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**Title:** Evaluation of the effects of surgical correction of left mediastinal displacement in children with pectus excavatum on pulmonary perfusion, using minimal radiation exposure

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**Body:** The pulmonary perfusion(PP) in pectus excavatum (PE) patients after surgery hasn't been objectively assessed.Objectives: To investigate the effects of surgical repaire of left mediastinal displacement in children with PE on PP, using easily performed and minimally invasive methods which minimize radiation exposure. Methods: We prospectively evaluated 34 consecutive patients with PE pre- and post-Nuss procedure using chest radiography (CXR), echocardiography(UCG), and PP scintigraphy. CXR was used to calculate the vertebral index (VI) and left displacement index (LDI, ratio between the distance from the left border of the mediastinum to the left border of the thorax and the transverse thoracic dimension on posteroanterior CXR). PP scintigraphy was visually interpreted and left-to-right count ratio (Ls/Rs) was measured. Pre-ejection period, acceleration time (AcT), and ejection time (ET) of the right pulmonary artery (RPA) and left pulmonary artery (LPA) were measured by pulse Doppler UCG. Results: VI and LDI improved postoperatively (P<0.001). Preoperatively, left PP was impaired. Postoperatively, Ls/Rs increased (P=0.001) and AcT/ET changed (LPA: P<0.001; RPA: P=0.008). Evaluation of the usefulness of CXR showed that LDI correlated with Ls/Rs (R=0.411, P<0.001) and LPA-AcT/ET (R=0.50, P<0.001), and that VI did not correlate with Ls/Rs and correlated poorly with LPA-AcT/ET (R= -0.28, P<0.05). Conclusions: The imbalance of PP improves after the Nuss procedure. The degree of leftward displacement of the mediastinum correlates with decreased left PP. Follow-up can be achieved with minimal radiation exposure.