

Supplementary Material

S1. Flow streamlines started from left and right vertebral artery respectively

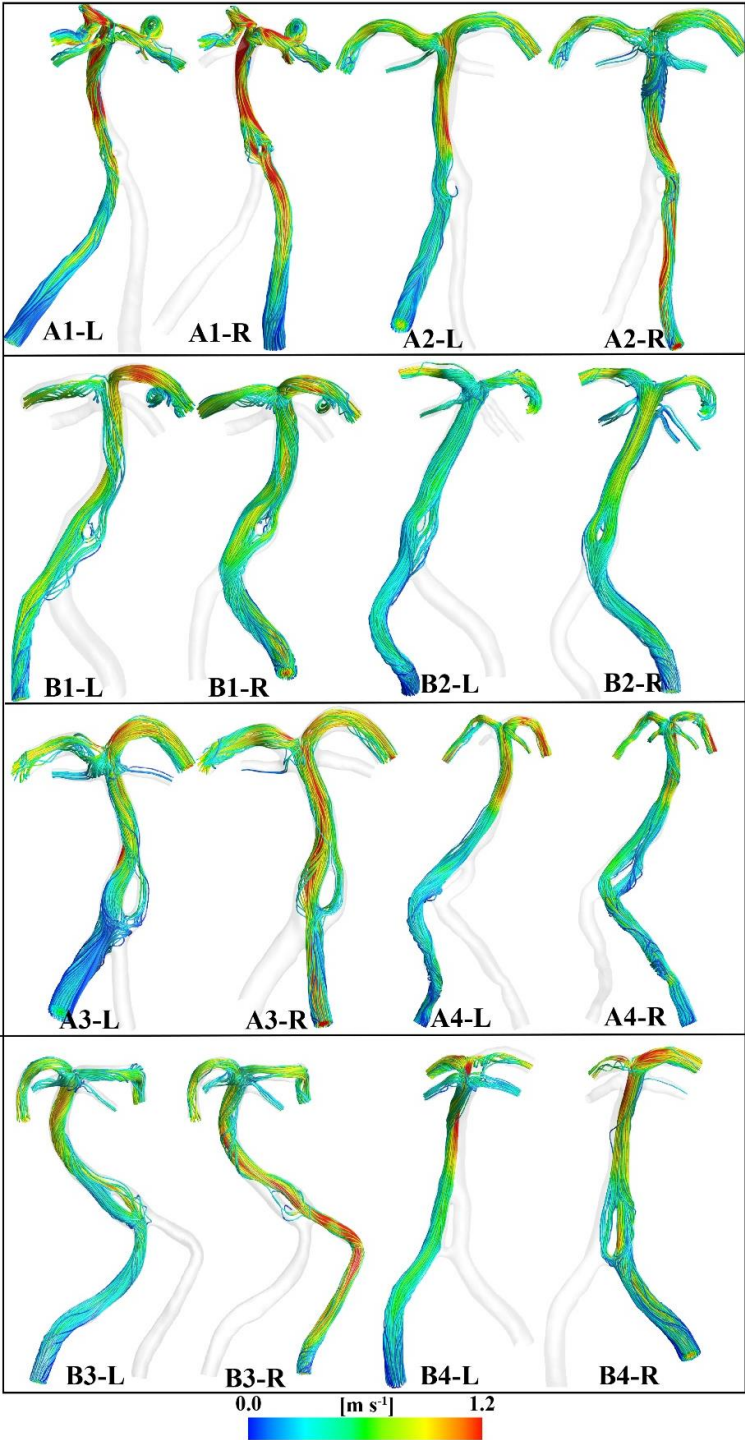


Figure S1. Flow streamlines started from the left and right VA respectively are displayed to clearly show the flow pattern and resources at the location of fenestration. The velocity legend is limited to 0-1.2 m/s to clearly show the flow pattern differences among cases.

S2. Model Segmentation

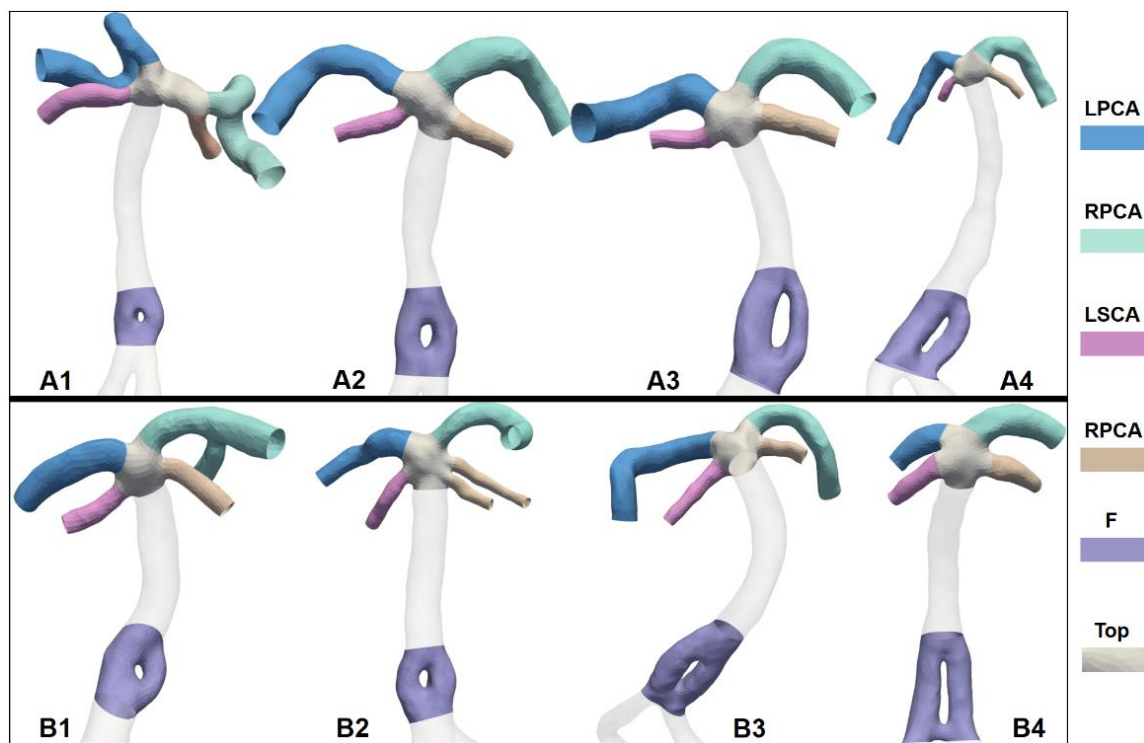


Figure S2. Six parts are extracted from each model for further quantitative analysis of hemodynamic indicators represented by different colors (PCA: posterior cerebral artery; SCA: superior cerebellar artery; L: left; R: right; F: fenestration; Top: surface area surrounded by the end of basilar artery to the beginning of PCAs and SCAs).

Table S1. Comparison of hemodynamic data on PCA and SCA locations.

Location	Parameters	A1	B1	A2	B2	A3	B3	A4	B4	
LPCA	TAWSS [Pa]	max	13.171	5.501	7.106	7.969	12.460	6.905	8.565	8.618
		mean	4.031	2.624	2.484	3.048	2.873	2.828	3.552	4.555
		ratio(0-2)	26.68%	19.44%	29.63%	17.08%	20.27%	13.04%	8.76%	1.22%
	OSI	max	0.387	0.299	0.326	0.173	0.198	0.336	0.302	0.204
		mean	0.023	0.021	0.026	0.013	0.018	0.010	0.013	0.015
		ratio(0.2-0.5)	0.3%	0	0.66%	0	0	0	0	0
	viscosity [#] [Pa·s]	max	11.117	6.632	9.181	6.099	7.084	7.495	7.551	5.255
		mean	4.225	4.465	4.69	4.259	4.342	4.305	4.056	3.825
		ratio(5-11)	20.20%	7.23%	18.74%	7.43%	10.52%	5.34%	3.83%	0.24%
RPCA	TAWSS [Pa]	max	10.702	7.843	6.776	6.717	9.728	5.600	12.081	11.409
		mean	2.880	2.977	3.340	2.865	3.781	3.034	4.622	4.579
		ratio(0-2)	26.68%	19.44%	29.63%	17.08%	20.27%	13.04%	8.76%	1.22%
	OSI	max	0.443	0.451	0.304	0.193	0.354	0.210	0.291	0.141
		mean	0.022	0.019	0.009	0.009	0.008	0.009	0.012	0.007
		ratio(0.2-0.5)	0.53%	1.55%	0	0	0	0	0	0
	Viscosity [#] [Pa·s]	max	7.313	10.014	6.39	6.557	5.892	6.038	7.601	6.48
		mean	4.428	4.515	4.068	4.355	3.978	4.184	3.771	3.806
		ratio(5-11)	15.73%	16.72%	2.83%	9.49%	3.09%	6.29%	2.23%	2.54%
LSCA	TAWSS [Pa]	max	16.532	3.282	6.177	5.059	4.470	5.732	12.876	4.827
		mean	3.519	1.528	2.710	2.979	2.581	2.566	6.254	2.550
		ratio(0-2)	23.69%	88.23%	23.06%	9.81%	12.11%	26.85%	8.89%	20.63%
	OSI	max	0.362	0.067	0.046	0.037	0.117	0.102	0.077	0.336
		mean	0.019	0.016	0.004	0.004	0.008	0.009	0.004	0.018
		ratio(0.2-0.5)	0.12%	0	0	0	0	0	0	0
	Viscosity [#] [Pa·s]	max	9.289	6.698	5.189	4.825	5.725	6.493	5.248	7.181
		mean	4.204	5.223	4.153	3.979	4.216	4.364	3.479	4.366
		ratio(5-11)	11.83	73.16	1.49	0	4.37	11.81	0	5.98
RSCA	WSS [Pa]	max	12.453	3.484	5.772	4.036	4.207	7.938	8.335	7.264
		mean	4.923	1.467	3.385	1.778	2.029	3.609	4.993	2.297
		ratio(0-2)	16.41	91.88	2.45	59.72	53.33	3.05	0	64.01
	OSI	max	0.249	0.370	0.032	0.242	0.399	0.102	0.019	0.279
		mean	0.019	0.036	0.004	0.004	0.012	0.009	0.002	0.012
		ratio(0.2-0.5)	0	0.69	0	0	0	0	0	0
	Viscosity [#] [Pa·s]	max	5.776	6.498	4.712	7.544	8.265	4.692	4.093	6.593
		mean	3.644	5.286	3.885	5.082	4.583	3.812	3.531	4.685
		ratio(5-11)	2.19	75.89	0	43.04	13.05	0	0	44.29

viscosity[#] = viscosity × 10⁻³