Retained Lenticule or Lenticular Fragments After SMILE

We read with interest the case series by Ganesh et al.1 in the December 2017 issue on retained lenticule removal after small incision lenticule extraction (SMILE). The adhesion of lenticule resulting in incomplete removal is a known complication of SMILE. It happens due to the surgical failure of complete lenticular removal or problems related to the laser delivery system. Their case series described successful techniques of surgical removal of retained SMILE lenticules with good postoperative anterior segment optical coherence tomography (AS-OCT) and visual and topographic outcomes. The authors found that the Sinsky hook and flap dissector may help in successful removal of retained lenticule under the operating microscope.1 There has been a previous report of delayed removal of retained SMILE lenticules.2

We agree with and appreciate the method of management and good outcome of all three cases, presented in three different time frames at 9 months, 4 days, and 7 days after the primary surgery (SMILE). Did the authors note any difference in difficulty of lenticule removal or in healing response postoperatively in these cases? Also, it would be enlightening to know the outcome difference, if any, from the other eye of patients on AS-OCT, visual acuity, topography, and higher order aberrations during follow-up.

The authors have rightly mentioned that SMILE does have a learning curve in case of retained lenticules and complete photodisruption failure; surgeons can consider repeat SMILE or flap-based surgery after 6 months. Other options include photorefractive keratectomy with mitomycin C.

As in this case series, the AS-OCT could be a good tool for the assessment of retained lenticules.3 Also, removal based on intraoperative optical coherence tomography (i-OCT)4 can also give a real-time view and good refractive outcomes. The anterior and posterior surface of thicker lenticules could be visible with i-OCT. Complete removal can be ensured without undue extra manipulations on the bed or inferior surface of the cap. This could also be helpful in cases of retained lenticules with edema, haze, and poor visibility.4

Ganesh et al. rightly mentioned that small and peripheral lenticular parts can be left as such because these do not affect the final vision much, but higher order aberrations can be there. Also in these cases, we have seen that an acceptable level of visual improvement occurs without any secondary intervention over time with the corneal healing. In these situations, we suggest that i-OCT (if available) would be a good option for complete removal under direct visualization during the primary surgery itself. However, the cost of the i-OCT is an important hindrance to its access for all refractive surgeons.

REFERENCES


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Reply

We thank Drs. Singh and Tripathy for the interesting remarks on our article.3 All cases presented in our article were referred for consultation and surgical exploration for the removal of the retained lenticule or lenticule fragment after a failed primary small incision lenticule extraction (SMILE). The primary SMILE surgery of the fellow eye was in all cases successful with normal postoperative topography and an excellent visual outcome.

The retained tissue may be removed easily when treated shortly after the primary surgery, leaving no clinically detectable signs of stromal fibrosis at the level of the interface. When the removal of retained lenticules or lenticule fragments is delayed for weeks or months, the extraction may become more challenging due to fibrosis and strong adhesions that may develop between the fragment’s or lenticule’s surfaces and the interface. In such cases, a fibrotic response at the interface surfaces may be expected after the successful removal of the retained tissue.

Intraoperative optical coherence tomography (i-OCT) may indeed be a useful tool for real-time visualization of a retained lenticule or fragment.2 This approach could assist a successful surgical exploration and removal of retained lenticules or lenticule fragments immediately or shortly after the failed SMILE procedure by enabling an accurate visualization of the planes. Careful inspec-
tion of i-OCT scans may also unveil sections where incomplete or no photodisruption was accomplished. However, i-OCT may be of limited value in late cases because the planes may not be accurately delineated due to the development of stromal fibrosis. In these cases, careful preoperative evaluation of the situation using anterior segment OCT, Scheimplug corneal tomography and corneal photographs in retroillumination, as well as intraoperative observation of the interface with a slit lamp, may be more important. Moreover, as Drs. Singh and Tripathy mentioned, i-OCT is an expensive technology that may not be available in every setting.

From our experience, small peripheral retained fragments may have no significant effect on visual rehabilitation in most cases due to their reduced thickness, their location, and the compensatory role of the epithelial remodeling. If the retained peripheral fragment induces minor or no visual disturbances, the surgeon may consider leaving it inside the pocket. For significant visual disturbances attributed to higher order aberrations, the surgeon may consider removing the peripheral retained fragment. In such cases, its location should be taken into consideration because the delayed extraction of retained fragments near the peripheral incision may result in cap tears and increase the risk of epithelial ingrowth.

REFERENCES

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