

# Influence of posterior vitreous detachment on extendability of treat-and-extend anti-VEGF therapy in neovascular age-related macular degeneration

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## Background

Posterior vitreous detachment (PVD) may be associated stable visual acuity outcomes despite fewer retreatments in fixed as well as treat-and extend (T&E) regimens of anti-vascular endothelial growth factor (anti-VEGF) therapy in neovascular age-related macular degeneration (nAMD).

Our aim was to evaluate the influence of PVD on functional and morphologic outcomes in a large, prospective, multicenter, randomized trial (monthly vs. T&E). Additionally, we analyzed the impact of PVD on treatment extendability in the T&E study arm.

# Patients and Methods

Available data from patients enrolled in the Treat and extend (TREND) study were included into the analysis. Central retinal thickness (CRT) at all visits and PVD status at baseline and month 12 were graded by certified readers on spectral domain-optical coherence tomography images. Independent samples t-test was applied to evaluate the influence of PVD and CRT on bestcorrected visual acuity (BCVA) change from baseline to month 12. To compare treatment frequency between patients with and without PVD, Pearson Chi-Square test and Mann-Whitney U test were performed.

	PVD		no PVD	
	monthly	T&E	monthly	T&E
Number of patients	133 (50.4%)	147 (55.5%)	131 (49.6%)	118 (44.5%)
Complete adhesion	-	-	36 (27.5%)	51 (43.2%)
Vitreomacular adhesion	-	-	43 (32.8%)	25 (21.2%)
ONH adhesion	-	-	52 (39.7%)	42 (35.6%)
BCVA baseline, mean (SD)	57.02 (±14.24)	58.03 (±13.07)	61.63 (±12.41)	59.05 (±14.44)
BCVA change, mean (SD)	+8.99 (±13.23)	+6.02 (±13.81)	+9.45 (±12.02)	+7.54 (±15.39)
CRT baseline, mean (SD)	486.78 (±184)	493.34 (±166)	507.71 (±187)	508.89 (±203)
CRT change, mean (SD)	-173.52 (±132)	-175.09 (±155)	-172.88 (±166)	-163.76 (±147)
Total injections, Md (IQR)	_	8 [7; 11]	-	9 [7; 12]

**Table 1:** Morphologic and functional characteristics depeding on PVD status and study arm. Md=Median; IQR=interquartile ratio





Fig. 1: Graphs showing the mean change in BCVA (A) and CRT (B) from baseline to the end of the study depending on PVD status (PVD+ = posterior vitreous detachment; SE = standard error; PVD- = no posterior vitreous detachment.) For T&E patients, monthly BCVA values are derived by the following rule: for a given month, the nearest value within ±2 weeks was used. If there were 2 values within that period, the mean was used.



Fig. 2: Histogram of total injection numbers in T&E patients broken down by PVD status



PVD- monthly . . . .

### Results

Data of n=265 (T&E arm) and n=264 (monthly arm) patients were available for analysis. At baseline PVD was present in 55.5% and 50.4% of patients, respectively (Table 1). Of patients without PVD at baseline 29% developed PVD in the T&E regimen, 14% in the monthly regimen.

BCVA change from baseline to month 12 did not differ between patients with or without PVD at baseline in the T&E (+6.0 vs. +7.5 ETDRS letters, p=0.42) and monthly (+9.0 vs. +9.5 ETDRS letters, p=0.78) regimen (Figure 1A). Likewise, CRT did not differ between patients with and without PVD in the T&E (-175.1 vs. -163.8, p=0.58) and monthly (-173.5 vs. -172.9, p=0.98) regimen (Figure 1B). Further, within PVD groups there was no difference in BCVA and CRT changes between treatment regimens.

However, patients with PVD required statistically significantly fewer injections (median 8 vs. median 9 injections p=0.035). Further, a higher proportion of patients with PVD was successfully extended (defined as reaching and maintaining at least an 8-week interval between injections) compared to patients without PVD (43.8% vs. 33.0%, p=0.079) (Figure 2).

# Conclusion

In a T&E regimen of anti-VEGF therapy in nAMD, patients with PVD at baseline receive fewer injections compared to patients without PVD, with similar functional gains and changes in CRT. This study, conducted on the basis of a large prospective, multicenter trial, confirms that PVD represents a relevant factor in the management of nAMD patients.

**Financial disclosures:** Waldstein: C(Bayer Healthcare AG; Novartis Pharma AG); F (Genentech) Gerendas: C (Roche) Schmidt-Erfurth: C (Boehringer Ingelheim GmbH; Novartis Pharma AG, Roche AG) all other authors: N

#### Acknowledgements

Financially supported by the Austrian Federal Ministry of Science, Research and Economy and the National Foundation of Research, Technology and Development

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