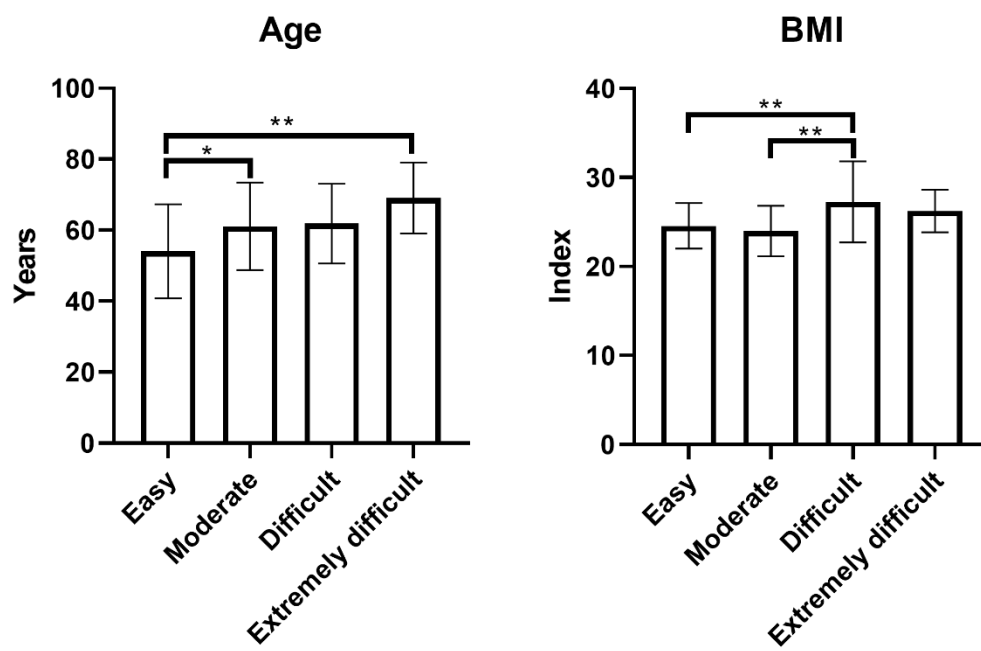
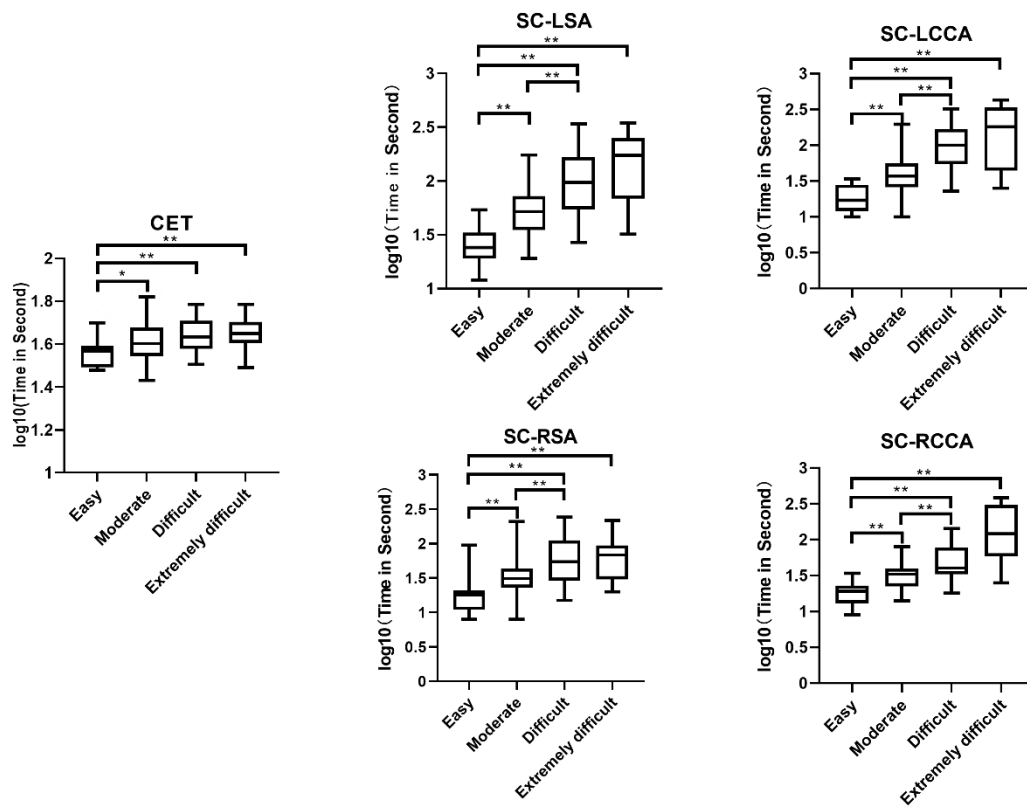




Supplementary figure 1. Intergroup comparisons of age and BMI across difficulty levels (Bonferroni-corrected analysis)

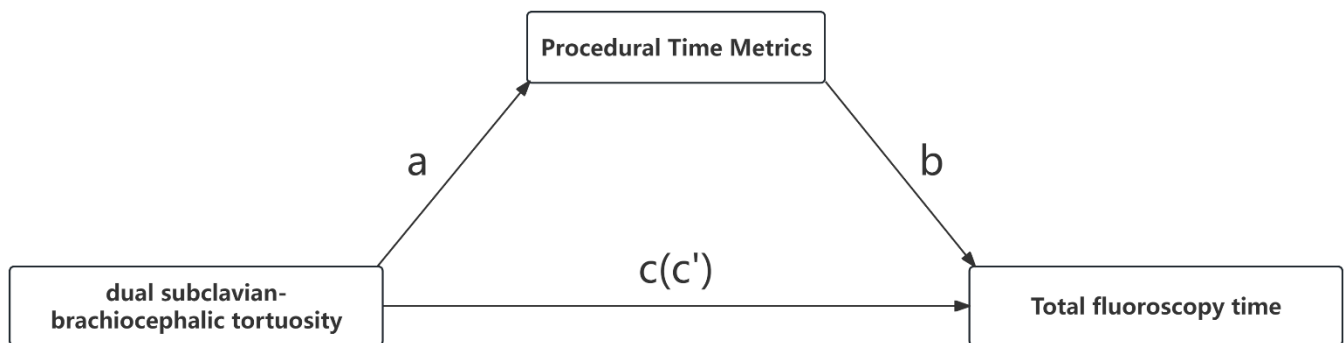
* $P < 0.05$ ** $P < 0.01$



Supplementary figure 2. Intergroup comparisons of CET, SC-LSA, SC-LCCA, SC-RSA, and SC-RCCA across difficulty levels (Kruskal-Wallis H test with Dunn's correction for multiple comparisons)

*** $P < 0.05$ ** $P < 0.01$**

Supplementary figure 3 The interventional procedures mediate the effect of dual subclavian-innominate artery tortuosity on total fluoroscopy time.



Variables	Model1		Model2		Model3	
	β (95%CI)	P-value	β (95%CI)	P-value	β (95%CI)	P-value
PTPC						
a	1.031 (-2.635,4.698)	0.579	1.179 (-2.556,4.915)	0.534	0.793 (-2.967,4.553)	0.678
b	0.025 (-0.048,0.100)	0.490	0.039 (-0.033,0.110)	0.286	0.023 (-0.045,0.091)	0.498
c	4.821 (3.046,6.596)	< 0.001*	4.070 (2.387,5.753)	< 0.001*	4.105 (2.437,5.772)	< 0.001*
c'	4.794 (3.015,6.574)	< 0.001*	4.025 (2.340,5.709)	< 0.001*	4.086 (2.415,5.757)	< 0.001*
ab	0.027(-0.136,0.298)	-	0.046(-0.139,0.375)	-	0.019(-0.126,0.260)	-
CET						
a	2.466 (-1.291,6.224)	0.197	1.245 (-2.532,5.022)	0.516	1.438 (-2.287,5.163)	0.447
b	0.121 (0.051,0.191)	< 0.001*	0.088 (0.018,0.157)	0.014*	0.076 (0.008,0.144)	0.028*
c	4.821 (3.046,6.596)	< 0.001*	4.070 (2.387,5.753)	< 0.001*	4.105 (2.437,5.772)	< 0.001*
c'	4.523 (2.793,6.253)	< 0.001*	3.961 (2.303,5.619)	< 0.001*	3.996 (2.344,5.647)	< 0.001*
ab	0.298 (-0.176, 0.936)	-	0.109 (-0.223, 0.505)	-	0.109 (-0.161, 0.549)	-
SC-LSA						
a	75.815 (50.108,101.523)	< 0.001*	67.146 (41.031,93.260)	< 0.001*	69.964 (44.476,95.452)	< 0.001*
b	0.047 (0.039,0.055)	< 0.001*	0.041 (0.033,0.049)	< 0.001*	0.042 (0.035,0.050)	< 0.001*
c	4.821 (3.046,6.596)	< 0.001*	4.070 (2.387,5.753)	< 0.001*	4.105 (2.437,5.772)	< 0.001*
c'	1.280 (-0.158,2.718)	0.081	1.315 (-0.090,2.721)	0.066	1.141 (-0.241,2.524)	0.105
ab	3.543 (1.740,5.600)	-	2.755 (1.137,4.423)	-	2.263 (1.399,4.753)	-
SC-LCCA						
a	75.80 (44.97,106.64)	< 0.001*	63.962 (33.590,94.334)	< 0.001*	64.173 (34.079,94.267)	< 0.001*
b	0.04 (0.03,0.04)	< 0.001*	0.035 (0.028,0.042)	< 0.001*	0.034 (0.028,0.041)	< 0.001*
c	4.821 (3.046,6.596)	< 0.001*	4.070 (2.387,5.753)	< 0.001*	4.105 (2.437,5.772)	< 0.001*
c'	1.92 (0.52,3.32)	0.008*	1.822 (0.446,3.198)	0.010*	1.891 (0.514,3.269)	0.007*
ab	2.901 (0.998,5.177)	-	2.248 (0.714,4.170)	-	2.213 (0.720,4.120)	-
SC-RSA						
a	18.690 (-0.159,37.538)	0.052	18.322 (-1.263,37.908)	0.067	15.994 (-3.083,35.070)	0.100
b	0.041 (0.028,0.054)	< 0.001*	0.035 (0.022,0.047)	< 0.001*	0.035 (0.023,0.048)	< 0.001*

Variables	Model1		Model2		Model3	
	β (95%CI)	P-value	β (95%CI)	P-value	β (95%CI)	P-value
c	4.821 (3.046,6.596)	< 0.001*	4.070 (2.387,5.753)	< 0.001*	4.105 (2.437,5.772)	< 0.001*
c'	4.059 (2.436,5.683)	< 0.001*	3.430 (1.871,4.990)	< 0.001*	3.540 (1.997,5.082)	< 0.001*
ab	0.762 (-0.090, 1.756)	-	0.640 (-1.115, 1.496)	-	0.565 (-0.168, 1.428)	-
SC-RCCA						
a	32.963 (8.421,57.685)	0.009*	29.026 (3.896,54.156)	0.024*	27.876 (2.973,52.779)	0.028*
b	0.045 (0.036,0.054)	< 0.001*	0.039 (0.031,0.048)	< 0.001*	0.041 (0.033,0.049)	< 0.001*
c	4.821 (3.046,6.596)	< 0.001*	4.070 (2.387,5.753)	< 0.001*	4.105 (2.437,5.772)	< 0.001*
c'	3.338 (1.922,4.755)	< 0.001*	2.927 (1.539,4.316)	< 0.001*	2.966 (1.621,4.310)	< 0.001*
ab	1.483(-0.058,3.196)	-	1.143(-1.194,2.554)	-	1.139(-0.348,2.692)	-

PTPC : Placement time of pigtail catheter;CET : Catheter exchange Time;SC-LSA: Superselective catheterization of the left subclavian artery;SC-LCCA: Superselective cannulation of the left common carotid artery;SC-RSA: Superselective cannulation of the right subclavian artery;SC-RCCA: Superselective cannulation of the right common carotid artery;CI: Confidence Interval; Model1: Adjust none; Model2: Adjust full factors; Model3: Adjust Age and BMI

*Statistically significant