

# Does PXF Necessitate a CTR?

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## INTRODUCTION

There remains a controversy among leading surgeons with respect to the indications for the capsular tension ring (CTR) in the patient with pseudoexfoliation (PXF) undergoing cataract surgery. Although some recommend that every PXF patient have a CTR, others believe that a ring should be inserted only when there is clear evidence of zonular weakness. I am in the latter group for several reasons.

First, the primary defect in PXF is located within the zonules. A ring within the capsular bag just does not seem likely to arrest progressive zonular damage. Advocates of the CTR state that its resistance to contracture of the bag decreases the chance of zonulysis. They add that the device may also make repositioning a dislocated IOL/bag complex easier, which may be true. The facts, however, are that we have operated on many thousands of PXF patients and that IOL/bag dislocation is extremely rare. Is it worth the extra time, effort, and cost to treat all for the sake of a few? While we endorse this prophylactic approach for endophthalmitis, there is an enormous difference in the degree of devastation to the eye when comparing a subluxated IOL to infection.

Moreover, there is a slight downside to implanting the CTR. Brian Little, MD, and colleagues in Sidcup, UK, have published a case of a CTR inadvertently placed in the anterior chamber.<sup>1</sup> Ricardo Gliken, MD, of Argentina has published on a capsular break during the CTR's insertion.<sup>2</sup> Moreover, Iqbal Iqbal Ahmed, MD, of Toronto and colleagues have demonstrated the stress on the remaining zonules that can occur during the ring's insertion,<sup>3</sup> which is why the capsular bag must be fully inflated with viscoelastic to facilitate the CTR's safe advancement. A famous European surgeon, who shall remain nameless, told me that he has dehisced the remaining zonules during the CTR's insertion. The complication resulted in the loss of the entire capsular bag. In addition, Lisa Arbisser, MD, of Davenport, Iowa, has presented a case in which the ring fractured during insertion.<sup>4</sup> Furthermore, the mere presence of a CTR makes cortical removal a bit more difficult.

Certainly, every OR should have a stock of CTRs, because the devices can truly save the day when the surgeon encounters zonular dialysis. The question of implanting a CTR in every PXF eye warrants further discussion, however, and I have invited three of my esteemed colleagues to share their perspectives.

—Robert H. Osher, MD

### I. HOWARD FINE, MD

I believe that a CTR should be standard in every patient with PXF. When placed prior to phacoemulsification, but immediately following the capsulorhexis and gentle cortical cleaving hydrodissection, the presence of the ring helps to stabilize the lens during the phaco procedure itself. It also delays capsular phimosis by countering the narrowing forces in the postoperative period.

The biggest advantage of having a CTR in the bag is that it may delay the decentration of the bag/ring/IOL complex as a result of the progressive deterioration of the zonular apparatus. If decentration occurs, one may suture the CTR to the ciliary sulcus to recenter the IOL complex more easily than suturing the haptics to the ciliary sulcus. The technique is noninvasive and atraumatic, and the surgeon may perform the procedure

while the IOL is within the capsular bag, whether or not there is a posterior capsulotomy.

**ROGER F. STEINERT, MD**

Logically, a CTR will reduce the risk of long-term subluxation of the IOL/bag complex in PXF pseudophakia if part of the pathophysiology is progressive contraction of the capsulorhexis. We do indeed see shrinkage of the anterior capsule in cases of late dislocation. We do not know, however, whether this contracture is a cause of progressive zonular loss or only a secondary manifestation of that loss. It is a classic chicken-versus-egg question, and no one knows the answer. Additionally, a CTR is not necessarily benign in asymptomatic, uncomplicated, PXF cataract surgery, because it adds weight to the IOL/bag complex.

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—Roger F. Steinert, MD

The bottom line is that only a long-term, prospective, randomized study can fully elucidate the issue. The other important unknown is natural history. No one knows the rate of late subluxation in uncomplicated surgery. Even if a CTR prevents late subluxation, what rate of this phenomenon justifies the expense and surgical complexity of using the device in every case—1:1,000, 1:100, 1:10?

**SAMUEL MASKET, MD**

Unfortunately, one cannot rely upon the established literature to help answer whether all cases with PXF syndrome should have a CTR placed at the time of otherwise routine cataract surgery. What is apparent, however, is that a traditional CTR will not reduce the chances for anterior capsular contraction following surgery in most cases of PXF. What, then, would be an advantage? One might speculate that a CTR, if previously placed, would allow the IOL/bag/CTR complex to be easily affixed to the sclera by “lasso” sutures of the ring to the eye wall. Although I have used that technique for a given case, my overall sense is that the number of eyes that would benefit from that maneuver is likely to be low. Moreover, there is no literature available to let us know the rates of complications from inserting CTRs for prophylactic purposes. All in

all, I do not consider the costs and risks versus the potential benefits as supporting the routine use of CTRs in all eyes undergoing cataract surgery in the presence of PXF. ■

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