



# ATLAS LITERATURE REVIEW

Issue 5 • Spring 2022



Welcome to the fifth issue of Centre for Eye Health's **ATLAS Literature Review**. Each quarter we'll be bringing you reviews from our pick of the latest literature as part of your ATLAS subscription.

## Is it safe to defer Epiretinal membrane surgery?

Prepared by Sharon Ho and Elisa Wang

**Clinical applications:** Most eyes with idiopathic epiretinal membrane (ERM) remain relatively stable after initial presentation. Even in the minority of patients who do progress, deferring surgery does not result in a disadvantageous final outcome compared to if surgery was performed immediately. This supports the concept of delaying surgery in asymptomatic or minimally symptomatic cases of ERM until significant symptoms arise rather than undertaking prophylactic treatment.

Surgery in ERM may be unnecessary in 90% of eyes. It is worth noting, however, that the decision to treat patients in this study was based on more than just visual acuity (OCT characteristics, visual distortions etc.). Nevertheless, since these factors were not standardised, their analysis was not included in this paper, yet in practice they are still critical to consider when evaluating the need for immediate surgery.

**Summary:** This retrospective study recruited patients with idiopathic ERM, and assessed the prevalence and visual outcomes of those who were not initially recommended surgery but later progressed to surgery after at least 6 months ("deferred surgery"). Results were compared with those of patients who underwent ERM surgery within 6 months of initial presentation ("immediate surgery").

**Key findings:** Of the 413 patients who did not undergo immediate surgery, 369 remained unoperated and 44 underwent deferred surgery at a mean duration of 18.1 months after initial presentation. Presence of symptoms at initial presentation was the factor most associated with deferred surgery. In pseudophakic cases, there was no significant difference in final best-corrected visual acuity between the deferred and immediate surgical groups.

**Reference:** RAI-Khersan H, Shaheen AR, Flynn HW Jr, et al. Natural History and Surgical Timing for Idiopathic Epiretinal Membrane. *Ophthalmol Retina*. 2022 Mar 8:S2468-6530(22)00087-2.

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## In this issue:

Prepared by Sharon Ho and Elisa Wang

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## Be wary of pregnant women with pre-existing diabetes

Prepared by Sharon Ho and Elisa Wang

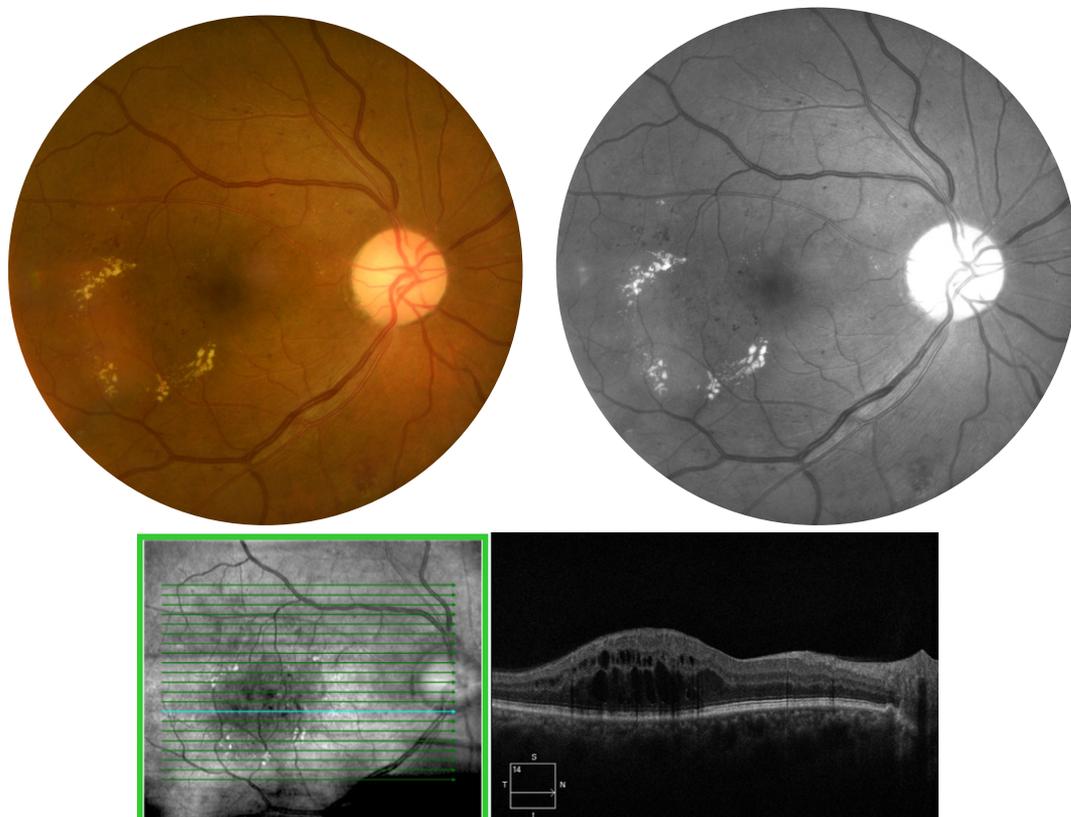
**Clinical applications:** The prevalence and progression of diabetic retinopathy (DR) in pregnant women with pre-existing diabetes remains higher than in non-pregnant diabetic women. Close follow-up should be maintained during pregnancy to prevent vision loss in this growing population. Clinicians should also be aware that women with Type 1 diabetes have a higher risk of developing new DR during pregnancy compared to those with Type 2 diabetes, but once a woman has DR, the risk of DR progression is similar in pregnancy irrespective of diabetes type. This research lends further support to the current Optometry Australia clinical guidelines on diabetic retinopathy which recommend that women with diabetes have a comprehensive eye examination prior to conception and another during the first trimester. The frequency of subsequent examinations during pregnancy should then be based on the results of the first trimester exam and blood glucose control. A comprehensive examination should also be conducted at 6-12 weeks post-partum.

**Summary:** This systematic review and meta-analysis estimated the prevalence of DR and its progression rate in pregnant women with pre-existing Type 1 or Type 2 diabetes. A literature search was conducted in three major databases (MEDLINE, Embase, Scopus).

**Key findings:** Eighteen observational studies were included in the analysis. From early pregnancy to around delivery, the prevalence of any DR was 52.3%-57.8% and proliferative DR was 6.1%-8.2%. The DR progression rate in pregnant women with pre-existing DR was not significantly different between women with Type 1 and Type 2 diabetes.

**Reference:** Widyaputri F, Rogers SL, Kandasamy R, et al. Global Estimates of Diabetic Retinopathy Prevalence and Progression in Pregnant Women With Pre-existing Diabetes: A Systematic Review and Meta-analysis. *JAMA Ophthalmol.* 2022;140(5):486-494.

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Fundus photograph and red-free image of a patient with severe non-proliferative diabetic retinopathy (top). OCT shows the presence of centre-involving macular oedema (bottom).

## AREDS2 supplements are safe and effective to use for over ten years

Prepared by Elisa Wang and Sharon Ho

**Clinical applications:** Clinicians can continue to reassure their patients with intermediate to late age-related macular degeneration (AMD) that the Age-Related Eye Disease Study (AREDS2) supplements are safe and effective for long-term use.

**Summary:** This study was a five-year epidemiologic follow-up study after the conclusion of the AREDS2 trial. The study assessed the 10-year risk of developing lung cancer and late AMD, and if there was a long-term benefit of adding lutein/zeaxanthin to the original AREDS formula. The participants received a telephone call every 6 months for five years and were asked if they had been newly diagnosed with lung cancer or late AMD.

**Key findings:** A total of 3882 participants (6351 eyes) were included in this follow-up study. After 10 years, the risk of having lung cancer almost doubled in participants assigned to beta-carotene compared to lutein/zeaxanthin. The risk of progression to late AMD was less with lutein/zeaxanthin compared to without lutein/zeaxanthin. Lutein/zeaxanthin was an appropriate and safe replacement for beta-carotene in the AREDS2 formula, with no increased risk of developing lung cancer after 10 years.

**Reference:** Chew EY, Clemons TE, Agrón E, et al. Long-term Outcomes of Adding Lutein/Zeaxanthin and  $\omega$ -3 Fatty Acids to the AREDS Supplements on Age-Related Macular Degeneration Progression: AREDS2 Report 28. *JAMA Ophthalmol.* 2022;140(7):692-698.

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## Dual-focus soft contact lenses are effective for long-term myopia control

Prepared by Sharon Ho and Elisa Wang

**Clinical applications:** Dual-focus soft contact lenses (DFCL) such as MiSight 1 day can continue slowing the progression of myopia in children over 6 years. Children wearing single vision lenses should be switched to DFCLs for enhanced myopia control. Furthermore, prior treatment does not influence treatment efficacy, thus eliminating the speculation that longer treatment duration will result in faster progression and reduced efficacy compared with a newly treated age-matched population.

**Summary:** This clinical trial evaluated the effectiveness of DFCLs in sustaining slowed myopia progression over a 6-year period. In Part 1, children aged 8 to 12 years were randomly fitted with either DFCL treatment lenses or single vision control lenses (SCL) for a duration of 3 years. In Part 2, subjects were invited to continue for 3 additional years during which all children were treated with DFCLs. Cycloplegic spherical equivalent refractive errors and axial lengths were monitored.

**Key findings:** Children in SCL progressed significantly faster than those in DFCL in the first 3 years. Nevertheless, when the children wearing SCL were switched to DFCLs, their rate of progression slowed to match those in the DFCL group.

**Reference:** Chamberlain P, Bradley A, Arumugam B, et al. Long-term Effect of Dual-focus Contact Lenses on Myopia Progression in Children: A 6-year Multicenter Clinical Trial. *Optom Vis Sci.* 2022 Mar 1;99(3):204-212.

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## Intense pulsed light is useful for treating dry eye disease

Prepared by Elisa Wang and Sharon Ho

**Clinical applications:** Intense pulse light (IPL) is a promising safe treatment for patients with moderate to severe dry eye disease. Clinicians can recommend a combination of both IPL and meibomian gland expression to patients who suffer from dry eye symptoms to help improve signs of dry eyes.

**Summary:** This clinical trial compared the effectiveness of two different treatments for dry eye disease. Patients with moderate to severe meibomian gland dysfunction were randomised into two study groups: 1) Treatment group underwent IPL and meibomian gland expressions (4 sessions, 2-week intervals) or 2) Control group underwent sham treatment (did not receive any light signals) and meibomian gland expressions (4 sessions, 2-week intervals).

**Key findings:** Tear break up time increased significantly in the treatment group compared to the control group. Other improvements found in the treatment group included meibomian gland score, eye dryness score, number of glands expressed in both the upper and lower eyelids, quality of meibum, and level of discomfort from meibomian gland expression.

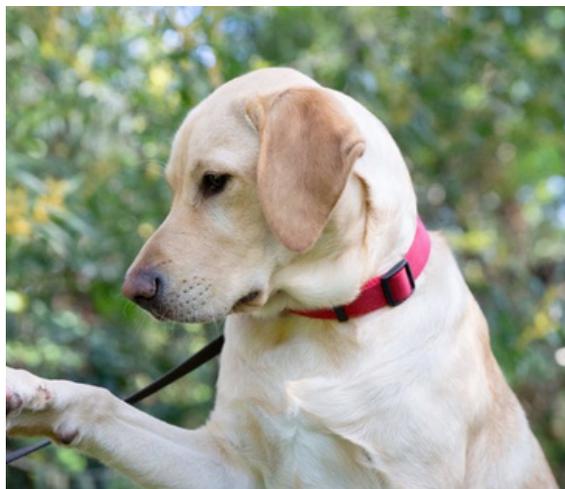
**Reference:** Toyos R, Desai ER, Toyos M, et al. Intense pulsed light improves signs and symptoms of dry eye disease due to meibomian gland dysfunction: A randomized controlled study. PLoS ONE. 2022; 17(6): e0270268

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Thank you for taking the time to read the CFEH Spring 2022 ATLAS Literature Review.

We appreciate any feedback you may have about our educational resources, particularly the CFEH Atlas. This resource will undergo continuous review and improvement and more cases will be added over time. If you have any feedback or suggestions, we would love to hear them! Please send us an email: [education@cfeh.com.au](mailto:education@cfeh.com.au).



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