

Supplementary materials

Predicting Intra-Abdominal Hypertension Using Anthropometric Measurements and Machine Learning

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Table S1. Body anthropometric parameters that can be influenced by IAP changes. Data include mean with standard deviation.

Variable	Total	without IAH (n = 41)	with IAH (n = 55)	p-value
Ear-xiphoid distance	38.1 ± 4.1	38.3 ± 4.8	38 ± 3.6	0.77
Nose-ear distance	15.5 ± 1.0	15.4 ± 1.1	15.6 ± 1.0	0.28
Rib cage diameter	38.8 ± 5.0	37.8 ± 4.7	39.5 ± 5.1	0.08
Umbilical diameter	41.4 ± 6.4	39.7 ± 5.4	42.7 ± 6.9	0.02
Waist diameter	38.2 ± 5.2	37.6 ± 5.1	38.6 ± 5.3	0.37
Hip diameter	43.9 ± 5.2	43.2 ± 4.3	44.5 ± 5.7	0.22
Rib cage circumference	108.0 ± 12.2	105.1 ± 11.2	110.2 ± 12.5	0.04
Abdominal perimeter	115.1 ± 16.1	107.6 ± 11.2	120.7 ± 17.0	< 0.001
Waist circumference	103.7 ± 13.1	99.9 ± 10.8	106.6 ± 14.0	0.01
Waist to hip ratio	0.95 ± 0.16	0.94 ± 0.14	0.97 ± 0.16	0.001
Hip circumference	108.7 ± 11.3	106.3 ± 10.1	110.5 ± 11.9	0.07
Convex xiphoid-pubis distance	38.1 ± 6.4	35.1 ± 4.8	40.4 ± 6.5	< 0.001
Xiphoid-pubis distance	31.9 ± 4.2	32.2 ± 4.4	31.8 ± 4.1	0.65
Dxiphoid-pubis	6.2 ± 4.9	2.9 ± 2.6	8.6 ± 4.7	< 0.001
Rib cage height	22.4 ± 3.6	20.8 ± 3.7	23.6 ± 3.0	< 0.001
Hip height	14.8 ± 2.4	14.3 ± 2.6	15.1 ± 2.2	0.10
Sagittal Abdominal Diameter	25.9 ± 4.8	22.9 ± 4.3	28.2 ± 3.8	< 0.001
Rib cage-crista distance	11.2 ± 2.8	11.4 ± 2.9	11.0 ± 2.8	0.49

Dxiph-pubis: difference between the convex and horizontal xiphoid to pubis distance; all measured in centimeters

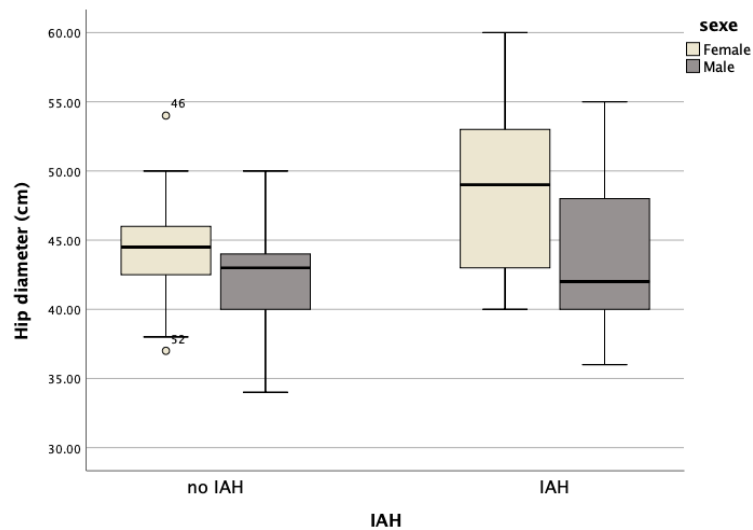


Figure S1. Box plot showing hip diameter to IAH variation in males versus females. Although all patients with IAH had higher hip diameter compared to patients without IAH, hip diameter increase was higher in females in comparison with males.

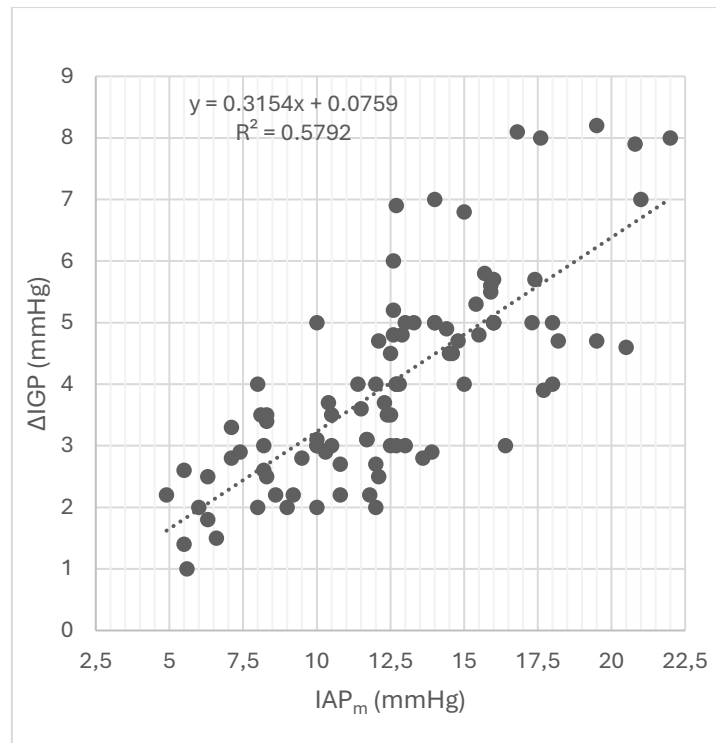


Figure S2. Scatter plot showing the correlation between ΔIGP and mean IAP. As mentioned before, ΔIGP increases due to IAH, which means that the IGP_{ei} increases more than IGP_{ee} during IAH development.

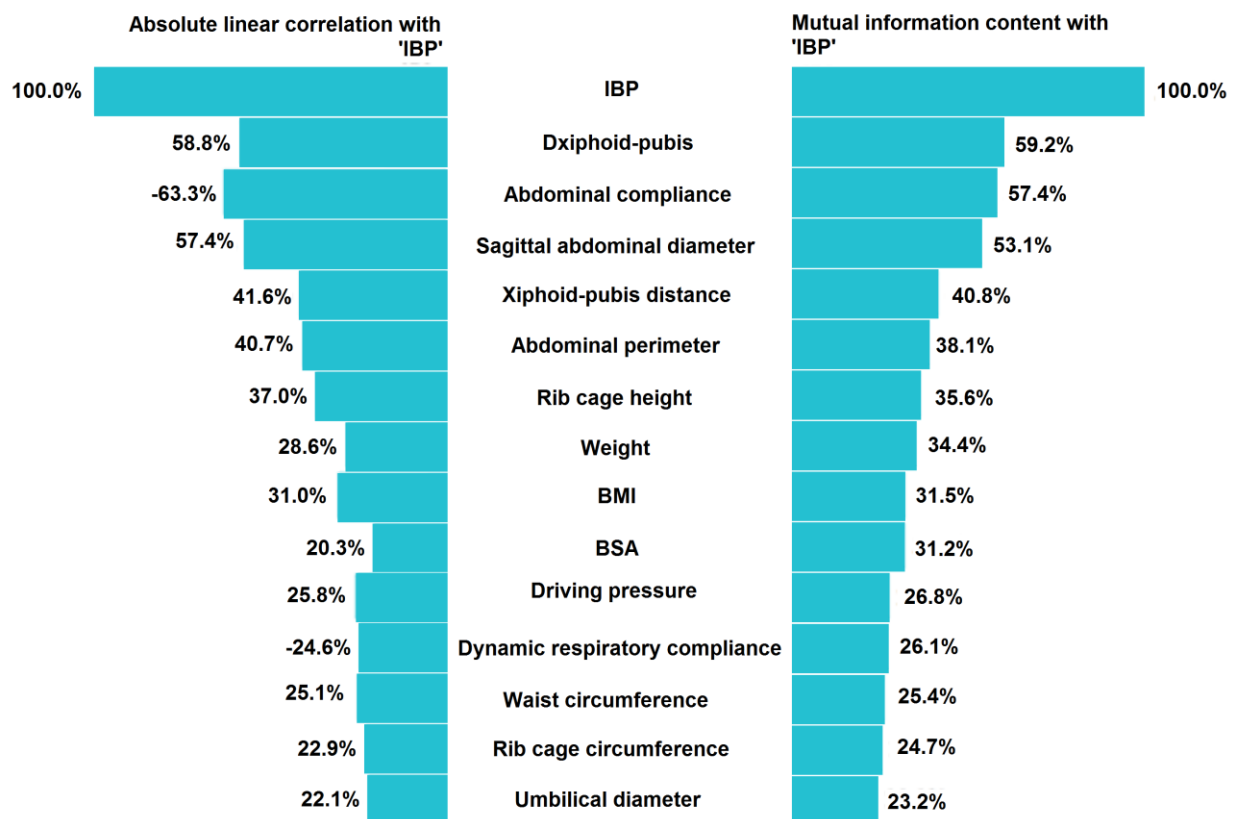


Figure S3. Results of the correlation analysis of the mutual information content between IBP and all other data inputs. The difference between convex and horizontal xiphoid-pubis distance (Dxiphoid-

pubis), C_{ab} , and sagittal abdominal diameter showed the highest mutual information correlation with IBP.

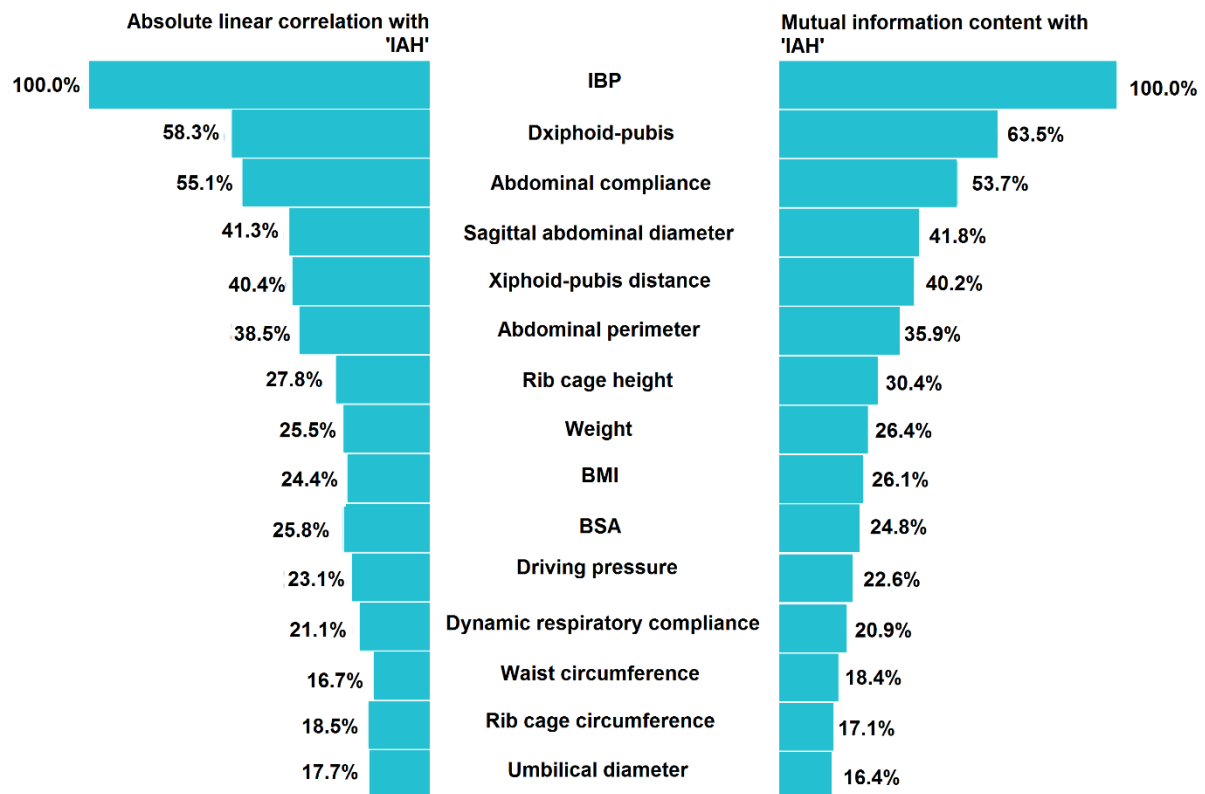


Figure S4. Results of mutual correlation analysis between different studied parameters and IBP (minimal strength of correlation 50%). As can be seen, the sagittal abdominal diameter, and the difference between the convex and horizontal xiphoid to pubis distance are the only body parameters with a correlation higher than 50%.

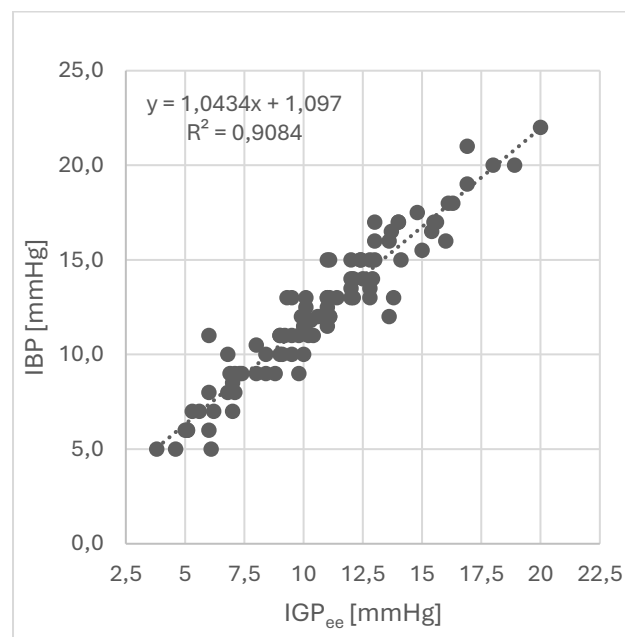


Figure S5. Scatter plot showing the correlation between intra-gastric pressure and intra-bladder pressure measurements.

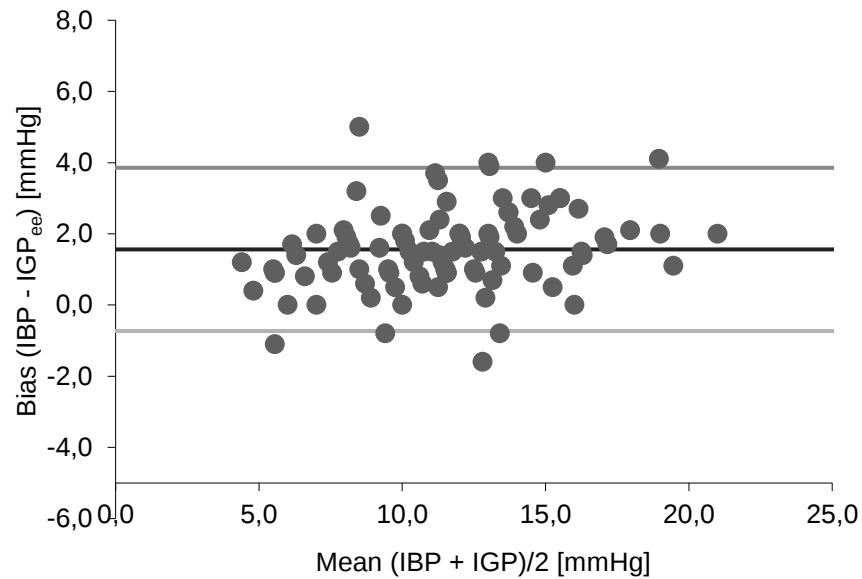


Figure S6. Relationship between IGP and IBP. Bland and Altman analysis revealed a mean bias of 1.6 ± 1.1 mmHg, with the limits of agreement ranging from -0.7 to 3.9 mmHg

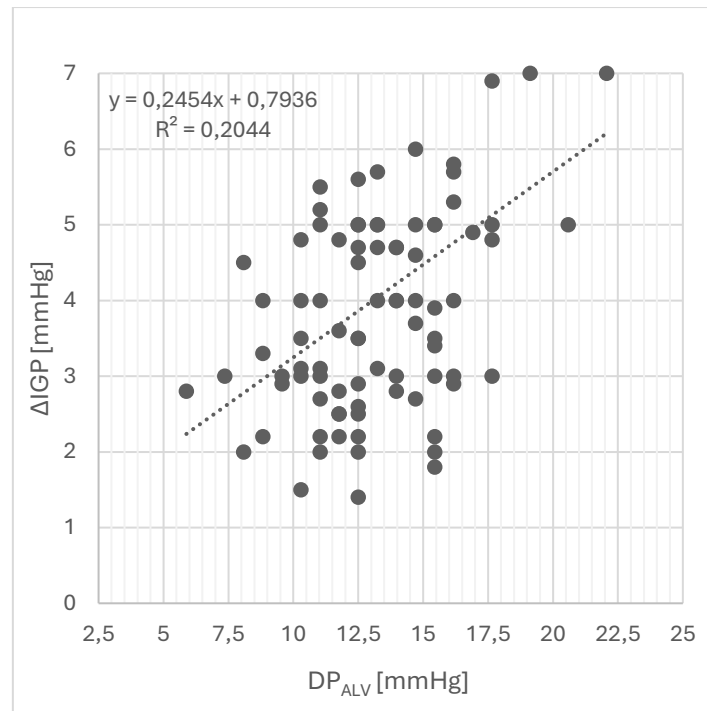


Figure S7. Scatter plot showing the correlation between ΔIGP and DP_{ALV} .

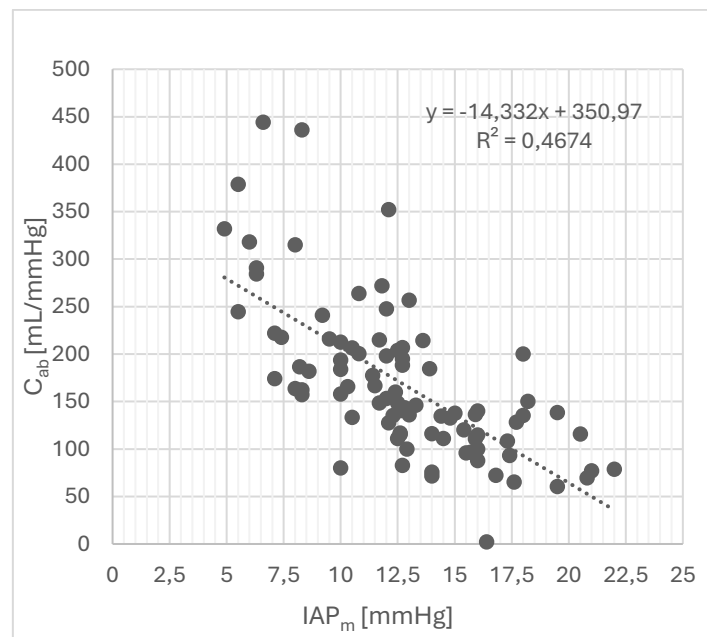


Figure S8. Scatter plot showing the correlation between C_{ab} and mean IAP.