

Table 3: Characterization of pulmonary arteries morphology on TTE and CTA. (MPA 68, LPA 68, RPA 68, total n 204)

Type	TTE, n (%)	CTA, n (%)
Normal	92 (45.1)	93 (45.6)
Stenotic	35 (17.2)	34 (16.7)
Hypoplastic	60 (29.4)	49 (24.0)
Atretic	5 (2.5)	21 (10.3)
Enlarged	1 (0.5)	7 (3.4)
Could not be evaluated	11 (5.4)	0 (0)

Regarding the morphology of the pulmonary valve annulus, stenosis was the most common finding, observed in 51 patients (75%) on TTE and 54 patients (79.6%) on CTA. Atresia was noted in 16 patients (23.5%) on TTE and 13 patients (19.1%) on CTA. CTA detected 1 patient (1.5%) with a normal pulmonary annulus, which was not visualized on TTE. While TTE failed to visualize the pulmonary annulus in 1 patient (1.5%), all pulmonary annulus were clearly seen on CTA (Table 4).

Table 4: Characterization of pulmonary valve annulus morphology on TTE and CTA.

Type	TTE, n (%)	CTA, n (%)
Normal	0 (0)	1 (1.5)
Stenotic	51 (75.0)	54 (79.4)
Atretic	16 (23.5)	13 (19.1)
Could not be evaluated	1 (1.5)	0 (0)

The diameters of the pulmonary arteries and pulmonary valve annulus measured by the two modalities were compared using Pearson's correlation analysis. Statistically significant correlations were observed between TTE and CTA for all pulmonary arteries ($P < 0.001$), with correlation coefficients (r) of 0.64, 0.53, and 0.50 for the MPA, RPA, and LPA, respectively. The pulmonary valve annulus also showed a strong association between the two modalities ($r = 0.72$, $P < 0.001$).

On Bland-Altman analysis, the mean difference between TTE and CTA measurements of pulmonary arteries was small, indicating good overall agreement. For the MPA, measurements by TTE tended to be

slightly higher than CTA on average (mean difference 0.34 mm; 95% limits of agreement [LOA] -6.41 to 7.11 mm) (Fig 3). In contrast, measurements of the RPA, LPA, and pulmonary valve annulus by TTE tended to be slightly lower than CTA on average (mean differences -1.16, -0.97, and -1.63 mm; LOA -6.45 to 4.13 mm, -6.83 to 4.89 mm, and -7.75 to 4.49 mm, respectively) (Fig 4–6). Although the average differences were small, the relatively wide limits of agreement indicate that individual measurements may vary by several millimeters between the two methods.

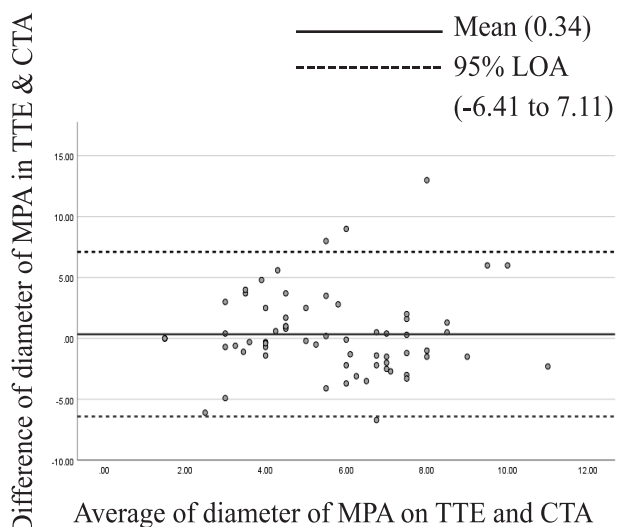


Figure 1. Bland–Altman plots demonstrating agreement between transthoracic echocardiography (TTE) and computed tomography angiography (CTA) measurements of the main pulmonary artery. The mean difference (bias) is represented by the central solid line, while the upper and lower dashed lines indicate the 95% limits of agreement.

