TREATMENT of the perforated cornea must be individualised, taking into account patient-, lesion-, and physician-related factors, according to Niels Ehlers MD.

“There are many approaches for treating the perforated cornea and no one procedure that is correct in all cases. The type of lesion present may limit the number of choices, but the surgeon’s experience with a particular technique must be factored in as well. Furthermore, it is always important to remember that we are treating a patient, not only an eye, and sometimes the patient is best served by a doctor who carefully considers the likelihood of treatment success and recognises when exenteration or enucleation may be the best solution,” said Dr Ehlers, department of ophthalmology, Aarhus University Hospital, Aarhus, Denmark.

When the focus is to salvage the eye, the options for treating a perforated cornea include suturing, amniotic membrane transplantation, conjunctivoplasty, corneal grafting, bandage contact lens placement, glue, and tarsorraphy. However, in Dr Ehlers’ estimation and experience, some of those techniques are not reasonable alternatives.

“A bandage contact lens can be used to manage a melting ulcer if the cornea has not perforated, but when it has, I am satisfied using that technique only as a temporary measure because I believe a much more aggressive approach must be taken. I have no personal experience with fibrin glue, but we do not use histoacrylate compounds much because they are painful and cause patients to be unhappy,” he said.

“Some physicians might perform tarsorraphy and ask the patient to return in two months. While the outcome may be good, the responses are variable, and to me that surgery is like closing your eyes and hoping for the best, which I also don’t think is good enough,” Dr Ehlers added.

Before choosing a treatment, the physician must consider the aetiology of the perforation, as the nature of the lesion may allow for certain interventions and not others. Causes of corneal perforation include trauma, post-surgery rupture, infection, and a melting ulcer.

Amniotic membrane for melting ulcers
Suturing is an option for eyes with trauma-induced perforation. In eyes with a deep substance defect, such as in those with infection or a melting ulcer, covering the eye by performing conjunctivoplasty or with an amniotic membrane graft is a good choice.

“Establishing an in-house human amniotic membrane bank is not too difficult to do and something that I would encourage clinics to consider since having tissue on hand for managing emergency cases can be very valuable,” Dr Ehlers said.

When treating a melting ulcer, Dr Ehlers first fills the wound with some of the amniotic membrane tissue and anchors it in place with small sutures. The entire corneal surface is then covered with a second piece of amniotic membrane that is sutured to the limbus. The suturing can be done with 10-0 nylon or 8-0 or 10-0 absorbable suture material.

Once the ulcer heals, it is possible to perform a corneal graft secondarily. However, a penetrating graft can also be performed on a perforated eye if the surgeon uses a sharp diamond knife to complete the incision. When the defect is present only in the periphery, use of a small graft covering only the involved site and not the optical centre may be a good option to minimise risk.

“The ulcer may recur or the graft may become opaque, and if those complications develop in an eye where the graft does not cover the optical centre, it is not too big of a disaster,” Dr Ehlers said.

Practically speaking, surgeon experience and tissue availability must also be considered when deciding on a management path.

“It is helpful for surgeons to have skill in a variety of techniques, but what one surgeon masters, another may not, while amniotic membrane or corneal grafting are options only when there is access to the tissue. Depending on the circumstances, there are times when it may be best to refer the patient elsewhere,” Dr Ehlers said.

Dr Ehlers presented his research at the XXII Congress of the European Society of Cataract and Refractive Surgeons in Paris.

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Multiple factors influence best management for perforated cornea

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