILE to identify unintended initial dissection of the posterior plane in time during operations. Jacob et al.\(^5\) reported the use of the white ring sign of the lenticule to assess the dissected plane. Nevertheless, it is not enough to merely observe the white ring sign. Liquid could enter the corneal stroma and obscure the anatomical structure, thus affecting the surgeon’s judgment.

We introduce five signs of unintended initial dissection of the posterior plane that may help shorten the learning curve.

1. The first sign of unintended initial dissection of the posterior plane appears near the peripheral incision. When dissecting the posterior plane of the lenticule, there would be a reflective stripe at the edge of the lenticule (Figure 1A).

2. Upon unintended initial dissection of the posterior plane, the surgeon would feel resistance greater than that of the dissection of the anterior plane. Moreover, overstretched white corneal stromal fibers would sometimes be present (Figure 1B).

3. The lenticule edge is much more apparent and sharper after dissection of the posterior plane. Through careful observation, the surgeon could notice that the lenticule edge is on top of the dissector (Figure 1C).

4. Because the posterior plane has been dissected, the next procedure is still performed on the same plane, so there would be no new resistance. As a result, the surgeon should consider unintended initial dissection of the posterior plane if the posterior plane remains inaccessible after a third attempt.

5. When unintended initial dissection of the posterior plane is suspected, the surgeon is advised to lift the dissector to look for the anterior plane; therefore, the curling edge of the lenticule might be visible (Figure 1D).

Unintended dissection of the posterior plane is acceptable as long as the surgeon is aware of which plane has been dissected. For novice surgeons, the most difficult issue is knowing how to eliminate the disturbing factors and accurately confirm placement of the dissecting instrument. We strongly advise all surgeons to remember these five signs during their learning process. Upon observing more than two signs, the surgeon should consider the possibility of unintended initial dissection of the posterior plane.

REFERENCES


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