

## BRIEF COMMUNICATION



# Outcomes of weekend surgery for acute retinal detachment

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The timing of rhegmatogenous retinal detachment (RRD) surgery, especially macula-involving cases, in the UK is controversial. Urgency of operation is traditionally dependent on macular attachment. Macula sparing RRD is often regarded as more urgent and operated on within 24 h, whilst macula involving RRD generally scheduled for surgery within 1 week or longer [1].

With increasing evidence [2, 3] regarding the importance of surgical timing and an improved understanding of the effect of macular off duration on outcome, a regional weekend vitreoretinal (VR) service was set up between two neighbouring VR units covering a total population of over 2 million.

We retrospectively reviewed all patients with acute RRD that were operated over the weekend between January 2018 and December 2019 as part of regional VR on-call service covering two units (Newcastle Eye Centre and Sunderland Eye Infirmary) in Northern England. The on-call was designed to treat acute progressive foveal sparing RRD that would likely progress to the fovea over the weekend [4], and recent fovea-involving RRD. For this analysis, eyes with previous RRD surgery were excluded. Baseline characteristics including macula status, best corrected visual acuity (BCVA) at baseline and final follow-up, anatomical outcome and operative complications were recorded. The regression formula derived from Yorston et al. [5] was used to calculate a predicted visual acuity outcome for the macular involving cases based on their weekend date of surgery. This was compared to the predicted outcome if their surgery had taken place on Monday, and the actual visual outcome observed.

90 eyes (90 patients) were included, equating to an average of approximately one eligible case per weekend. 26 (28.9%) were female with median age of 60 (Interquartile range (IQR) 13). Median follow-up duration was 6 months with a minimum of 2 months. 35 eyes (38.9%) were macula involving and 61 (67.8%) phakic. The majority (97.8%) underwent vitrectomy, one was treated with scleral buckling and one with pneumatic retinopexy. Overall, 83 eyes (92.2%) achieved primary anatomical success. Subgroup analysis is shown in Table 1.

There were no intraoperative complications. 44 eyes (72% of phakic eyes) developed visually significant cataract requiring surgery.

Using the probability calculator [5] as shown in Table 2, 74.4% of the macula involving eyes overall were predicted to achieve a post-operative BCVA of 0.3 logMAR (6/12) or better based on their actual timing of surgery; this was significantly different from the 66.7% predicted if they had been operated upon on the following Monday ( $p < 0.001$ ). In reality 24 of our 31 eyes with primary

attachment (77.4%) achieved 0.3 logMAR or better, reflecting the predicted weekend results closely ( $\chi^2 = 0.088$ ,  $p = 0.767$ ). Although our study is limited with a relatively small sample size, our findings suggest that this regional weekend service improved the probability of our macula involving RRD patients in achieving driving vision or better.

In summary, the service was safe and effective, with favourable RRD surgical outcomes. The results suggest a higher probability of visual recovery due to earlier surgical intervention. We demonstrate a potential collaborative model that could be implemented between adjacent units to improve outcomes.

**Table 1.** Subgroup analysis based on macula status.

	Macula on (n = 55)	Macula off (n = 35)
Age (median, IQR)	59 (14.5)	61 (11.5)
Female (n, %)	18 (32.7%)	8 (22.9%)
Myopia $\geq 6$ Dioptres (n, %)	16 (29.1%)	6 (17.1%)
BCVA preoperatively, logMAR (median, IQR)	0.2 (0.2)	0.9 (1.4)
Phakic	40 (72.7%)	21 (60.0%)
Visual field defect, days (median, IQR)	3 (5)	2 (4)
Central visual loss, days (median, IQR)	-	1 (1)
Vitreous haemorrhage present (n, %)	13 (23.6%)	2 (5.7%)
Extent of retinal detachment, clock hours (median, IQR)	4 (2)	5 (3)
PVR Grade C (n, %)	0	2 (5.7%)
Follow up, months (median, IQR)	5.5 (10.5)	6.0 (8.5)
BCVA at last follow up, logMAR (median, IQR)	0.2 (0.3)	0.3 (0.38)
Primary anatomical success (n, %)	52 (94.5%)	31 (88.6%)

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**Table 2.** Probability calculator with regression coefficient, showing an example of: 65-year-old pseudophakic man, with a 2-day history of loss of vision and pre-operative VA of 3/60, has an 85.4% chance of regaining VA of 6/12 or better if operated on less than 3 days compared to 76.2% chance if operated on 3–7 days.

Factor	Operated <3 days		Operated between 3–7 days		Coefficient
Age 70–79 (1 = yes, 0=no)	0	0	0	0	–0.331
Age 80 + (1=yes, 0=no)	0	0	0	0	–0.546
Female (1 = yes, 0=no)	0	0	0	0	–0.269
Pre-op VA 6/60-1/60 (1 = yes, 0=no)	1	–0.608	1	–0.608	–0.608
Pre-op VA < 1/60 (1 = yes, 0=no)	0	0	0	0	–0.902
Mac-off 3-7 days (1 = yes, 0=no)	0	0	1	–0.604	–0.604
Mac-off 8–31 days (1 = yes, 0=no)	0	0	0	0	–0.829
Mac-off >31 days (1 = yes, 0=no)	0	0	0	0	–1.684
Duration not recorded/unknown (1 = yes, 0=no)	0	0	0	0	–0.735
PVR grade C (1 = yes, 0=no)	0	0	0	0	–0.808
Total RD (1 = yes, 0=no)	0	0	0	0	–0.697
Any co-pathology (1 = yes, 0=no)	0	0	0	0	
Previous cataract surgery (1 = yes, 0=no)	1	0.713	1	0.713	0.713
Constant		1.664		1.664	
		1.769		1.165	
	–1.769	0.170503407	–1.165	0.311922662	
	probability of 6/12+ vision =	85.4%		76.2%	

#### DATA AVAILABILITY

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

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#### AUTHOR CONTRIBUTIONS

BLT collected, analysed, interpreted data and write up the manuscript. MAZ collected, analysed, interpreted data and revised manuscript. RJH and DHS analysed, interpreted data and revised manuscript critically with approval of the final version. VR Study Group revised manuscript with approval of the final version.

#### COMPETING INTERESTS

The authors declare no competing interests.

#### ADDITIONAL INFORMATION

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