



Figure 1: The changes in volume of the operated side and non-operated side of  $Vt_{rcp}$  and  $Vt_{rca}$  of the COPD group and Non-COPD group during quiet breathing, 3 months after surgery and 6 months after surgery compared to preoperative values.  $Vt_{rcp, dx}$  : non operated side of upper ribcage pulmonary,  $Vt_{rcp, sx (op)}$  : operated side of upper ribcage pulmonary ,  $Vt_{rca, dx}$  : non operated side of lower pulmonary ribcage,  $Vt_{rca, sx (op)}$  : operated side of upper pulmonary ribcage . B: before surgery (\* =  $p < 0.05$ ).