

Supplemental Table S1. **(A)** Demographic for randomly split cohort for SMSGOP (training and validation cohort)

	Training cohort (<i>n</i> = 320, 80%)	Validation cohort (<i>n</i> = 80, 20%)	<i>p</i>
Age (years)	40.2 ± 13.8	37.7 ± 13.9	0.162
Gender			1
Female	241 (75.3%)	60 (75.0%)	
Male	79 (24.7%)	20 (25.0%)	
Duration of follow up for GD (months)	63.4 ± 47.7	56.5 ± 52.6	0.59
Duration of follow up for GO (months)	48.7 ± 42.1	43.7 ± 48.1	0.424
Interval between diagnosis of GD and GO (months)	18.3 ± 38.4	23.3 ± 52.1	0.425
Hypertension	34 (10.6%)	7 (8.8%)	0.773
Diabetes mellitus	11 (3.4%)	3 (3.8%)	1
Cerebrovascular disease	6 (1.9%)	1 (1.2%)	1
Autoimmune diseases	5 (1.6%)	3 (3.8%)	0.422
History of taking statin	36 (11.2%)	12 (15.0%)	0.465
Smoking behavior			0.444
Never smoker	285 (89.1%)	70 (87.5%)	
Ex-smoker	14 (4.4%)	2 (2.5%)	
Current smoker	21 (6.6%)	8 (10.0%)	
History of RAI *	9 (2.8%)	0 (0.0%)	0.273
History of thyroidectomy	10 (3.1%)	3 (3.8%)	1
ft3			0.823
Lower	5 (1.6%)	2 (2.5%)	
Normal	193 (60.3%)	49 (61.2%)	
Higher	122 (38.1%)	29 (36.2%)	
ft4			0.504
Lower	44 (13.8%)	9 (11.2%)	
Normal	141 (44.1%)	41 (51.2%)	
Higher	135 (42.2%)	30 (37.5%)	
Thyroid Stimulating Hormone (TSH)			0.76
Lower	226 (70.6%)	54 (67.5%)	
Normal	64 (20.0%)	19 (23.8%)	
Higher	30 (9.4%)	7 (8.8%)	
TSH-R Ab			0.172
Negative	59 (18.4%)	9 (11.2%)	
Positive	261 (81.6%)	71 (88.8%)	
Thyroglobulin antibody (TG Ab)			0.858
Negative	194 (60.6%)	47 (58.8%)	
Positive	126 (39.4%)	33 (41.2%)	
Thyroid peroxidase antibody (TPO Ab)			0.772
Negative	112 (35.0%)	26 (32.5%)	
Positive	208 (65.0%)	54 (67.5%)	
Thyroid stimulating immunoglobulin (TSI)			0.435
Negative	67 (20.9%)	13 (16.2%)	

Positive	253 (79.1%)	67 (83.8%)	
CAS	1.7 ± 1.4	2.0 ± 1.4	0.158
NOSPECS	2.3 ± 1.6	2.4 ± 1.5	0.673
Proptosis			0.612
<15 mm	111(34.7%)	27(33.8%)	
15–18 mm	122 (38.1%)	25 (31.2%)	
>18 mm	87 (27.2%)	28 (35.0%)	
Type of eye deviation			0.784
Normal	226 (70.6%)	60 (75.0%)	
Horizontal	61 (19.1%)	13 (16.2%)	
Vertical	24 (7.5%)	6 (7.5%)	
Mixed	9 (2.8%)	1 (1.2%)	
Amount of eye deviation (°)	5.5 ± 11.6	4.2 ± 9.4	0.306
Central diplopia †			0.549
Absence	275 (85.9%)	66 (82.5%)	
Presence	45 (14.1%)	14 (17.5%)	
The Ratio of the Cross-Sectional area to total Orbit (RCSO) †			
Orbital fat	0.717 ± 0.082	0.0708 ± 0.085	0.409
Superior rectus muscle	0.058 ± 0.020	0.060 ± 0.018	0.329
Medial rectus muscle	0.048 ± 0.015	0.051 ± 0.017	0.222
Inferior rectus muscle	0.059 ± 0.024	0.062 ± 0.024	0.293
Lateral rectus muscle	0.060 ± 0.023	0.060 ± 0.024	0.852
Total extraocular muscle ††	0.225 ± 0.082	0.233 ± 0.083	0.256

* RAI, radioactive iodine therapy.

† Diplopia within ≤30° of field of view measured by Binocular single vision test.

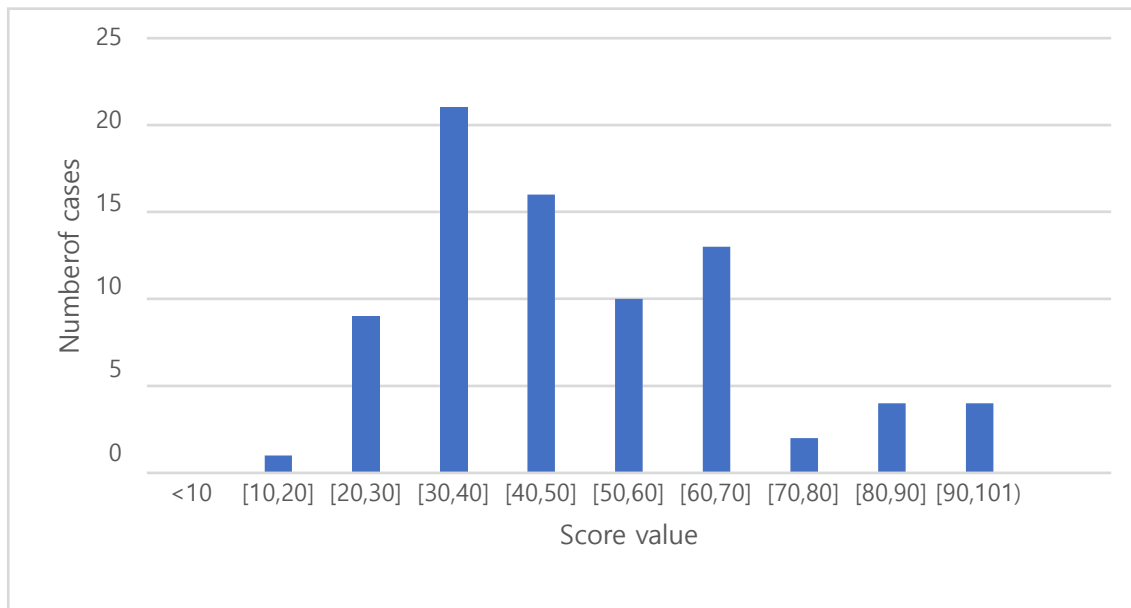
† Ratio of the Cross-Sectional area to total Orbit (RCSO), cross sectional area measurement taken at the 4 mm behind the eyeball using computed tomography (CT).

†† Total extraocular muscle = superior rectus muscle + medial rectus muscle + inferior rectus muscle + lateral rectus muscle.

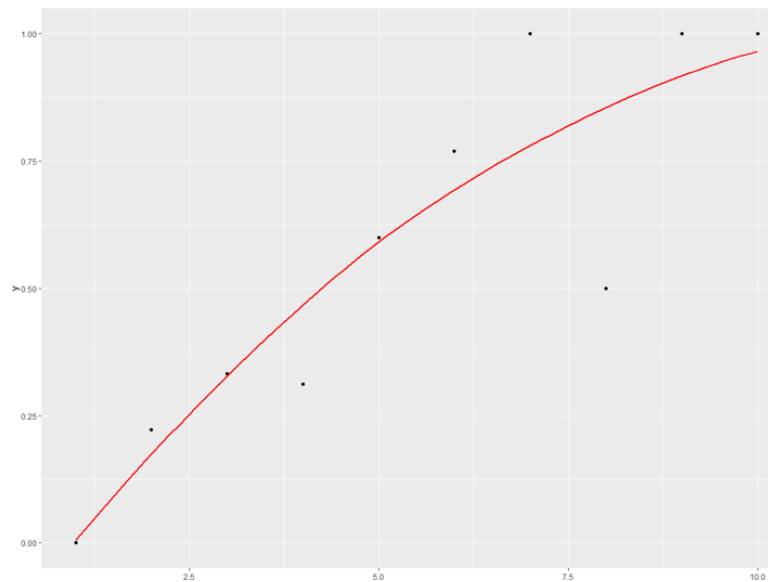
(B) Demographic for randomly split cohort for SMGOP (training and validation cohort)

	Training cohort (n = 144)	Validation cohort (n = 35)	p
Age (years)	42.6 ± 13.6	44.1 ± 15.2	0.584
Gender			0.706
Female	104 (72.2%)	27 (77.1%)	
Male	40 (27.8%)	8 (22.9%)	
Duration of follow up for GD (months)	61.4 ± 39.7	59.5 ± 43.2	0.47
Duration of follow up for GO (months)	49.2 ± 38.1	44.2 ± 50.1	0.398
Interval between diagnosis of GD and GO (months)	20.7 ± 45.3	30.6 ± 49.6	0.256
Hypertension	20 (13.9%)	5 (14.3%)	1
Diabetes mellitus	3 (2.1%)	1 (2.9%)	1
Cerebrovascular disease	2 (1.4%)	1 (2.9%)	1
Autoimmune diseases	3 (2.1%)	0 (0.0%)	0.899
History of taking statin	18 (12.5%)	9 (25.7%)	0.09
Smoking behavior			0.268
Never smoker	121 (84.0%)	30 (85.7%)	
Ex-smoker	9 (6.2%)	4 (11.4%)	

Current smoker	14 (9.7%)	1 (2.9%)	
History of RAI *	3 (2.1%)	2 (5.7%)	0.55
History of thyroidectomy	7 (4.9%)	2 (5.7%)	1
ft3			0.516
Lower	5 (3.5%)	0 (0.0%)	
Normal	92 (63.9%)	24 (68.6%)	
Higher	47 (32.6%)	11 (31.4%)	
ft4			0.605
Lower	22 (15.3%)	4 (11.4%)	
Normal	73 (50.7%)	21 (60.0%)	
Higher	49 (34.0%)	10 (28.6%)	
Thyroid Stimulating Hormone (TSH)			0.296
Lower	97 (67.4%)	19 (54.3%)	
Normal	32 (22.2%)	12 (34.3%)	
Higher	15 (10.4%)	4 (11.4%)	
TSH-R Ab			0.171
Negative	24 (16.7%)	10 (28.6%)	
Positive	120 (83.3%)	25 (71.4%)	
Thyroglobulin antibody (TG Ab)			0.049
Negative	87 (60.4%)	28 (80.0%)	
Positive	57 (39.6%)	7 (20.0%)	
Thyroid peroxidase antibody (TPO Ab)			0.186
Negative	50 (34.7%)	17 (48.6%)	
Positive	94 (65.3%)	18 (51.4%)	
Thyroid stimulating immunoglobulin (TSI)			0.645
Negative	19 (13.2%)	3 (8.6%)	
Positive	125 (86.8%)	32 (91.4%)	
CAS	2.7 ± 1.3	1.9 ± 1.3	0.003
NOSPECS	3.3 ± 1.5	2.7 ± 1.2	0.035
Proptosis			0.598
<15 mm	50 (34.7%)	12 (34.3%)	
15–18 mm	48 (33.3%)	12 (34.3%)	
>18 mm	46 (31.9%)	11 (32.4%)	
Type of eye deviation			0.347
Normal	90 (62.5%)	21 (60.0%)	
Horizontal	29 (20.1%)	4 (11.4%)	
Vertical	18 (12.5%)	8 (22.9%)	
Mixed	7 (4.9%)	2 (5.7%)	
Amount of eye deviation (°)	8.2 ± 14.9	8.4 ± 12.4	0.963
Central diplopia †			0.209
Absence	97 (67.4%)	28 (80.0%)	
Presence	47 (32.6%)	7 (20.0%)	
The Ratio of the Cross-Sectional area to total Orbit (RCSO) †			
Orbital fat	0.0710 ± 0.082	0.0714 ± 0.074	0.8
Superior rectus muscle	0.060 ± 0.019	0.059 ± 0.016	0.671
Medial rectus muscle	0.050 ± 0.016	0.050 ± 0.016	0.846
Inferior rectus muscle	0.063 ± 0.023	0.062 ± 0.020	0.82
Lateral rectus muscle	0.060 ± 0.023	0.059 ± 0.022	0.922
Total extraocular muscle ††	0.233 ± 0.081	0.230 ± 0.074	0.256

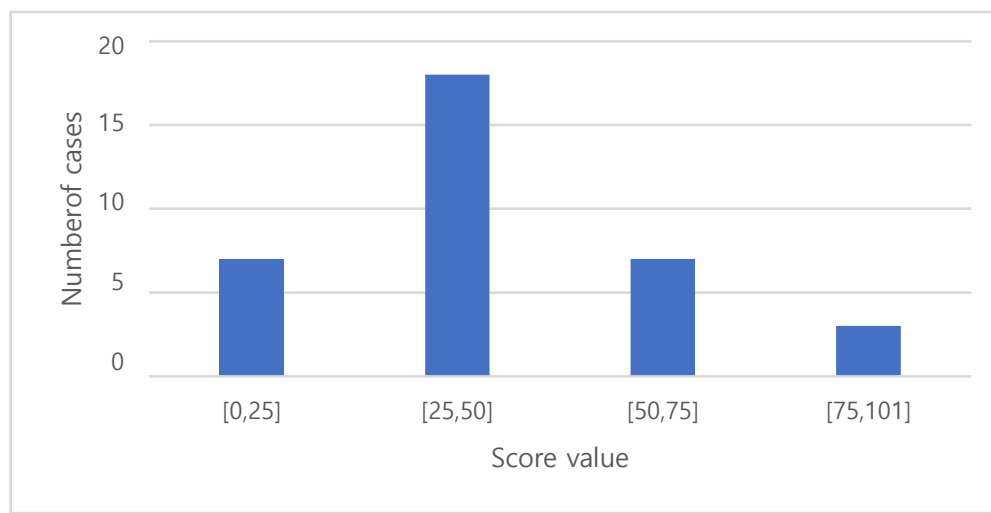


(A)

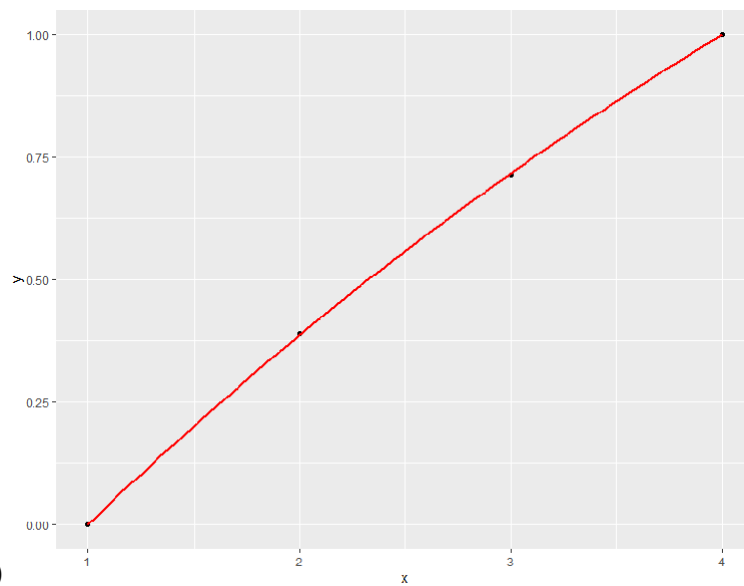


(B)

Supplemental Figure S1. (A) Number of Cases Versus Score Value on the Testing Cohort for SMSGOP (B) Observed Severity Rate Versus Score Value on the Testing Cohort for SMSGOP



(A)



(B)

Supplemental Figure S2. (A) Number of Cases Versus Score Value on the Testing Cohort for SMGOP (B) Observed Severity Rate Versus Score Value on the Testing Cohort for SMGOP