

One-Month Changes in Choroidal Vascularity Index of Medium Vessel Layer in Children with Myopia Wearing Orthokeratology Lenses: A Predictor for One-Year Changes in Axial Length

Author's list:

Junmeng Li¹, Bei Rong¹, Lei Zhu^{2,3}, Ruilin Zhu¹, Xin Rong¹, Yuwei Wang¹, Yadi Zhang¹, Xiaopeng Gu¹, Shuang Zeng^{2,3}, Yanye Lu², and Liu Yang¹

Author affiliations

¹Department of Ophthalmology, Peking University First Hospital, No. 8 Xi Shi Ku Street, Xicheng District, Beijing, 100034, China.

²Institute of Medical Technology, Peking University Health Science Center, Peking University, No. 38 Xueyuan Road, Haidian District, Beijing, 100191, China.

³Department of Biomedical Engineering, College of Future Technology, Peking University, No.5 Yiheyuan Road, Haidian District, Beijing, 100871, China.

Corresponding Author

Liu Yang, Department of Ophthalmology, Peking University First Hospital, No. 8 Xi Shi Ku Street, Xicheng District, Beijing, 100034, China;

liu_yang@bjmu.edu.cn

Supplementary Materials

Table S1. List of abbreviations in manuscript and supplementary materials.

Table S2. Differences Between Baseline and One-Month Ocular Biometrics.

Table S3. Baseline and 1-month Changes in CVV of The Cohort.

Table S4. Baseline and 1-month Changes in CSV of The Cohort.

Table S5. Baseline and 1-month Changes in CV of The Cohort.

Table S6. Correlation of CVI at baseline and one-month changes with one-year AL elongation.

Table S7. Multiple linear regression analysis.

Table S8. Differences in AUC values between different models.

Figure S1. Nomogram for predicting slow or fast AL progression of myopic children with one-year Ortho-K treatment.

Table S9. Correlation of CVV at baseline and one-month changes with one-year AL elongation.

Table S10. Correlation of CSV at baseline and one-month changes with one-year AL elongation.

Table S11. Correlation of CV at baseline and one-month changes with one-year AL elongation.

Table S1. List of abbreviations in manuscript and supplementary materials

Abbreviation	Term
CVI	choroidal vascularity index
Ortho-K	orthokeratology
AL	axial length
ETDRS	early treatment of diabetic retinopathy study
CVV	choroidal vascular volume
CSV	choroidal stromal volume
CV	choroidal volume
TCL	total choroidal layer
LVCL	large-vessel choroidal layer
MVCL	medium-vessel choroidal layer
AUC	area under the curve
SER	spherical equivalent refraction
CCT	central corneal thickness
ACD	Anterior Chamber Depth
CT	choroidal thickness
IOP	intraocular pressure
OCT	optical coherence tomography
SD-OCT	spectral domain OCT
EDI	enhanced depth imaging
S13	superior inner ring
I13	inferior inner ring
T13	temporal inner ring
N13	nasal inner ring
S36	superior outer ring
T36	temporal outer ring
I36	inferior outer ring
N36	nasal outer ring
ROC	receiver operating characteristic

Table S2. Differences Between Baseline and One-Month Ocular Biometrics.

	Paired Difference					t	df	P value
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
IOP - IOP Changes	0.945313	2.068659	0.129291	0.690698	1.199927	7.311	256	<0.001
CCT - CCT Changes	6.256809	7.882697	0.491709	5.288499	7.225119	12.725	256	<0.001
K1 - K1 Changes	2.03828794	0.86427319	0.05391188	1.93212068	2.14445520	37.808	256	<0.001
K2 - K2 Changes	2.29439689	0.99387368	0.06199614	2.17230951	2.41648426	37.009	256	<0.001
Average K - Average K Changes	2.16634241	0.88180127	0.05500525	2.05802201	2.27466282	39.384	256	<0.001

Abbreviations: IOP, intraocular pressure; CCT, central corneal thickness.

Table S3. Baseline and 1-month Changes in CVV of The Cohort.

	Baseline CVV (mm ³)			P value ^a	1-month CVV Changes (mm ³)				P value ^c
	Total (n =257)	Slow Progression ≤ 0.20 mm (n = 124)	Fast Progression >0.20 mm (n = 133)		Total (n =257)	Slow Progression ≤ 0.20 mm (n = 124)	Fast Progression >0.20 mm (n = 133)	P value ^b	
TCL_C	0.04873±0.01118	0.04892±0.01033	0.04856±0.01196	0.796	- 0.00012±0.00745	0.00092±0.00728	- 0.00109±0.00750	0.030	0.792
TCL_S13	0.09847±0.02036	0.09805±0.01857	0.09886±0.02197	0.752	0.00144±0.01209	0.00328±0.01146	- 0.00028±0.01245	0.018	0.058
TCL_I13	0.10219±0.02052	0.10253±0.02056	0.10187±0.02055	0.797	0.00072±0.01168	0.00284±0.01118	- 0.00126±0.01183	0.005	0.323

TCL_T13	0.10165±0.01844	0.10003±0.01699	0.10315±0.01964	0.176	- 0.00010±0.01209	0.00232±0.01094	- 0.00235±0.01271	0.002	0.895
TCL_N13	0.08565±0.01883	0.08538±0.01722	0.08590±0.02028	0.828	0.00076±0.00941	0.00185±0.00823	- 0.00026±0.01032	0.069	0.197
TCL_S36	0.34011±0.06262	0.34010±0.06286	0.34011±0.06264	0.998	0.01102±0.03615	0.01397±0.03647	0.00826±0.03577	0.206	<0.001
TCL_I36	0.34011±0.06254	0.33889±0.06307	0.34124±0.06227	0.764	0.01151±0.03110	0.01945±0.02923	0.00410±0.03107	<0.001	<0.001
TCL_T36	0.35101±0.05718	0.35019±0.05605	0.35178±0.05841	0.825	0.01240±0.03877	0.01597±0.04083	0.00907±0.03659	0.154	<0.001
TCL_N36	0.24823±0.05157	0.24696±0.04854	0.24941±0.05440	0.705	0.00281±0.02312	0.00779±0.02305	- 0.00184±0.02229	0.001	0.053
LVCL_C	0.03659±0.01052	0.03678±0.00993	0.03641±0.01107	0.778	0.00040±0.00712	0.00170±0.00693	- 0.00082±0.00711	0.004	0.372
LVCL_S13	0.07264±0.01847	0.07250±0.01769	0.07277±0.01924	0.906	0.00204±0.01174	0.00394±0.01116	0.00028±0.01204	0.012	0.006
LVCL_I13	0.07475±0.01760	0.07501±0.01815	0.07451±0.01714	0.820	0.00143±0.01070	0.00349±0.01048	- 0.00049±0.01059	0.003	0.033
LVCL_T13	0.07439±0.01663	0.07276±0.01560	0.07591±0.01745	0.129	0.00077±0.01111	0.00312±0.01017	- 0.00142±0.01154	0.001	0.269
LVCL_N13	0.06321±0.01671	0.06291±0.01575	0.06348±0.01762	0.786	0.00107±0.00850	0.00221±0.00770	0.00000±0.00908	0.037	0.045
LVCL_S36	0.25472±0.05707	0.25613±0.05864	0.25340±0.05576	0.702	0.01156±0.03292	0.01437±0.03355	0.00894±0.03222	0.187	<0.001
LVCL_I36	0.25137±0.05611	0.25113±0.05741	0.25160±0.05509	0.947	0.01243±0.02808	0.01949±0.02730	0.00585±0.02729	<0.001	<0.001
LVCL_T36	0.26014±0.05090	0.26061±0.05007	0.25970±0.05186	0.886	0.01296±0.03537	0.01656±0.03676	0.00961±0.03382	0.116	<0.001
LVCL_N36	0.17471±0.04239	0.17389±0.04016	0.17547±0.04450	0.766	0.00291±0.01971	0.00693±0.01942	- 0.00084±0.01930	0.001	0.019
MVCL_C	0.01214±0.00249	0.01214±0.00220	0.01215±0.00274	0.975	- 0.00052±0.00188	-0.00078±0.00204	- 0.00028±0.00169	0.033	<0.001

MVCL_S13	0.02583±0.00498	0.02555±0.00481	0.02609±0.00514	0.391	- 0.00061±0.00264	-0.00066±0.00275	- 0.00055±0.00254	0.744	<0.001
MVCL_I13	0.02743±0.00564	0.02752±0.00518	0.02736±0.00606	0.821	- 0.00071±0.00289	-0.00064±0.00295	- 0.00077±0.00285	0.733	<0.001
MVCL_T13	0.02726±0.00456	0.02728±0.00433	0.02724±0.00478	0.947	- 0.00087±0.00304	-0.00080±0.00322	- 0.00093±0.00288	0.748	<0.001
MVCL_N13	0.02244±0.00446	0.02247±0.00434	0.02242±0.00458	0.922	- 0.00031±0.00294	-0.00036±0.00303	- 0.00027±0.00286	0.802	0.092
MVCL_S36	0.08539±0.01454	0.08397±0.01422	0.08671±0.01477	0.132	- 0.00055±0.00692	-0.00040±0.00699	- 0.00068±0.00688	0.742	0.208
MVCL_I36	0.08874±0.01484	0.08776±0.01404	0.08964±0.01556	0.311	- 0.00093±0.00777	-0.00004±0.00788	- 0.00175±0.00760	0.079	0.057
MVCL_T36	0.09087±0.01266	0.08958±0.01226	0.09208±0.01294	0.114	- 0.00056±0.00822	-0.00058±0.00868	- 0.00054±0.00781	0.965	0.275
MVCL_N36	0.07351±0.01331	0.07307±0.01348	0.07393±0.01318	0.602	- 0.00011±0.00592	0.00085±0.00639	- 0.00100±0.00532	0.012	0.774

The nine subfields in ETDRS grid include central [C], superior inner ring [S13], inferior inner ring [I13], temporal inner ring [T13], nasal inner ring [N13], superior outer ring [S36], temporal outer ring [T36], inferior outer ring [I36], and nasal outer ring [N36].

^a *P* value: Comparison of differences in baseline CVV between slow and fast progression groups

^b *P* value: Comparison of differences in 1-month changes of CVV between slow and fast progression groups

^c *P* value: Comparison of differences between baseline CVV and 1-month CVV

Bold font indicates statistical significance

Abbreviations: CVV, Choroidal Vascular Volume; TCL, Total Choroidal Layer; LVCL, Large-Vessel Choroidal Layer; MVCL, Medium-Vessel Choroidal Layer.

Table S4. Baseline and 1-month Changes in CSV of The Cohort.

	Baseline CSV (mm ³)				1-month CSV Changes (mm ³)				<i>P</i> value ^c
	Total (n=257)	Slow Progression ≤ 0.20 mm (n = 124)	Fast Progression >0.20 mm (n = 133)	<i>P</i> value ^a	Total (n=257)	Slow Progression ≤ 0.20 mm (n = 124)	Fast Progression >0.20 mm (n = 133)	<i>P</i> value ^b	
TCL_C	0.13481±0.02706	0.13517±0.02673	0.13448±0.02746	0.839	0.00381±0.01220	0.00732±0.01283	0.00054±0.01063	<0.001	<0.001
TCL_S13	0.26601±0.05577	0.26493±0.05124	0.26702±0.05987	0.763	0.00924±0.02544	0.01538±0.02659	0.00352±0.02299	<0.001	<0.001
TCL_I13	0.27377±0.05383	0.27578±0.05444	0.27190±0.05339	0.564	0.00828±0.02384	0.01509±0.02480	0.00193±0.02108	<0.001	<0.001
TCL_T13	0.27234±0.04885	0.27389±0.04717	0.27090±0.05050	0.625	0.00993±0.02441	0.01619±0.02659	0.00409±0.02064	<0.001	<0.001
TCL_N13	0.24984±0.05455	0.25271±0.05403	0.24717±0.05510	0.417	0.00644±0.02031	0.01359±0.02200	- 0.00023±0.01600	<0.001	<0.001
TCL_S36	0.84955±0.15702	0.85244±0.14907	0.84685±0.16461	0.776	0.03928±0.09091	0.05636±0.09168	0.02336±0.08756	0.003	<0.001
TCL_I36	0.85596±0.14746	0.86531±0.15605	0.84724±0.13899	0.327	0.04547±0.07362	0.06890±0.07912	0.02362±0.06067	<0.001	<0.001
TCL_T36	0.88809±0.15792	0.89288±0.15703	0.88362±0.15921	0.639	0.05719±0.09460	0.07925±0.09778	0.03661±0.08695	<0.001	<0.001
TCL_N36	0.72057±0.17198	0.73221±0.16727	0.70970±0.17620	0.295	0.02067±0.06452	0.03960±0.07423	0.00301±0.04784	<0.001	<0.001
LVCL_C	0.03659±0.01052	0.03678±0.00993	0.03641±0.01107	0.778	0.00288±0.01060	0.00619±0.01083	- 0.00021±0.00941	<0.001	<0.001
LVCL_S13	0.07264±0.01847	0.07250±0.01769	0.07277±0.01924	0.906	0.00677±0.02195	0.01171±0.02267	0.00216±0.02028	<0.001	<0.001
LVCL_I13	0.07475±0.01760	0.07501±0.01815	0.07451±0.01714	0.820	0.00652±0.01954	0.01231±0.02028	0.00112±0.01722	<0.001	<0.001
LVCL_T13	0.07439±0.01663	0.07276±0.01560	0.07591±0.01745	0.129	0.00776±0.02051	0.01297±0.02233	0.00290±0.01737	<0.001	<0.001
LVCL_N13	0.06321±0.01671	0.06291±0.01575	0.06348±0.01762	0.786	0.00488±0.01632	0.01074±0.01755	- 0.00059±0.01293	<0.001	<0.001
LVCL_S36	0.25472±0.05707	0.25613±0.05864	0.25340±0.05576	0.702	0.03193±0.07488	0.04313±0.07435	0.02150±0.07413	<0.001	<0.001
LVCL_I36	0.25137±0.05611	0.25113±0.05741	0.25160±0.05509	0.947	0.03892±0.06258	0.05714±0.06855	0.02194±0.05114	<0.001	<0.001

LVCL_T36	0.26014±0.05090	0.26061±0.05007	0.25970±0.05186	0.886	0.04956±0.07739	0.06597±0.08015	0.03425±0.07169	<0.001	<0.001
LVCL_N36	0.17471±0.04239	0.17389±0.04016	0.17547±0.04450	0.766	0.01575±0.05072	0.02937±0.05774	0.00304±0.03931	<0.001	<0.001
MVCL_C	0.01214±0.00249	0.01214±0.00220	0.01215±0.00274	0.975	0.00093±0.00428	0.00112±0.00479	0.00075±0.00375	0.492	<0.001
MVCL_S13	0.02583±0.00498	0.02555±0.00481	0.02609±0.00514	0.391	0.00247±0.00658	0.00367±0.00717	0.00136±0.00578	0.005	<0.001
MVCL_I13	0.02743±0.00564	0.02752±0.00518	0.02736±0.00606	0.821	0.00176±0.00690	0.00278±0.00705	0.00081±0.00663	0.021	<0.001
MVCL_T13	0.02726±0.00456	0.02728±0.00433	0.02724±0.00478	0.947	0.00217±0.00664	0.00322±0.00687	0.00119±0.00629	0.014	<0.001
MVCL_N13	0.02244±0.00446	0.02247±0.00434	0.02242±0.00458	0.922	0.00156±0.00694	0.00285±0.00754	0.00036±0.00613	0.004	<0.001
MVCL_S36	0.08539±0.01454	0.08397±0.01422	0.08671±0.01477	0.132	0.00735±0.02113	0.01324±0.02206	0.00186±0.01868	<0.001	<0.001
MVCL_I36	0.08874±0.01484	0.08776±0.01404	0.08964±0.01556	0.311	0.00654±0.01999	0.01176±0.02009	0.00168±0.01870	<0.001	<0.001
MVCL_T36	0.09087±0.01266	0.08958±0.01226	0.09208±0.01294	0.114	0.00763±0.02445	0.01328±0.02531	0.00236±0.02248	<0.001	<0.001
MVCL_N36	0.07351±0.01331	0.07307±0.01348	0.07393±0.01318	0.602	0.00492±0.01828	0.01023±0.02039	- 0.00003±0.01447	<0.001	<0.001

The nine subfields in ETDRS grid include central [C], superior inner ring [S13], inferior inner ring [I13], temporal inner ring [T13], nasal inner ring [N13], superior outer ring [S36], temporal outer ring [T36], inferior outer ring [I36], and nasal outer ring [N36].

^a *P* value: Comparison of differences in baseline CSV between slow and fast progression groups

^b *P* value: Comparison of differences in 1-month changes of CSV between slow and fast progression groups

^c *P* value: Comparison of differences between baseline CSV and 1-month CSV

Bold font indicates statistical significance

Abbreviations: CSV, Choroidal Stromal Volume; TCL, Total Choroidal Layer; LVCL, Large-Vessel Choroidal Layer; MVCL, Medium-Vessel Choroidal Layer.

Table S5. Baseline and 1-month Changes in CV of The Cohort.

	Baseline CV (mm ³)				1-month CV Changes (mm ³)				<i>P</i> value ^c
	Total (n =257)	Slow Progression ≤ 0.20 mm (n = 124)	Fast Progression >0.20 mm (n = 133)	<i>P</i> value ^a	Total (n =257)	Slow Progression ≤ 0.20 mm (n = 124)	Fast Progression >0.20 mm (n = 133)	<i>P</i> value ^b	

TCL_C	0.18354±0.03433	0.18409±0.03279	0.18304±0.03583	0.807	0.00369±0.01362	0.00823±0.01409	- 0.00055±0.01171	<0.001	<0.001
TCL_S13	0.36448±0.07132	0.36298±0.06490	0.36588±0.07704	0.744	0.01068±0.02871	0.01866±0.02942	0.00324±0.02600	<0.001	<0.001
TCL_I13	0.37596±0.06906	0.37831±0.06957	0.37377±0.06877	0.599	0.00900±0.02723	0.01793±0.02755	0.00068±0.02420	<0.001	<0.001
TCL_T13	0.37399±0.06272	0.37392±0.05895	0.37405±0.06626	0.987	0.00983±0.02881	0.01851±0.02891	0.00174±0.02634	<0.001	<0.001
TCL_N13	0.33549±0.06891	0.33809±0.06630	0.33306±0.07143	0.560	0.00720±0.02325	0.01545±0.02404	- 0.00049±0.01966	<0.001	<0.001
TCL_S36	1.18965±0.21000	1.19254±0.20219	1.18696±0.21776	0.832	0.05030±0.11556	0.07034±0.11615	0.03162±0.11225	0.007	<0.001
TCL_I36	1.19607±0.19957	1.20420±0.20725	1.18848±0.19260	0.529	0.05697±0.09148	0.08835±0.09693	0.02772±0.07542	<0.001	<0.001
TCL_T36	1.23910±0.20539	1.24308±0.20230	1.23540±0.20892	0.765	0.06958±0.12317	0.09523±0.12798	0.04568±0.11388	<0.001	<0.001
TCL_N36	0.96879±0.21415	0.97917±0.20662	0.95911±0.22129	0.454	0.02347±0.07654	0.04739±0.08664	0.00117±0.05768	<0.001	<0.001
LVCL_C	0.13421±0.02755	0.13446±0.02618	0.13398±0.02887	0.891	0.00328±0.01218	0.00789±0.01197	- 0.00103±0.01075	<0.001	<0.001
LVCL_S13	0.26400±0.05638	0.26297±0.05148	0.26497±0.06077	0.776	0.00881±0.02497	0.01565±0.02561	0.00244±0.02265	<0.001	<0.001
LVCL_I13	0.27246±0.05436	0.27416±0.05534	0.27087±0.05359	0.629	0.00795±0.02311	0.01579±0.02348	0.00064±0.02026	<0.001	<0.001
LVCL_T13	0.26994±0.04989	0.26995±0.04693	0.26994±0.05268	0.998	0.00853±0.02495	0.01609±0.02478	0.00148±0.02305	<0.001	<0.001
LVCL_N13	0.24118±0.05169	0.24330±0.05008	0.23921±0.05326	0.527	0.00595±0.01945	0.01295±0.02044	- 0.00059±0.01597	<0.001	<0.001
LVCL_S36	0.85119±0.16576	0.85664±0.16256	0.84611±0.16914	0.612	0.04349±0.09849	0.05750±0.09806	0.03044±0.09744	0.027	<0.001
LVCL_I36	0.85254±0.15677	0.85869±0.16636	0.84681±0.14768	0.545	0.05135±0.08043	0.07664±0.08711	0.02778±0.06569	<0.001	<0.001
LVCL_T36	0.87922±0.16191	0.88544±0.16194	0.87343±0.16229	0.553	0.06252±0.10480	0.08253±0.10878	0.04386±0.09770	0.003	<0.001
LVCL_N36	0.67595±0.15385	0.68384±0.14841	0.66860±0.15896	0.429	0.01866±0.06082	0.03631±0.06828	0.00220±0.04757	<0.001	<0.001
MVCL_C	0.04933±0.00893	0.04963±0.00882	0.04906±0.00906	0.608	0.00041±0.00500	0.00034±0.00567	0.00047±0.00431	0.836	0.190
MVCL_S13	0.10048±0.01770	0.10002±0.01628	0.10091±0.01899	0.685	0.00187±0.00729	0.00301±0.00775	0.00080±0.00669	0.015	<0.001
MVCL_I13	0.10350±0.01714	0.10415±0.01692	0.10289±0.01738	0.558	0.00106±0.00759	0.00214±0.00776	0.00004±0.00730	0.026	0.027

MVCL_T13	0.10404±0.01571	0.10397±0.01494	0.10411±0.01644	0.943	0.00130±0.00785	0.00242±0.00822	0.00026±0.00738	0.027	0.008
MVCL_N13	0.09431±0.01921	0.09479±0.01824	0.09385±0.02013	0.696	0.00125±0.00805	0.00249±0.00862	0.00010±0.00732	0.017	0.013
MVCL_S36	0.33846±0.05162	0.33590±0.04655	0.34085±0.05601	0.444	0.00681±0.02269	0.01284±0.02287	0.00118±0.02110	<0.001	<0.001
MVCL_I36	0.34353±0.05062	0.34551±0.04871	0.34168±0.05245	0.545	0.00562±0.02254	0.01171±0.02291	- 0.00006±0.02071	<0.001	<0.001
MVCL_T36	0.35988±0.05080	0.35764±0.04755	0.36197±0.05375	0.496	0.00707±0.02847	0.01270±0.02936	0.00182±0.02667	0.002	<0.001
MVCL_N36	0.29284±0.06243	0.29534±0.06050	0.29051±0.06432	0.537	0.00481±0.02060	0.01108±0.02285	- 0.00103±0.01628	<0.001	<0.001

The nine subfields in ETDRS grid include central [C], superior inner ring [S13], inferior inner ring [I13], temporal inner ring [T13], nasal inner ring [N13], superior outer ring [S36], temporal outer ring [T36], inferior outer ring [I36], and nasal outer ring [N36].

^a *P* value: Comparison of differences in baseline CV between slow and fast progression groups

^b *P* value: Comparison of differences in 1-month changes of CV between slow and fast progression groups

^c *P* value: Comparison of differences between baseline CV and 1-month CV

Bold font indicates statistical significance

Abbreviations: CV, Choroidal Volume; TCL, Total Choroidal Layer; LVCL, Large-Vessel Choroidal Layer; MVCL, Medium-Vessel Choroidal Layer.

Table S6. Correlation of CVI at baseline and one-month changes with one-year AL elongation.

Baseline CVI										
TCL		TCL_C	TCL_S13	TCL_I13	TCL_T13	TCL_N13	TCL_S36	TCL_I36	TCL_T36	TCL_N36
	r value	0.038	-0.008	0.006	0.155	-0.005	0.038	0.105	0.045	0.086
	<i>P</i> value	0.545	0.898	0.925	0.013	0.941	0.546	0.094	0.470	0.169
LVCL		LVCL_C	LVCL_S13	LVCL_I13	LVCL_T13	LVCL_N13	LVCL_S36	LVCL_I36	LVCL_T36	LVCL_N36
	r value	0.029	-0.021	-0.020	0.121	-0.031	0.006	0.038	0.016	0.050
	<i>P</i> value	0.642	0.733	0.755	0.053	0.620	0.919	0.547	0.803	0.421
MVCL		MVCL_C	MVCL_S13	MVCL_I13	MVCL_T13	MVCL_N13	MVCL_S36	MVCL_I36	MVCL_T36	MVCL_N36

	r value	0.035	0.023	0.054	0.026	0.053	0.066	0.094	0.069	0.103
	P value	0.579	0.708	0.386	0.677	0.395	0.290	0.109	0.270	0.080
1-month CVI Changes										
TCL		TCL_C	TCL_S13	TCL_I13	TCL_T13	TCL_N13	TCL_S36	TCL_I36	TCL_T36	TCL_N36
	r value	0.013	0.059	0.014	0.047	0.109	0.121	0.003	0.165	0.033
	P value	0.831	0.345	0.820	0.453	0.081	0.053	0.965	0.008	0.600
LVCL		LVCL_C	LVCL_S13	LVCL_I13	LVCL_T13	LVCL_N13	LVCL_S36	LVCL_I36	LVCL_T36	LVCL_N36
	r value	-0.021	0.030	-0.013	-0.008	-0.019	0.070	-0.028	0.119	-0.103
	P value	0.735	0.637	0.836	0.897	0.765	0.265	0.650	0.058	0.100
MVCL		MVCL_C	MVCL_S13	MVCL_I13	MVCL_T13	MVCL_N13	MVCL_S36	MVCL_I36	MVCL_T36	MVCL_N36
	r value	0.255**	0.319**	0.348**	0.271**	0.289**	0.320**	0.246**	0.404**	0.240**
	P value	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

The nine subfields in ETDRS grid include central [C], superior inner ring [S13], inferior inner ring [I13], temporal inner ring [T13], nasal inner ring [N13], superior outer ring [S36], temporal outer ring [T36], inferior outer ring [I36], and nasal outer ring [N36].

** At the 0.01 level, the correlation is significant.

* At the 0.05 level, the correlation is significant.

Bold font indicates statistical significance

Abbreviations: CVI, Choroidal Vascularity Index; AL, axial length; TCL, Total Choroidal Layer; LVCL, Large-Vessel Choroidal Layer; MVCL, Medium-Vessel Choroidal Layer.

Table S7. Multiple linear regression analysis.

Coefficient Model	Unstandardized coefficient		Standardized coefficient	t	P	95.0% confidence interval of B		Collinearity statistics	
	B	Standard error	Beta			Lower	Upper	Tolerance	VIF

1	Constant	0.246	0.011		22.625	<0.001	0.225	0.268		
	MVCL_T36 Changes	3.374	0.450	0.425	7.505	<0.001	2.489	4.259	1.000	1.000
2	Constant	0.252	0.011		23.182	<0.001	0.231	0.274		
	MVCL_T36 Changes	2.830	0.476	0.357	5.946	<0.001	1.893	3.768	0.863	1.158
	MVCL_N13 Changes	1.150	0.372	0.185	3.088	0.002	0.417	1.883	0.863	1.158
3	Constant	0.311	0.099		3.158	0.002	0.117	0.505		
	MVCL_T36 Changes	2.671	0.444	0.337	6.018	<0.001	1.797	3.546	0.856	1.168
	MVCL_N13 Changes	1.082	0.348	0.174	3.109	0.002	0.397	1.767	0.853	1.172
	TCL_T13	0.848	0.303	0.146	2.797	0.006	0.251	1.445	0.986	1.014

The nine subfields in ETDRS grid include central [C], superior inner ring [S13], inferior inner ring [I13], temporal inner ring [T13], nasal inner ring [N13], superior outer ring [S36], temporal outer ring [T36], inferior outer ring [I36], and nasal outer ring [N36].

Abbreviations: MVCL, Medium-Vessel Choroidal Layer; TCL, Total Choroidal Layer; VIF, Variance Inflation Factor.

Table S8. Differences in AUC values between different models.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Model 1										
Model 2	0.008									
Model 3	0.175	0.133								
Model 4	<0.001	0.337	0.071							
Model 5	<0.001	<0.001	<0.001	<0.001						
Model 6	0.023	0.276	0.465	0.110	<0.001					
Model 7	<0.001	<0.001	<0.001	0.001	0.002	<0.001				
Model 8	0.005	0.487	0.026	0.759	<0.001	0.118	<0.001			

Model 9	<0.001	<0.001	<0.001	<0.001	0.513	<0.001	0.005	<0.001		
Model 10	<0.001	0.165	0.008	0.322	<0.001	0.013	0.001	0.227	<0.001	
Model 11	<0.001	<0.001	<0.001	<0.001	0.700	<0.001	0.001	<0.001	0.414	<0.001

Bold font indicates statistical significance

Figure S1. Nomogram for predicting slow or fast AL progression of myopic children with one-year Ortho-K treatment.

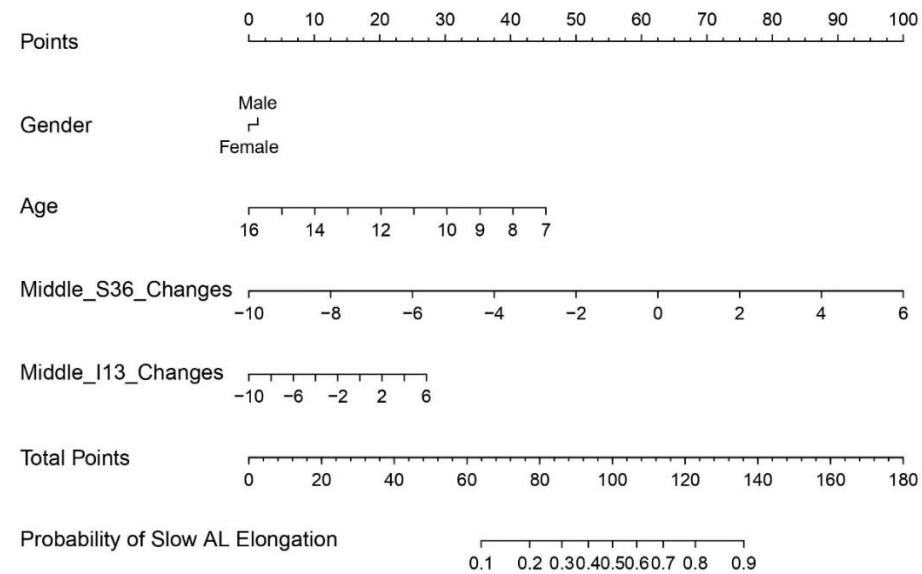


Table S9. Correlation of CVV at baseline and one-month changes with one-year AL elongation.

Baseline CVV									
	TCL_C	TCL_T13	TCL_N13	TCL_S13	TCL_I13	TCL_T36	TCL_N36	TCL_S36	TCL_I36
r value	-0.081	-0.098	-0.129	-0.026	-0.127	-0.085	-0.093	-0.124	-0.123
P value	0.195	0.119	0.039	0.673	0.042	0.174	0.139	0.047	0.049
	LVCL_C	LVCL_T13	LVCL_N13	LVCL_S13	LVCL_I13	LVCL_T36	LVCL_N36	LVCL_S36	LVCL_I36
r value	-0.058	-0.106	-0.137	-0.022	-0.111	-0.093	-0.093	-0.146	-0.124
P value	0.357	0.090	0.028	0.726	0.077	0.139	0.137	0.020	0.046
	MVCL_C	MVCL_T13	MVCL_N13	MVCL_S13	MVCL_I13	MVCL_T36	MVCL_N36	MVCL_S36	MVCL_I36
r value	-0.117	-0.054	-0.077	-0.066	-0.090	-0.001	-0.010	0.008	-0.050
P value	0.062	0.388	0.219	0.294	0.148	0.988	0.871	0.897	0.426
1-month CVV Changes									
	TCL_C	TCL_T13	TCL_N13	TCL_S13	TCL_I13	TCL_T36	TCL_N36	TCL_S36	TCL_I36
r value	-0.159	-0.152	-0.179	-0.213	-0.151	-0.137	-0.275	-0.100	-0.214
P value	0.011	0.015	0.004	0.001	0.015	0.028	<0.001	0.108	0.001
	LVCL_C	LVCL_T13	LVCL_N13	LVCL_S13	LVCL_I13	LVCL_T36	LVCL_N36	LVCL_S36	LVCL_I36
r value	-0.199	-0.153	-0.191	-0.204	-0.161	-0.131	-0.268	-0.087	-0.194
P value	0.001	0.014	0.002	0.001	0.010	0.036	<0.001	0.164	0.002
	MVCL_C	MVCL_T13	MVCL_N13	MVCL_S13	MVCL_I13	MVCL_T36	MVCL_N36	MVCL_S36	MVCL_I36
r value	0.130	0.009	0.008	-0.082	-0.029	-0.042	-0.171	-0.020	-0.204
P value	0.037	0.886	0.896	0.191	0.639	0.505	0.006	0.747	0.001

The nine subfields in ETDRS grid include central [C], superior inner ring [S13], inferior inner ring [I13], temporal inner ring [T13], nasal inner ring [N13], superior outer ring [S36], temporal outer ring [T36], inferior outer ring [I36], and nasal outer ring [N36].

Bold font indicates statistical significance

Abbreviations: CVV, Choroidal Vascular Volume; AL, Axial Length; TCL, Total Choroidal Layer; LVCL, Large-Vessel Choroidal Layer; MVCL, Medium-Vessel Choroidal

Layer.

Table S10. Correlation of CSV at baseline and one-month changes with one-year AL elongation.

Baseline CSV									
	TCL_C	TCL_T13	TCL_N13	TCL_S13	TCL_I13	TCL_T36	TCL_N36	TCL_S36	TCL_I36
r value	-0.119	-0.094	-0.135	-0.142	-0.128	-0.116	-0.177	-0.124	-0.181
P value	0.056	0.132	0.031	0.023	0.040	0.063	0.004	0.046	0.004
	LVCL_C	LVCL_T13	LVCL_N13	LVCL_S13	LVCL_I13	LVCL_T36	LVCL_N36	LVCL_S36	LVCL_I36
r value	-0.058	-0.106	-0.111	-0.022	-0.111	-0.093	-0.093	-0.114	-0.081
P value	0.357	0.090	0.076	0.726	0.077	0.139	0.137	0.068	0.195
	MVCL_C	MVCL_T13	MVCL_N13	MVCL_S13	MVCL_I13	MVCL_T36	MVCL_N36	MVCL_S36	MVCL_I36
r value	-0.117	-0.054	-0.077	-0.066	-0.090	-0.001	-0.010	0.008	-0.050
P value	0.062	0.388	0.219	0.294	0.148	0.988	0.871	0.897	0.426
1-month CSV Changes									
	TCL_C	TCL_T13	TCL_N13	TCL_S13	TCL_I13	TCL_T36	TCL_N36	TCL_S36	TCL_I36
r value	-0.292	-0.295	-0.283	-0.286	-0.362	-0.298	-0.285	-0.291	-0.321
P value	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	LVCL_C	LVCL_T13	LVCL_N13	LVCL_S13	LVCL_I13	LVCL_T36	LVCL_N36	LVCL_S36	LVCL_I36
r value	-0.311	-0.286	-0.288	-0.279	-0.363	-0.261	-0.265	-0.248	-0.306
P value	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	MVCL_C	MVCL_T13	MVCL_N13	MVCL_S13	MVCL_I13	MVCL_T36	MVCL_N36	MVCL_S36	MVCL_I36
r value	-0.120	-0.241	-0.163	-0.195	-0.200	-0.327	-0.267	-0.311	-0.305

	LVCL_C	LVCL_T13	LVCL_N13	LVCL_S13	LVCL_I13	LVCL_T36	LVCL_N36	LVCL_S36	LVCL_I36
r value	-0.387	-0.341	-0.336	-0.358	-0.375	-0.280	-0.322	-0.238	-0.324
P value	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	MVCL_C	MVCL_T13	MVCL_N13	MVCL_S13	MVCL_I13	MVCL_T36	MVCL_N36	MVCL_S36	MVCL_I36
r value	-0.060	-0.222	-0.149	-0.192	-0.193	-0.325	-0.296	-0.294	-0.333
P value	0.338	<0.001	0.017	0.002	0.002	<0.001	<0.001	<0.001	<0.001

The nine subfields in ETDRS grid include central [C], superior inner ring [S13], inferior inner ring [I13], temporal inner ring [T13], nasal inner ring [N13], superior outer ring [S36], temporal outer ring [T36], inferior outer ring [I36], and nasal outer ring [N36].

Bold font indicates statistical significance

Abbreviations: CV, Choroidal Volume; AL, Axial Length; TCL, Total Choroidal Layer; LVCL, Large-Vessel Choroidal Layer; MVCL, Medium-Vessel Choroidal Layer.