

II-S-1 Significance of The Chestwall Compliance and Work of Breathing in Patients with The Respiratory Failure After Upper Abdominal Surgery.

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Purpose: Upper abdominal surgery induces the chestwall and diaphragmatic dysfunction, and often causes the difficulty of weaning from ventilator. We conducted this study to evaluate the chestwall compliance and respiratory work in patients undergoing upper abdominal surgery. We also compared these parameters in patients between the successful weaning and the failure of weaning.

Methods: 20 patients undergoing upper abdominal surgery were subjected. They were divided into two groups consisting of the groups of the successful weaning (G-S) and the failure of weaning (G-F). In addition to this, the respiratory failure without operation was studied as control (G-C). Immediately before weaning trial we measured the total, lung and chestwall compliances (Ct, CL, Ccw) under controlled ventilation respectively. During the weaning, the total respiratory work ($W_T = W_L + W_{cw}$) was directly measured on the basis of Campbell's formula. Simultaneous measurements of the respiratory works on lung and chestwall (W_L , W_{cw}) were done from the changes in intrapleural pressure using respiratory monitor (RM-300, Minato Ika,

Japan). Oxygen cost of breathing (OCB) and pressure time product (PTP) were also assessed.

Result: Results are as follows;

	G-C n=7	G-S n=10	G-F n=10
Ct (ml/cmH ₂ O)	73 ± 26	89 ± 48	60 ± 37
CL (")	71 ± 24	123 ± 58 ‡	83 ± 28
Ccw (")	216 ± 84	122 ± 53	66 ± 29 † *
W _T (J/min)		7.0 ± 2.6	10.4 ± 5.2 †
W _L (")		4.7 ± 1.5	6.2 ± 4.0
W _{cw} (")		2.3 ± 1.4	4.6 ± 3.5 †
OCB (%)		5.0 ± 8.2	14.1 ± 12.1 †
PTP (cmH ₂ O/min)		161 ± 50	217 ± 52 †
†: P<0.05 G-S vs G-F *: P<0.05 G-C vs G-F			
‡: P<0.05 G-C vs G-S			

Discussion and Conclusion: Patients with respiratory failure after upper abdominal surgery indicate the significant low compliance on chestwall and diaphragm. They also showed the significant increases in the total respiratory work and the chestwall work of breathing. From these results, we concluded that one of the causes of the post-operative respiratory failure is contributed to the low compliance on chestwall and diaphragm. Decreased compliance on chestwall are an important factor on the diaphragmatic dysfunction.