

BASELINE RIGHT ATRIAL PRESSURE AND MEAN PULMONARY ARTERY PRESSURE DETERMINE RISK FOR REPERFUSION PULMONARY EDEMA AFTER PULMONARY ENDARTERECTOMY

DS Poch¹, WR Auger¹, PF Fedullo¹, NH Kim¹, KM Kerr¹ and TM Fernandes¹

1: University of California, San Diego; Division of Pulmonary and Critical Care Medicine

Objective: Reperfusion pulmonary edema (RPE) is a common complication after pulmonary endarterectomy (PEA) defined by a PaO₂:FiO₂ ratio of less than 300 with a new radiographic infiltrate in an area that was endarterectomized. Little data exists regarding which patients are at the highest risk of developing RPE. **Methods:** We reviewed 479 consecutive patients referred to UCSD for PEA and examined their demographics as well as their baseline pulmonary hemodynamics to determine risk factors for RPE. **Results:** Overall, 22.9% of patients developed RPE after PEA. Between patients who developed RPE and those who did not, there were no significant differences in age, sex or BMI. Compared to those who did not develop RPE, patients who developed RPE had higher pre-operative RA pressures (12.7 vs. 10.3 mmHg, p<0.001), higher mean PA pressures (49.3 vs. 43.2, p<0.001), lower cardiac indexes (2.07 vs. 2.26, p=0.005) and higher PVR (822.3 vs. 637.6, p<0.001). The RA pressure was >12 mmHg in 61.5% of those who developed RPE compared to only 30.1% of those who did not develop RPE (p<0.001). The differences in hemodynamics persisted after PEA with those who developed RPE having higher RA pressures (9.6 vs. 8.5, p=0.013), higher mean PA pressures (28.6 vs. 23.2, p<0.001), and higher PVR (429.2 vs. 413.1, p=0.005). In a multivariate logistic regression model, the only pre-operative variables that predicted RPE were RA pressures >12 mmHg (OR 3.120, 95% CI: 1.94-5.01) and baseline mean PA pressure >50 mmHg (OR 1.694, 95% CI: 1.05-2.72). **Conclusions:** Pre-operative hemodynamics and volume status are important determinants of RPE. Further investigation is needed to determine if improving these variables prior to surgery decreases the incidence of RPE.

Table 1: Univariate and Multivariate Odds Ratios for Reperfusion Pulmonary Edema

	<u>Univariate</u>		<u>Multivariate</u>	
	Odds Ratio (95% CI)	p-value	Odds Ratio (95% CI)	p-value
Age, per year	0.998 (0.98-1.01)	0.836	-	
Female Sex	0.811 (0.53-1.24)	0.337	-	
BMI, per 1 kg/m ²	1.001 (0.97-1.03)	0.990	-	
Pre-op RA >12 mmHg	4.030 (2.55-6.36)	<0.001	3.120 (1.94-5.01)	<0.001
Pre-op mean PA >50 mmHg	2.498 (1.61-3.87)	<0.001	1.694 (1.05-2.72)	0.029
Pre-op Cardiac Index, per 1 L/min/m ²	0.564 (0.37-0.85)	0.006	-	
Pre-op PVR, per 100 dynes/cm ⁵	2.718 (2.23-3.31)	<0.001	-	