

Iris-fixated phakic intraocular lens

Most surgeons induce pupillary miosis before they initiate iris-fixated PIOL implantation, both to protect the crystalline lens and to make the iris easier to manipulate. The lens is generally inserted through a superior limbal incision but can be implanted with the wound placed at the steep meridian to minimize postoperative astigmatism. The long axis of the PIOL is ultimately oriented perpendicular to the axis of the incision. A side port incision is made approximately 2–3 clock-hours on either side of the center of the incision; thus, a 12 o'clock incision requires side port incisions near the 10 and 2 o'clock meridians. The “claw” haptics are fixated to the iris in a process called *enclavation*.

After the PIOL has been carefully centered over the pupil, it is stabilized with forceps while a specially designed enclavation needle is introduced through 1 of the side port incisions, and a small amount of iris is brought up into the claw haptic. This procedure is repeated on the other side. If adjustment of the PIOL position becomes necessary after fixation, the iris must be released before the PIOL is moved. Careful wound closure helps minimize surgically induced astigmatism. PMMA PIOLs require a 6-mm wound and thus generally require sutures for proper closure, whereas iris-fixated PIOLs made of flexible materials can be inserted through a small, self-sealing wound of approximately 3 mm. Video 9-1 demonstrates implantation of an iris-fixated PIOL.



VIDEO 9-1 Implantation of an iris-fixated phakic IOL.
Courtesy of David R. Hardten, MD.



Sizing the iris-fixated phakic intraocular lens Because this type of PIOL is fixated to the midperipheral iris, not to the angle or sulcus, it has the advantage of having a “one-size-fits-all” length. The PIOL is 8.5 mm long in total, including the 5.0- or 6.0-mm-long PMMA optic (Fig 9-1).

Posterior chamber phakic intraocular lens

Posterior chamber PIOLs require pupillary dilation before implantation. These PIOLs are made of a flexible collamer material and are implanted through a small wound approximately 3 mm long (Fig 9-2). The optic of the PIOL is vaulted to avoid contact with the crystalline lens and to allow aqueous to flow over the crystalline lens. This vaulting can be viewed at the slit lamp as well as with ultrasound biomicroscopy or Scheimpflug imaging (Fig 9-3). The lens manufacturers suggest that an acceptable amount of vaulting of the lens optic over the crystalline lens is 1.0 ± 0.5 corneal thicknesses. Using the appropriate vault is crucial for reducing complications (discussed later in the chapter).

For lens implantation, following pupil dilation, a 3.0- to 3.2-mm temporal clear corneal incision is made, and 1–2 additional paracentesis incisions are created, usually superiorly and inferiorly, to facilitate lens positioning. The lens is inserted using a cohesive viscoelastic material; after the lens unfolds, the footplates are positioned under the iris (Fig 9-4). The leading footplate is marked for identification to allow confirmation of correct orientation of the lens as it is injected. The surgeon should avoid contact with the central 6.0 mm of the lens, as any contact might damage the thin lens optic. Care should also be taken to avoid touching the crystalline lens with the PIOL to minimize the risk

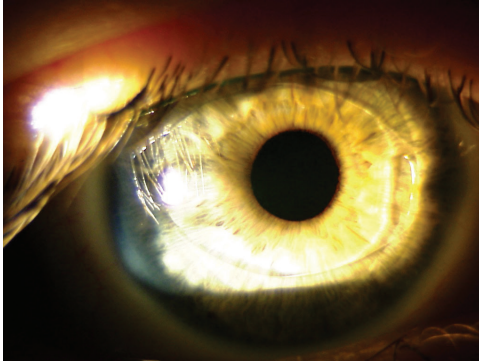


Figure 9-1 An iris-fixated phakic intraocular lens (PIOL) for myopic correction. The iris clip portion of the lens is visible on the right side of the image. (Courtesy of Sherman W. Reeves, MD, MPH.)

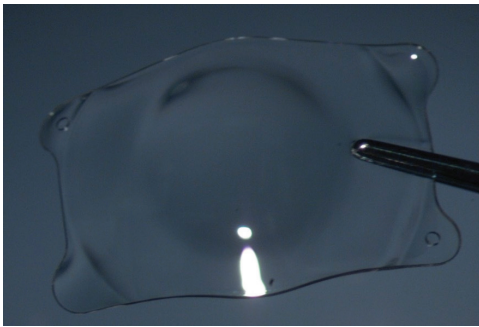


Figure 9-2 An implantable collamer posterior chamber PIOL. (Courtesy of John B. Cason, MD.)

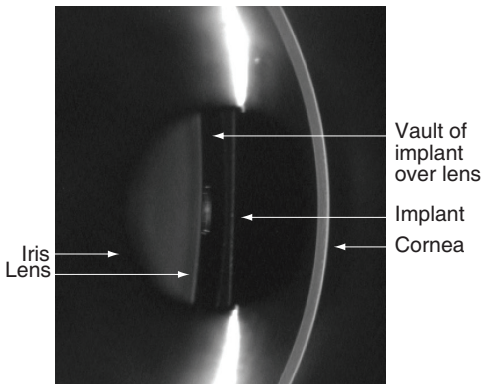


Figure 9-3 Scheimpflug image of a posterior chamber PIOL in place within the ciliary sulcus. The clear space between the implant and the native lens of the eye is termed the *vault* of the implant. (Courtesy of Sherman W. Reeves, MD, MPH.)

of cataract formation. Positioning instruments should be inserted through the paracenteses and kept peripheral to this central area. The pupil is then constricted. It is crucial to remove all viscoelastic material at the conclusion of the procedure to reduce the risk of a postoperative spike in IOP. Video 9-2 shows implantation of a posterior chamber PIOL.



VIDEO 9-2 Implantation of a posterior chamber phakic IOL.

Courtesy of George O. Waring IV, MD.

