Preventive Strategies

Spontaneous late in-the-bag IOL dislocation is caused by progressive zonular weakness with or without capsule shrinkage, which leads to an unbalance between centrifugal and centripetal forces over the capsular bag, resulting in dislocation. The main cause of zonular weakness is pseudoexfoliation and the main predisposing conditions for capsular shrinkage are pseudoexfoliation, diabetes mellitus, uveitis, pigmentary retinal degeneration and myotonic dystrophy.1-3 The main step in prevention is the recognition of these cases at risk in which a modified approach should be considered.

Taking into account the two mechanisms involved in the dislocation, preventive strategies can be divided into three categories.1 The first one, with full consensus among surgeons, includes those measures that minimize zonular damage during cataract surgery in cases at risk, since we cannot stop progressive zonular dehiscence. Bimanual rotation of the nucleous, supracapsular phacoemulsification of soft nuclei or phaco-chop techniques, tangential aspiration of the cortex together with the use of biaxial irrigation/aspiration cannules, decrease surgical induced stress over the zonules and are strongly recommended.1

The second and more controversial strategy, is whether to modify the place/technique of IOL implantation.1,3 In-the bag placement with some form of scleral IOL fixation (scleral suture of a capsular tension ring (CTR), Cionni ring, Ahmed segment, etc…) can be accomplish in cases of severe zonular instability during surgery. An alternative technique would be to implant the IOL in the sulcus performing an anterior optic capture. Although there is no agreement in the literature over the best option, it is our opinion that the IOL would rather be implanted within the capsular bag and fixated, than implanted in the sulcus, technique that is associated with more inflammation and risk of pigment dispersion if optic capture is not accomplish.1
Lastly, the third group of preventive measures aims to halt the development of capsule contraction syndrome. The capsulorhexis diameter should be smaller than the optic but a particularly small opening should be avoided.\(^4\) Although no correlation between capsulorhexis size and postoperative capsulorhexis constriction has been found,\(^5\) some authors suggest small capsulorhexis increases capsule fibrosis and shrinkage.\(^6\) A small capsulorhexis may be enlarged at the end of the case, after IOL implantation. Also, a close follow up with careful observation of the capsulorhexis after surgery is recommended. Anterior relaxing YAG capsulotomies should be performed as soon as initial contraction is detected -usually during the first month after surgery- to halt progressive capsular shrinkage in susceptible eyes.\(^7\)

All type of IOLs have been involved in cases of late in the bag dislocation.\(^2,3,8-13\) The preponderance of one type of lens over others more likely reflects the most commonly used IOL at the time of the original surgery. Nevertheless, it has been demonstrated that capsular contraction secondary to anterior capsule opacification is more common with plate-haptic silicone IOLs and less common with acrylic hydrophobic IOLs.\(^14\)

Considering that capsule contraction might play a role in the mechanism that leads to dislocation,\(^1-3\) it seems reasonable to avoid the implantation of this design and material in susceptible eyes.

The role of the CTR in the prevention is a matter of debate.\(^2,11,12\) Some authors have hypothesized that the ring could prevent dislocation and capsular shrinkage. However, cases of in-the-bag dislocation with a CTR within the bag have been published.\(^2,11,12\) In our previous series of 45 cases, 8 of them had a CTR\(^2\) and in our current data (Lorente R, unpublished data 2012), 22 out of 106 cases of dislocation occurred despite having a CTR within the bag. Moreover, it has been found that the interval between original cataract surgery and IOL dislocation is shorter in cases with CTR.\(^2,12\) This could be the result of selection bias, with CTR being implanted in the worst cases, or increased zonular damage due to additional stress on the zonules during implantation of the CTR.\(^15\) Thus, ubiquitous prophylactic use of CTRs does not seem to be a suitable approach in patients with pseudoexfoliation and no phakodonesis undergoing cataract surgery. However, it is our opinion that CTRs are advisable in cases of zonular insufficiency and in advanced pseudoexfoliation syndrome. They clearly facilitate repositioning, particularly in cases of plate-haptic lenses without holes. Currently, it is unknown whether the cost of implanting a CTR in all at-risk eyes is justified by the potential decrease in incidence of dislocations.
Thus, we believe that in mild cases of pseudoexfoliation with no phacodonesis the IOL may be implanted in the bag with close monitoring of capsular contraction; in moderate cases a CTR should be implanted also; in severe cases with intraoperative evidence of zonular instability, in-the-bag placement with some form of scleral IOL/CTR fixation (scleral suture of a CTR, Cionni ring, Ahmed segment, etc...) is strongly recommended.


