Appendix 1

For calculation of the curvature of the central luminal line (CLL) of the carotid artery, the following equation of the extrinsic linear curvature was used (18):

$$\kappa = \frac{\sqrt{(z''y' - y''z')^2 + (x''z' - z''x')^2 + (y''x' - x''y')^2}}{(x'2 + y'2 + z'2)^{(3/2)}} \quad [1]$$

To calculate torsion of the CLL, the following equation derived from the theory described by Pressley (19) was used:

$$\tau = \frac{(x'''(y'z'' - y''z') + y'''(x''z' - x'z'') + z'''(x'y'' - x''y'))}{((y'z'' - y''z')^2 + (x^\wedge z' - x'z'')^2 + (x'y'' - x''y')^2)} \quad [2]$$

Where x,y,z are the CLL cartesian coordinates, ' is the first derivative, '' is the second derivative and ''' is the third derivative.

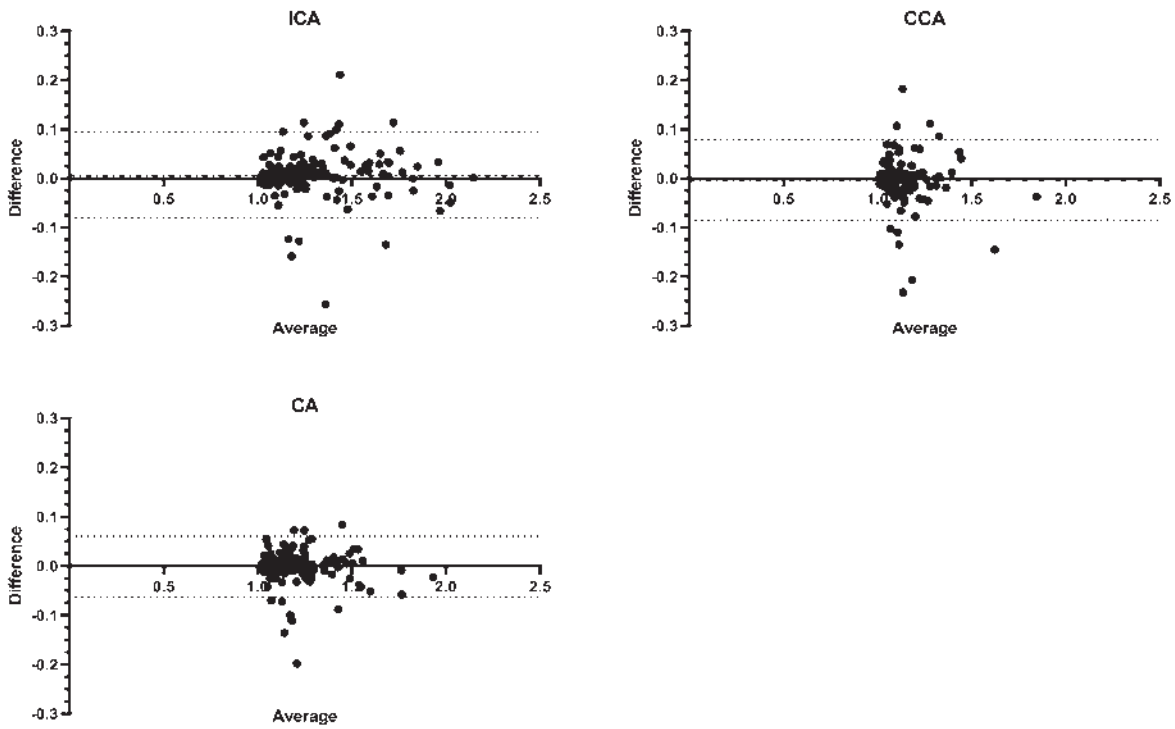

Figure S1 Bland-Altman plots showing agreement of two operators on tortuosity index (TI) measurements of 175 carotids according to the three subfields [internal carotid artery (ICA), common carotid artery (CCA), total carotid artery (CA)]. The dash-dotted line in the middle represents the mean difference of the TI between the two operators, and the dotted lines represent the upper and lower limits of agreement (mean difference ± 1.96 × standard deviation).

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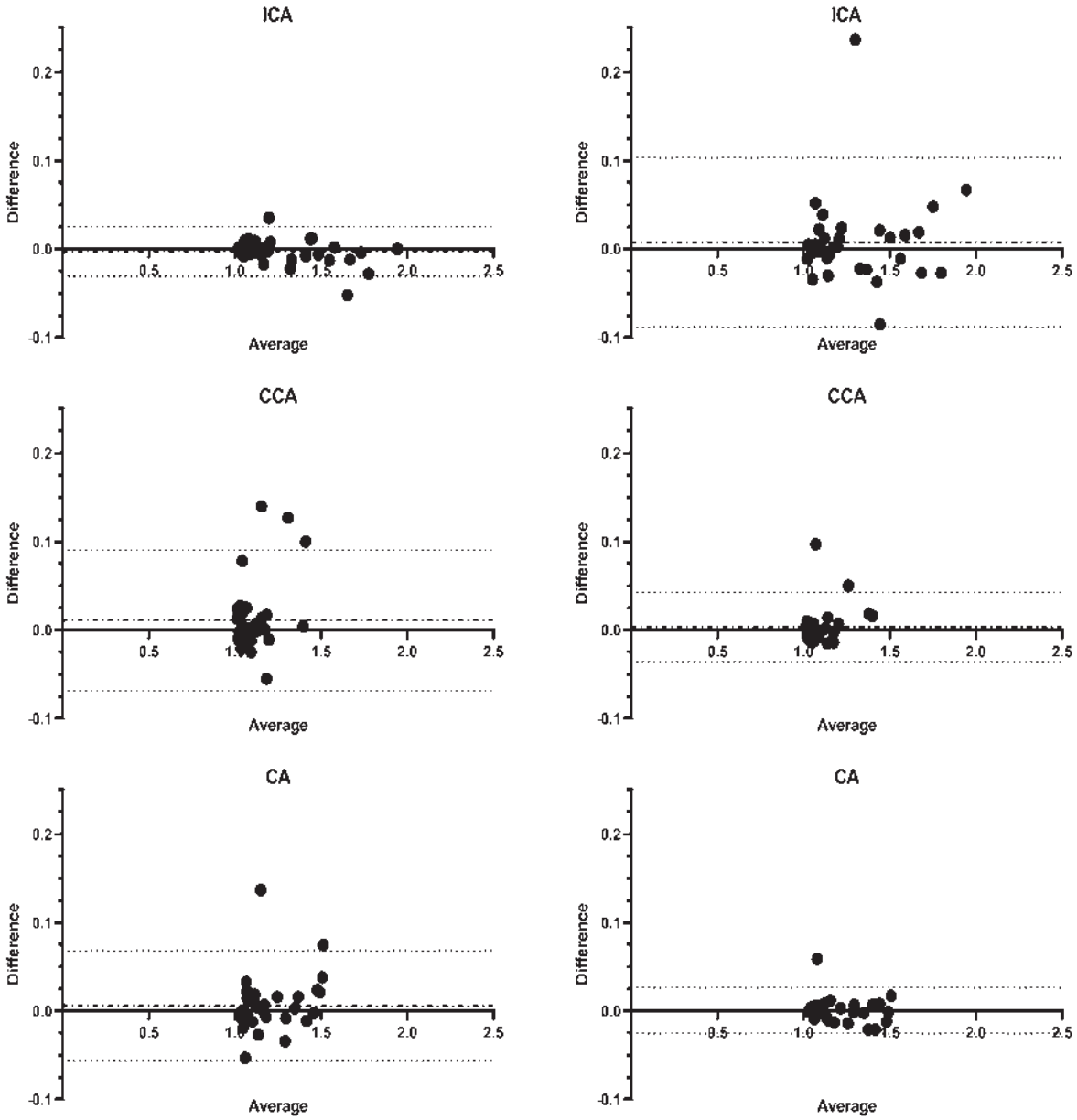

Figure S2 Bland-Altman (18,19) plots showing intra-operator agreement of operator 1 (blinded) in the left panel, and operator 2 on the right on tortuosity index (TI) measurements of 35 carotids according to the three subfields [internal carotid artery (ICA), common carotid artery (CCA), total carotid artery (CA)]. The dash-dotted line in the middle represents the mean difference of the TI between the two operators, and the dotted lines represent the upper and lower limits of agreement (mean difference ± 1.96 × standard deviation).

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Table S1 Intraclass correlation coefficients for both inter- and intra-operator reliability (18,19)

	Inter-operator (n=175)		Intra-operator (n=35)			
			Operator 1*		Operator 2	
	ICC	(95% CI)	ICC	(95% CI)	ICC	(95% CI)
ICA	0.983	(0.977-0.988)	0.998	(0.997-0.999)	0.982	(0.965-0.991)
CCA	0.921	(0.849-0.959)	0.978	(0.956-0.994)	0.921	(0.849-0.959)
Total CA	0.980	(0.973-0.985)	0.996	(0.993-0.998)	0.980	(0.962-0.990)

*, indicates blinded operator. ICC model: two-way mixed, type: absolute agreement. ICC, intraclass correlation coefficient; CI, confidence interval; ICA, internal carotid artery; CCA, common carotid artery; CA, carotid artery.

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