

Innovation of Injector for Foldable IOL

by Prof. Kimiya Shimizu, Japan

Recently, in Japan, approximately 90% of the intraocular lenses (IOLs) used in cataract surgery have been foldable IOLs. Accordingly, the use of injectors for IOL implantation has been increasing remarkably. There are some advantages to using an injector over forceps. With an injector, implantation through a minimally-sized incision is possible. Moreover, the risks of bacterial entry into the eyes are reduced because a foldable IOL doesn't come in contact with the incision or the operative field directly.

Using an injector is more beneficial compared to using forceps. However, the IOL loading and handling during implantation with today's conventional injector, which requires loading the IOL into a cartridge, are unexpectedly complicated and require certain skills. Any improper handling can lead to IOL damages or abnormal IOL movements during ejection. In order to solve these problems, we developed a disposable injector in 1993. In 2002, we developed the world's first preloaded injector with a foldable IOL. Preparation of the preloaded injector for IOL implantation is safe and quite simple, so the injector never comes in contact directly with an IOL throughout the whole process. It means the handling of a preloaded injector is less dependent on the surgeon's skill level or human error.

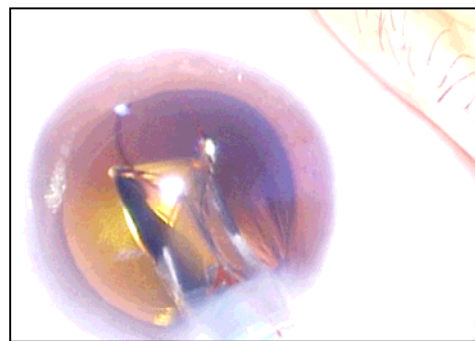
All conventional injectors require viscoelastic materials such as sodium hyaluronate as "lubricant" for IOL loading and also for forming and maintaining space for IOL implantation. While viscoelastic material is necessary for the surgery with a non-preloaded injector, it should be removed after IOL implantation. Otherwise, it may result in a higher postoperative IOP.

Our development of a new preloaded injector (KS-VF), which is an improvement on the conventional preloaded injector, requires no viscoelastic material either for loading the IOL or forming and maintaining the anterior chamber and capsular bag. The KS-VF requires no viscoelastic material for implantation of the IOL. Thus, it is expected to avoid the risks of a high postoperative IOP caused by residual viscoelastic material. In a clinical setting, the IOL is secured properly in the capsular bag which is formed with irrigating solution alone without any risk for adverse events such as abnormal IOL movement and IOL damage during ejection. I/A is not performed immediately after IOL implantation in KS-VF cases. No significant IOP rise in any patient was observed at one day postoperative, indicating that the KS-VF had both simplified the surgical procedure and reduced the risk of an elevated postoperative IOP.

Recently, the safety of cataract surgery has improved markedly by virtue of advances in surgical techniques and equipment. It is expected to improve not only the efficiency of surgery itself but also reduce surgical costs considerably. Safer and smoother surgery with the Visco-Free Preloaded Injector emancipates patients from both physical and mental strain; it is promising and truly ideal for all concerned.



KS-VF connected to the irrigating tube.



Using irrigating solution alone, enough space in the anterior chamber and capsular bag is formed and the IOL can be safely implanted.

Source: Kimiya Shimizu, MD