Retained intraocular BBs are difficult to remove. According to manufacturers’ specifications, BBs have a spherical diameter of 4.5 mm and a copper plate covering a steel core. They have only moderate magnetic properties because of the copper plate cover and they are too large to be grasped by almost all intraocular forceps and, therefore, present a problem when they are retained in the eye after injury.


Surgical instruments currently available to remove BBs and other large foreign bodies include large electromagnets, intraocular magnets, and forceps, none of which are particularly well suited for BB extraction.1,7 The rare earth magnet that fits inside the eye does not hold the BB firmly enough to allow extraction through a sclerotomy site and requires intraocular transfer of the foreign body to forceps. The larger magnets strong enough to allow removal of the foreign body from the eye are bulky and present difficulties in achieving precise control of the foreign body during the extraction process, risking further damage to intraocular structures. Available intraocular forceps that fit through standard sclerotomies are too small to grasp the BB and remove it from the eye. Larger forceps require large incision sites that reduce ocular stability and require intraocular transfer between instruments. Moreover, the jaws of the forceps may impact the retina in the process of removal, or the foreign body may drop or even be propelled into the retina if it is not securely grasped.

We designed a new forceps with a ring configuration, ideal for removal of intraocular BBs. In the closed position the forceps may be inserted through a 4.5-mm scleral opening. The ring design allows the foreign body to be grasped without the tip of the forceps extending to the retinal surface where the BB is resting (Figure A). By positioning the tips of the forceps just beyond the equator of the BB and squeezing the handle of the forceps (Figure, B), the BB is lifted and securely grasped without exerting downward pressure on the retina or other intraocular structures. Once grasped, the BB may be removed through the sclerotomy without fear of dropping it. To remove the BB, a straight incision must be extended to 8 to 9 mm in a linear fashion. An alternative is to create a T incision since a shorter wound is more stable during the removal process and is less likely to cause vitreous loss and retinal breaks. The forceps may also be used for large, irregularly shaped foreign bodies such as glass.

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REFERENCES

A, Intraocular foreign body forceps with BB, illustrating ring design. B, Intraocular foreign body forceps with tips positioned just beyond equator of BB.