

## ABSTRACT:

**Introduction:** The systemic load on the right ventricle (RV) after Senning atrial switch leads to ventricular dysfunction. Quantitative assessment of RV contractile reserve is mandatory to anticipate the need for anti-failure treatment. We aimed to quantitatively assess RV contractile reserve in Senning children by interrogating speckled global longitudinal strain (GLS) during dobutamine stress echocardiography (DSE). **Methods:** This prospective study compared thirty-one post-Senning children (group I), and thirty controls (group II). In post-Senning children, echocardiographic RV systolic function using automated Simpson's one-plane ejection fraction (RVEF), tricuspid annulus plane systolic excursion (TAPSE), and RVGLS were recorded at rest and peak DSE. The contractile reserve was defined as improvement  $>5\%$  in RVEF,  $>2\%$  in GLS, and/or to near normal values in TAPSE. **Results:** RVEF, and TAPSE were significantly lower in patients than controls (RVEF:  $40.13 \pm 2.93\%$  vs.  $53.17 \pm 3.17\%$  respectively,  $P < 0.001^*$ , TAPSE:  $13.81 \pm 1.26$  vs.  $17.45 \pm 2.93$  mm respectively,  $P < 0.001^*$ ). Also, RVGLS was significantly worse in Senning children than controls ( $-11.89 \pm 2.31\%$  vs.  $-22.35 \pm 6.73\%$  respectively,  $P < 0.001^*$ ). At peak DSE, contractile reserve was not evident as measured by RVEF which increased none significantly to  $42.47 \pm 2.80\%$  ( $P = 0.063$ ). However, RVGLS improved significantly to  $-15.78 \pm 0.93\%$  ( $P < 0.001^*$ ) and discovered the masked contractile reserve in Senning children. The 19(61.29%) children who showed masked contractile reserve (improvement in RVGLS  $>2\%$ ) underwent continuation of anti-failure medications. **Conclusions:** Despite systemic RV function in post Senning children was impaired at rest and during DSE, RVGLS was useful in quantitative assessment of masked contractile reserve that was not evaluated by the ordinary RVEF, thus promoted continuing anti-failure treatment.

**KEYWORDS:** Systemic right ventricle contractile reserve, Systemic right ventricle post-Senning, Contractile reserve in Senning children, Speckled systemic right ventricular strain, Dobutamine stress echocardiography in Senning children, Systemic right ventricular strain at peak dobutamine.