VITRECTOMY IN DME
Surgical procedure can reduce macular swelling but produces mixed results on visual acuity
by Roibeard O’hEineachain in London

Vitrectomy can help normalise the anatomical appearance of the macula in eyes with chronic diffuse diabetic macular oedema (DME) or diabetic macular oedema with vitreomacular traction, but the procedure does not generally bring about improvements in visual acuity, said William F Mieler MD, University of Illinois, Chicago.

“Vitrectomy surgery for chronic diabetic macular oedema can be successful, though the patient needs to understand the potential visual limitations," he told the 11th EURETINA Congress.

He noted that by the time a patient with DME has been referred for surgery, they will have undergone treatment with a range of therapies, including focal laser photocoagulation, which can itself have damaging effects, as well as treatment with topical agents, intravitreal corticosteroids and/or anti-VEGF agents.

“Many of these eyes have extensive chronic oedema prior to surgery that has not responded as hoped for to extensive therapy, so in many cases we cannot achieve any visual recovery,” Dr Mieler said.

Who to treat and what to expect
The principal indications for surgery are taut posterior hyaloid syndrome and diffuse DME that has not responded to conventional therapy with laser or pharmacological approaches, alone or in combination.

However, the published literature’s support for surgery in such cases is somewhat equivocal, he noted.

In eyes with taut posterior hyaloid membrane syndrome, the area of the vitreous attached to the macula contracts in a way similar to an epiretinal membrane. The oedema that occurs is generally unresponsive to laser treatment.

However, starting from a study published nearly 20 years ago, there have been reports that vitrectomy can result in improved visual function in such eyes, the theory being that it relieves traction on the macula from the contracted vitreous and thereby also reduces the oedema (Lewis et al. Ophthalmology (1992); 99(5): 753-759).

In a more recent study conducted on behalf of the Diabetic Clinical research Network (DRCR.net) vitrectomy produced mixed results in 87 patients with taut posterior hyaloid membrane syndrome (Haller et al. Ophthalmology 2010;117: 1087-1093). Dr Mieler said. That is, although there was 50 per cent reduction in thickening in 68 per cent of patients and 38 per cent of patients had an improvement of at least 10 letters in best-corrected visual acuity, visual acuity fell by 10 or more letters in 22 per cent of patients.

The study’s authors estimated that, based on their findings, between 28 per cent and 49 per cent of eyes with DME and vitreomacular traction will have some degree of visual improvement, while 13 per cent to 31 per cent will have a reduction in vision.

Vitrectomy’s benefits
Apart from its more direct effects on retinal thickness and visual acuity, there is a lot of evidence in the published literature to suggest that vitrectomy may have other effects that improve the general health of the retina.

For example, research has shown that the inner segment/outer segment photoreceptor line appears improved on OCT following vitrectomy. (Sakamoto et al. Graefes Arch Clin Exp Ophthalmol. 2009; 247(10):1325-30). It may therefore be that removal of adherent vitreous facilitates enhanced diffusion of nutrients and other metabolic factors from the vitreous to the inner retina.

In another study, eyes with macular oedema had a normalisation in their macular microcirculation following pars plana microcirculation, if the procedure also resulted in a resolution of the central macular thickness on OCT (Park et al. Graefes Arch Clin Exp Ophthalmol. 2006; 247:1089-17). A report from Japan showed that patients who had undergone pars plana vitrectomy reported an enhanced quality of life in their responses to the VFQ-25 questionnaire (Emi et al, Nihon Ganka Gakkai Zasshi 2008; 112(2):141-7).

“The majority of cases of diffuse DME can be successfully managed through focal photocoagulation and/or pharmacologic therapy. But when those treatments fail, pars plana vitrectomy can be beneficial in many cases. There is almost always improvement on OCT and many cases have visual improvement as well,” Dr Mieler concluded.