ALK with fibrin glue and amniotic membrane stabilises corneal melts

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AUTOMATED anterior lamellar keratoplasty (ALK) with fibrin glue and amniotic membrane transplantation (AMT) can stabilise the cornea in cases of corneal melt and descemetocele, said Thomas John MD, clinical associate professor Loyola University at Chicago, Maywood, Illinois, US.

“The purpose of this technique is not to visually rehabilitate the patient, instead it is just to stabilise the globe and decrease ocular inflammation with the amniotic membrane transplant and then to perform a penetrating keratoplasty (PKP) at a later date when the eye has quietened down,” Dr John told the XXV Congress of the ESCRS.

The study involved eight eyes of seven patients with a mean age of 66 years. All had corneal melt, 86 per cent had descemetocele and 71 per cent had corneal perforation. In addition, two eyes of one patient had pellucid marginal degeneration, one eye had Terrien’s marginal degeneration and three eyes had failed PKP.

Another eye in the study had been implanted with an AlphaCor Keratoprosthesis and had developed a sterile melt with exposure of the AlphaCor skirt, and another eye had an infective ulcer that had been “sterilised” with frequent topical gatifloxacin eye drops. The patients’ preoperative systemic diagnoses included rheumatoid arthritis in three cases and diabetes mellitus in six patients.

All patients underwent automated anterior lamellar keratoplasty (ALK) using a microkeratome and an artificial anterior chamber, combined with fibrin glue and preserved human amniotic membrane transplant. The thickness of the donor disc ranged from 170 microns to 380 microns. All procedures were carried out using topical anaesthesia with monitored anaesthesia care.

All eyes achieved globe stabilisation; none had pseudo-chamber formation and vision improved in 86 per cent of eyes. Furthermore, in 71 per cent of eyes there was a rapid decrease in ocular inflammation, which Dr John attributed to the use of amniotic membrane transplantation. In all eyes the donor corneal disc adhered uniformly to the host corneal sterile ulcer crater created by the corneal melt, which he attributed to the fibrin glue.

Two cases required repeat surgical procedures, Dr John noted. In the eye with Terrien’s marginal degeneration and descemetocele, a recurrence occurred when a 300 µm corneal disc was used, but after a second operation using a thicker 350 µm disc the cornea has remained stable for a year. There was also a recurrence of the melt in the eye with an extruded keratoprosthesis. However, following the repeat procedure the cornea has remained stable for one-and-a-half years.

In two patients who underwent ALK with AMT and fibrin glue, the eyes became sufficiently quiet for the performance of PKP after two weeks and three-and-a-half weeks, respectively. In one of those cases, which had corneal melt and descemetocele, Dr John also performed the removal of an anterior chamber IOI, anterior vitrectomy and the implantation of a scleral fixated posterior chamber IOI. The eye also underwent tarsorrhaphy and punctal occlusion. Dr John noted that four-and-a-half months after PKP the cornea remained clear.

“Amniotic membrane transplantation decreases inflammation and promotes healing. Fibrin glue approximates donor corneal disc to the ulcer crater, decreases bleeding and surgical time. ALK stabilises globes with melt, descemetocele, with or without corneal perforation. PKP can be performed at a later date when the eye is less inflamed as a second-stage procedure to visually rehabilitate the patient.”

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