

# Additive value of the right parasternal window for the assessment of aortic stenosis

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## Abstract

**Background:** Although Doppler evaluation using a multiplanar method is recommended to assess the severity of aortic stenosis (AS) with transthoracic echocardiography, evidence on the diagnostic significance of a non-apical method is limited. This study aimed to compare the use of the apical window (AW) with use of the right parasternal window (RW) method to evaluate AS severity and to examine the diagnostic significance of performing the RW method in addition to the AW method during the evaluation. **Methods:** This retrospective observational study included 287 consecutive patients (mean age:  $79 \pm 10$  years; women, 56%) with severe AS (aortic valve area [AVA]  $[?]1.0\text{cm}^2$ ). The severity of AS according to the AW method and that according to the RW for all subjects were compared, and the significance of performing the RW method in addition to the AW method was examined. Furthermore, we compared the concordance group, in which the AW and RW methods indicated matching in severity, and the discordant group, in which the AW and RW methods did not indicate matching severity. **Results:** Peak velocity (PV), mean pressure gradient (PG), and AVA were not significantly different between the AW and RW methods. Performing the RW method in addition to the AW method significantly decreased the number of low PG AS cases (mean PG  $<40$  mmHg) from 71.1% to 65.0% and it increased the number of very severe AS cases (PV  $[?]5\text{m/s}$ ) from 8.7% to 14.5%. Although, there was no significant difference in the Doppler angle (DA) observed using the AW method for the discordant group and the concordant group, the DA observed using the RW method was significantly smaller in the discordant group ( $8.8 \pm 8.2$ ,  $16.3 \pm 12.3$  deg,  $p < 0.01$ ). In the receiver-operating characteristic analysis, with the RW method, a DA of 8deg was the cutoff value for discrepancies between the two groups. **Conclusions:** By performing the RW method in addition to the AW method to determine AS severity, different severity is observed in approximately 10% of cases. These results suggest that AS severity may be underestimated by using the AW method alone.

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