

Belt Loop Technique for Scleral Fixation of In-the-Bag Dislocated IOLs

In her Florida-based practice, Cathleen M. McCabe, MD, has seen many older patients with in-the-bag dislocations who want to keep their original IOL. Traditionally, correcting these dislocations is rarely a straightforward procedure, said Dr. McCabe. And there can be significant risks with the anterior vitrectomy that is typically needed when it's necessary to remove the IOL.

She saw this challenge as a great opportunity for innovation. “If there was a way of simplifying the fixation process so it required very basic equipment that ORs already have, we could avoid some of the potential complications associated with an IOL exchange—such as vitreous loss and endothelial or iris trauma—and allow patients to retain the lenses that they’ve been happy with for years.”

The result—the “belt loop” technique—is proving to be a boon for both patients and ophthalmologists.

How It Works

The basics of the belt loop technique build off of similar sutureless intrascleral fixation principles developed by Shin Yamane, MD, and Sergio Canabrava, MD, said Dr. McCabe.^{1,2}

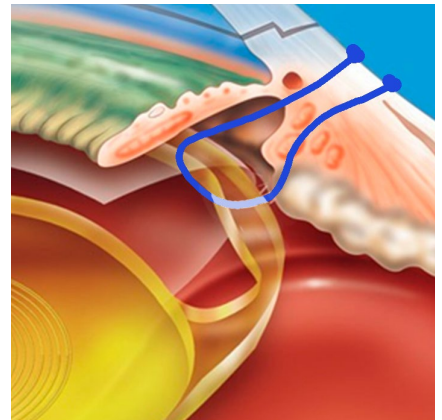
Because many ophthalmologists are already familiar with these supporting principles, the belt loop technique is very straightforward, she noted.

Creating the first flange. Dr. McCabe starts by placing a 30-gauge, thin-walled

needle through the conjunctiva and sclera 2 mm posterior to the limbus in the area of maximal zonular weakness. She then passes the needle through the capsular bag and under the haptic. A cut piece of 6-0 Prolene suture with tapered ends is then placed into the anterior chamber, where she uses microforceps to thread the tapered tip into the needle lumen. Once the needle is threaded with the Prolene suture, she externalizes the suture by guiding the needle between the haptic and optic, through the capsular bag, and out through sclera and conjunctiva. She withdraws the needle from the sclera and then uses handheld, low-temperature cautery to melt the suture end and create her first flange.

Creating the second flange. Next, Dr. McCabe introduces a second 30-gauge needle 0.5 mm anterior to the original insertion, passing into the sulcus in front of the IOL bag complex and the haptic. The other tapered end of the same piece of 6-0 Prolene suture is again introduced into the lumen of the second needle using microforceps; the needle is withdrawn from the sclera; and the suture is externalized to tighten the belt loop before she trims and melts the end to create a second flange.

Finishing up. Dr. McCabe then pushes the flanges back through the conjunctiva and into the sclera, passing a cannula over the conjunctiva to ensure that the flanges are flush within



SCHEMATIC. This image shows the belt loop configuration.

the sclera. If she notices any laxity on the opposite side of the capsular bag, she can then place a second loop 180 degrees away on the opposite haptic.

“This creates what I call a ‘belt loop’ from the sclera around the haptic through the capsular bag anterior to the haptic in the sulcus and then back through the sclera,” said Dr. McCabe, “creating a support system that can hold the haptic, fixating it to the sclera, and maintaining the position of the lens.”

Benefits and Challenges

Minimally invasive, with little disruption to the conjunctiva. The belt loop is a creative way to fixate the IOL to the wall of the eye without actually having to necessarily disrupt conjunctiva, said Nicole R. Fram, MD, at Advanced Vision Care in Los Angeles. “We’ve been lassoing IOLs for a long time.” As Dr. Fram noted, this approach was first described by the late Alan Crandall, MD, “but previous techniques require

BY MIKE MOTT, CONTRIBUTING WRITER, INTERVIEWING NICOLE R. FRAM, MD, CATHLEEN M. MCCABE, MD, AND BEERAN B. MEGHARA, MD.

conjunctival dissection and have their own specific problems related to suture material.”

The belt loop technique also is minimally invasive, said Beeran B. Meghpara, MD, at Wills Eye Hospital in Philadelphia. “First of all, it’s transconjunctival,” he said. “Because you’re not creating a peritomy, the incisions heal more quickly with less risk of scarring.” The only required incisions are one or two corneal incisions large enough to accommodate microforceps and a pair of 30-gauge sclerotomies, he said. In most cases, no vitreous is lost and there is very little disturbance to the conjunctiva.

Surgical skills needed. There’s a relatively shallow learning curve with the belt loop technique, said Dr. Meghpara, but on the chance that you disrupt the zonules and dislocate the lens even further, you’ll need to be familiar with performing IOL exchanges and be comfortable working in the anterior vitreous as a backup option.

You should also be familiar with and skilled at pars plana–assisted anterior vitrectomy, said Dr. Fram. “When you’re suturing anything to the sclera, the instrumentation can catch on the vitreous, causing traction and possibly creating a retinal tear,” she said. “So understanding the basic concepts of vitrectomy is paramount when performing the belt loop technique or any scleral fixation.”

Surgical pearl: bury the flange. Although one of the benefits of the technique is that it’s transconjunctival by nature, said Dr. Fram, it’s of the utmost importance to ensure that the flanges are buried within superficial layers of the sclera in order to prevent any conjunctival erosion over the flange.

“It’s a little disconcerting to see how many flanges are left subconjunctivally without Tenon coverage,” she said. “When I’m performing the belt loop, I make sure that the flange is buried into the sub-Tenon space. If there’s not a lot of Tenon capsule to work with, you might want to create a buttonhole in the conjunctival and scleral groove before you enter so that you have a place to hide the flange. Another modification I’ve made is taking down the

conjunctiva, making a scleral groove, and burying the flange in the groove.”

Surgical pearl: address the tilt.

Another challenge can be the titration of the belt loop itself, said Dr. Fram. “During the procedure, one side of the suture might be too taut while you start titrating the other side of the suture. So it’s really a process of going back and forth, adjusting your flange to achieve the right tension—otherwise you may inadvertently create tilt.” And although the 6-0 Prolene fits well into a 30-gauge thin-walled needle, it is stiffer than other suture material, she said, and doesn’t “hug” the haptic-optic junction the same way.

But if you do see tilt at the time of surgery, fix it—don’t leave it, said Dr. Fram. That’s because, if you have significant residual pseudophacodonesis with tilt, you can cause uveitis-glaucoma-hyphema (UGH) syndrome. “Of course you never want to leave the patient worse off than when you started,” she said. “So when you’re performing the belt loop technique, schedule enough time to do a retrobulbar block and give yourself enough time to make it right in case the first pass isn’t ideal.”

Patient Selection

IOL position. The belt loop technique is appropriate for any lens type with an in-the-bag dislocation, said Dr. McCabe. “First and foremost, it’s important that the lens is in the bag because it’s the fibrosis of the bag around the haptic that provides the additional support and additional substance for the belt loop to hang on to.”

In addition, the IOL should be relatively well positioned within the bag, said Dr. Meghpara, with some remaining zonules present and a minimal amount of vitreous and other obstructions—for example, a tube shunt—at the fixation site. The presence of a large Soemmering ring is another relative contraindication, he added, as re-fixation can lead to UGH syndrome.

You’ll also want to be sure that you can approach the case anteriorly, said Dr. Fram. “I always examine the patient in the upright position and then lay them down supine in the chair to figure out if I can access the lens. If it’s tilting

too far posteriorly, then you may need a retina specialist on standby in case the lens is not safely accessible.”

Additional notes. Dr. McCabe has been able to harness the procedure’s benefits for cases in which she particularly wants to avoid disturbing the conjunctiva. For example, some of her patients who present with in-the-bag dislocated IOLs also have well-functioning trabeculectomies with elevated avascular blebs, she said, and performing a more invasive surgery like a vitrectomy to remove the original lens could present a greater likelihood of trabeculectomy or bleb failure. “With the minimal disruption of the conjunctiva that the belt loop technique offers, I have been able to retain the lens, and their trabeculectomies have continued to function well,” she said.

Finally, as the technique allows for retention of the original IOL, perhaps the best application is for patients who were happy with their vision prior to the dislocation, said Dr. McCabe. “The first few cases in which I performed the belt loop technique were two older patients who had paid out of pocket for an expensive premium lens,” she said. “They really wanted to retain the lens so that they could continue to benefit from an expanded range of vision. It’s a great way to help them achieve that.”

1 Yamane S et al. *Ophthalmology*. 2017;124(8):1136-1142.

2 Canabrava S et al. *Cornea*. 2020;39(4):527-528.

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