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Title: Serial study on lung function in adolescents before and after the repair of chest wall deformities

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Body: Background: Only 2 old studies had performed simple pulmonary function tests (PFT) pre- and postoperatively in patients undergoing pectus excavatum (PE) and carinatum (PC) repair. Aim and objectives: What are the PFT parameters in chest deformities? Are there differences between groups of PE and PC? What changes occur in PFT after corrective surgery? Methods: 26 patients PE (16.2±2.0 yrs) and 21 PC (15.9±1.4) (M/F=42/5). We assessed respiratory performance before and after corrective surgery for chest wall deformities using a wide spectrum of PFT. We used: whole-body plethysmography; standard spirometry; respiratory muscle strength testing (RMS). Results: before repair: TLC was normal in both groups (97±12% in PE ; 107±14% in PC). RV%TLC increased (129±34% in PE, p<0.01 ; 125±39% in, p<0.03). Central airway obstruction was found (SGtot 61±26% PE, p<0.001; 54±13% PC, p<0.001). No periph. airway obstruction was detected. Values of maximum insp./exp. pressure (PI max/PE max) were decreased in both groups: 66±25% PEmax/53±21% PImax (p<0.001/p<0.001) in PE ; 59±23% PEmax/49±23% PImax (p<0.001/p<0.001) in PC. After the repair: No change of TLC in both groups was found. RV%TLC increased in PE by 12±41%, p<0.05 while mild regression of this parameter in PC was proved. FEF75 increased by 14±31%, p<0.04 in PE while it decreased by 20±32%, p<0.03 in PC. There were found no changes in central airway patency as well as RMS indice. Conclusion: No restrictive disorder in either group was found. Normal peripheral airway patency and mild central airway obstruction was proved. Static lung hyperinflation was proved before repair in both groups. Finding of weak respiratory muscles persisted even after the repair.