A NEW donor insertion technique in Descemet's stripping automated endothelial keratoplasty (DSAEK) procedures leads to reduced endothelial damage and better graft survival rates, according to Donald Tan MD.

"We have developed a simple glide insertion technique which obviates the need for folding and unfolding of the donor tissue during DSAEK surgery and minimises damage to the endothelium," he said.

Discussing the rationale for developing an alternative technique for donor insertion, Dr Tan told delegates attending the XXV Congress of the ESCRS that laboratory studies carried out at Singapore National Eye Research Institute clearly demonstrated the damage that occurs using traditional folding forceps in DSAEK.

"Even using the latest folding forceps which have been designed specifically for DSAEK, there is still significant damage relating to forceps compression in almost all of the tissues that we looked at using scanning electron microscopy and dye staining," he said.

Dr Tan said that the major challenge of DSAEK today is to try to reduce endothelial damage. "The 'taco' folding technique is currently the most common approach used to insert the donor lamella in DSAEK, but folding and attempts to unfold the donor in the anterior chamber may cause significant loss of endothelial cells and leads to higher rates of primary graft failure," he said.

The primary graft failure rate ranges between six per cent and 45 per cent in the published literature, said Dr Tan. Furthermore, he noted that the problem may be more relevant in Asian populations.

"The problem with DSAEK surgery in Asian eyes is that we are often dealing with smaller eyes with very shallow anterior chambers. Many of our patients have previous angle-closure glaucoma and we have had major difficulties unfolding these large donors in such small and shallow anterior chambers," he said.

Dr Tan said that using the standard 'taco' technique for the first 20 DSAEK cases resulted in five primary graft failures. "This is a 25 per cent graft failure rate which we considered was unacceptable high," he said.

For the next 20 cases, Dr Tan and colleagues altered the technique completely to avoid folding and unfolding the donor tissue.

"We used a donor glide technique to pull through an unfolded donor and with this approach we did have one graft failure due to Descemet's membrane detachment. Still, it was a five per cent primary failure rate, which was a significant improvement on the 20 per cent failure rate with the 'taco' approach," he said.

Dr Tan added that all primary failures have since had successful donor replacement using the glide technique and currently all grafts are clear.

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The overall visual outcomes were also satisfactory, said Dr Tan, and are comparable with other DSAEK studies. At a mean follow-up of only four months, two-thirds of patients (64 per cent) achieved 20/40 visual acuity or better and 45 per cent attained 20/30 or better.

Dr Tan concluded that while DSAEK is undoubtedly the 'state of the art' in terms of current keratoplasty techniques, endothelial cell loss remains a major issue and the taco folding technique in Asian populations results in unacceptably high rates of primary graft failure.

"In our hands, the glide technique of donor insertion has significantly reduced primary graft failure to 5.0 per cent or lower. Naturally, we need further long-term endothelial cell count studies to confirm our initial findings, and these investigations, including further improvements in technique, are currently ongoing," he concluded.

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