# The effect of cataract surgery on patients receiving injections for wet AMD

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## Purpose

To investigate the effect of cataract surgery (phacoemulsification) on progression of wet AMD in patients receiving intravitreal anti-VEGF injections (IVI).

## Introduction

AMD and cataracts are the commonest causes of vision loss in the UK. As more patients are treated for wet AMD with IVI, an increasing number will require concurrent cataract surgery to improve vision or allow fundal view. However, concerns remain that surgery might cause progression and some units in the UK do not list patients for phacoemulsification surgery during a course of IVI.

## Methods

A retrospective review of all patients receiving injections for wet AMD who had phacoemulsification surgery between July 2014 and March 2019 with 6 month follow-up data were included (193 eyes). Visual acuity (VA), the number of anti-VEGF injections, and optical coherence tomography (OCT) features were compared before and 6 months after surgery.. For statistical analysis two-tailed t-tests were used, using GraphPad Prism version 5.0 (GraphPad, San Diego, USA).

## Results

The mean age was 86 years. VA significantly improved immediately (mean 26 days, 0.97 vs 0.70 logMAR, p<0.001) and at 6 months (0.97 vs 0.70 logMAR, p<0.001) post-operatively in all patients, but slightly more so in those who had received more than one year of injections (mean difference 0.17 logMAR) compared to those who had received less than one year of injections (mean difference 0.32 logMAR). Patients receiving injections for less than one year, received more injections after the operation (n=54, 5 more, p<0.001) than previously but those who had had more than one year of treatment, received fewer injections (7 less, p<0.001), likely reflecting the local treat and extend regime. The mean OCT central retinal thickness was greater post-operatively (n=180, 9.5µm, p=0.009). This was not significant in those receiving injections for less than one year (n=53, p=0.94) but was significant in those receiving injections for more than one year (n=124, 12.5 µm, p=0.008). Other complications including raised IOP (n=3), corneal oedema (n=1) and vitreous haemorrhage (n=1).

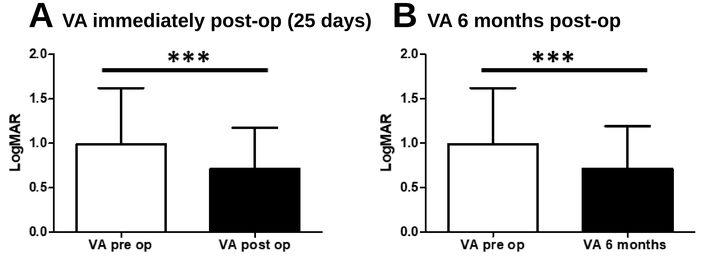



**Figure 1.** VA improved immediately (panel A, mean 26 days, 0.97 vs 0.70 logMAR, p<0.001) and at 6 months (panel B 0.97 vs 0.70 logMAR, p<0.001) post-operatively in all patients, but slightly more so in those who had received more than one year of injections(data not shown).

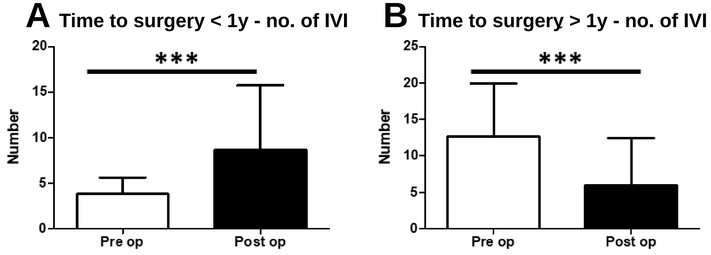



**Figure 2.** The number of IVI received post-operatively reflects the treat and extend regime. Patients receiving injections for less than one year, received more injections after the operation (n=54, 5 more, p<0.001) than previously but those who had had more than one year of treatment, received fewer injections (7 less, p<0.001).

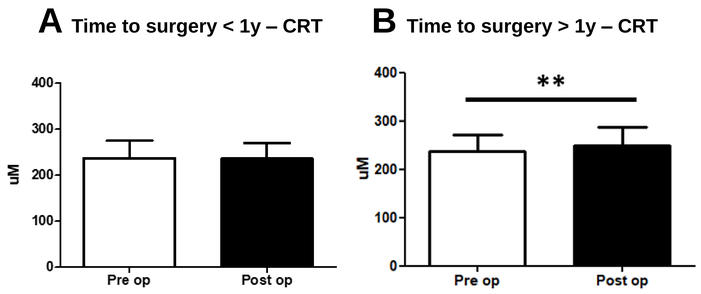



**Figure 3.** The mean OCT central retinal thickness (CRT) was greater post-operatively (data not shown, n=180, 9.5µm, p=0.009). This was not significant in those receiving injections for less than one year (panel A - n=53, p=0.94) but was significant in those receiving injections for more than one year (panel B - n=124, 12.5 µm, p=0.008).

## Discussion

There are limitations to this study as it is retrospective, not mechanistic, there is no control group, and does not address patient satisfaction. However, it is one of the largest study in the literature and has a medium term follow-up. It reflects other studies which show an increase in macula fluid post-operatively (Grixti 2014, Lee 2014, Saraf 2015, Rappoport 2017, Daien 2018,).

## Conclusion

Cataract surgery during a course of IVI leads to an improvement in visual acuity. However, thickening of the retina post-operatively needs to be further evaluated as this may be due to macula oedema, reactivation, subretinal fibrosis or poor responders.