

**Table 21-1.****OVERCOMING HISTORICAL OBJECTIONS TO IRIS RETRACTORS**

OBJECTION	REBUTTAL
Too costly	Reusable iris hooks are very cost effective.
Time consuming to place	Stiffer 4-0 polypropylene hooks are much easier to handle and manipulate compared to 6-0 nylon.
Iris sphincter will be torn and damaged	With IFIS, the sphincter is elastic rather than fibrotic. Maximal stretching can therefore occur without excessive trauma to the sphincter muscle. Otherwise, aim smaller with the expectation of progressive widening during phaco.
Iris is tented up in front of the phaco tip	The diamond configuration avoids this problem and the associated iris chafing.
Insufficient surgical exposure	The diamond configuration and the ability to maximally stretch an IFIS pupil provide superb visualization and exposure.

single use device that is introduced with a disposable injector (see Figure 21-6B-F). The way in which the iris drapes over the sides of the device creates a round 6- or 7-mm pupil diameter, depending on which of the 2 available sizes is used (see Figure 21-6H). The disposable injector tip fits through a 2.5-mm incision and is used to both place and extract the ring. Compared to bulkier and more rigid plastic expansion rings, the thin profile of the Malyugin ring reduces the risk of accidental corneal or incisional trauma and does not impede instrument access to the cataract (see Figure 21-6I). The avoidance of multiple paracentesis sites is advantageous in the presence of a bleb, a pterygium, and multiple radial keratotomy (RK) scars and avoids the problem of iris hooks being pushed against the lid speculum with a tight palpebral fissure. Finally, the smooth coils are very gentle on the pupil margin, and generally minimize iris sphincter damage (see Figures 21-2R and 21-6O). A similar iris expander device has been introduced by Oasis Medical.

## IRIS RETRACTORS

The author prefers reusable 4-0 polypropylene retractors (available from Katena Products, Denville, NJ, and FCI Ophthalmics) to disposable 6-0 nylon retractors, which are available through Alcon<sup>21</sup> (Figure 21-7). Measuring 0.15 mm in diameter, the 4-0 retractors are the same size and stiffness as the polypropylene haptic of an IOL (see Figure 21-7D). This greater rigidity, when compared to 6-0 nylon retractors, makes 4-0 retractors more durable and easier to manipulate. Furthermore, the 4-0 polypropylene hooks can be repeatedly autoclaved in the manufacturer supplied storage case, which makes them more cost

effective than disposable hooks or pupil expansion rings (see Figure 21-7I).

Before initiating the capsulorrhexis, 1-mm limbal paracenteses are created in each quadrant, including a separate stab incision just posterior to the temporal clear corneal incision (see Figure 21-7A-C). In this way, the phaco tip passes through a separate incision directly alongside and above the track for the subincisional retractor (see Figure 21-7F). As originally advocated by Oetting and Omphroy, placing the hooks in this diamond configuration has several advantages (see Figure 21-7E).<sup>22,23</sup> The subincisional hook retracts the iris downward and out of the path of the phaco tip. This not only provides excellent access to subincisional cortex, but also avoids tenting the iris up in front of the phaco tip, which is what occurs when the retractors are placed in a square configuration (see Figures 21-7F and 21-7G). This configuration also maximizes temporal exposure directly in front of the phaco tip as well as nasal exposure for placement of the chopper tip (see Figure 21-7G). Following IOL implantation, the iris retractors are removed, rinsed in balanced salt solution, and gently dabbed with an instrument wipe to remove any viscoelastic residue. They are then stored in the autoclavable storage container (see Figure 21-7I).

Iris retractors both enlarge and maintain an adequate pupillary size throughout the course of surgery. They provide sufficient tension to the iris stroma so that no prolapse can occur with IFIS. If the pupil is fibrotic, such as with chronic pilocarpine use or longstanding posterior synechiae, overstretching the iris can cause bleeding, tear the sphincter, and result in permanent mydriasis. It is therefore advisable to start with a smaller target diameter than needed with the expectation that the pupil opening will widen further during phaco (Figure 21-8B). The likely