

UC San Diego

Independent Study Projects

Title

Association of pre-operative diastolic pulmonary vascular pressure gradient and pulmonary artery fractional pulse pressure with surgical outcome after pulmonary thromboendarterectomy for chronic thromboembolic pulmonary hypertension.

Permalink

<https://escholarship.org/uc/item/4kd634kp>

Author

Dai, D.

Publication Date

2014

Association of pre-operative diastolic pulmonary vascular pressure gradient and pulmonary artery fractional pulse pressure with surgical outcome after pulmonary thromboendarterectomy for chronic thromboembolic pulmonary hypertension

Dai D, Auger WR, Papamatheakis DG, Kim NH.

University of California, San Diego, La Jolla, California, USA

Rationale:

Pulmonary thromboendarterectomy (PTE) is a potentially curative surgery for chronic thromboembolic pulmonary hypertension (CTEPH). However, CTEPH can present with varying degree of small vessel disease, component not treatable with PTE and presence of which contributes to clinical outcome following PTE. Although the pre-operative pulmonary vascular resistance (PVR) has been established as a risk factor for post-PTE outcomes, other hemodynamic parameters may also correlate with PTE outcome. Accordingly, we evaluated the association of diastolic pulmonary vascular pressure gradient (DPG) and pulmonary artery fractional pulse pressure (fPP) with surgical outcome following PTE.

Methods:

This was a retrospective review of all patients that underwent PTE at UC San Diego Health System from January 2010 through June 2012. The DPG was determined by using the measured pulmonary artery diastolic pressure and subtracting the pulmonary artery wedge pressure. Fractional pulse pressure was calculated by dividing the pulmonary artery pulse pressure (systolic minus diastolic) by the measured mean pulmonary artery pressure. The outcome of interest to which these variables were compared to was post-operative PVR.

Results:

Of the 394 PTEs performed within the time period, 391 survived hospital discharge. The average age was 50.8 years, (range 14 to 84), with females representing 49.5% of the cohort. The mean and median DPG were 17.9 mmHg (SD 8.6) and 18.3 mmHg, respectively. The mean and median fPP were 1.12 (SD 0.23) and 1.11, respectively. The pre-operative DPG demonstrated a linear correlation with post-operative PVR ($R^2=0.175$). However, the pre-operative fPP showed no significant correlation with post-operative PVR ($R^2=0.005$).

Conclusions:

Pre-operative DPG correlated with post-operative PVR in this series of 394 consecutive PTEs. Pre-operative fPP showed no correlation with post-operative PVR. Just 3 post-operative deaths were observed in this series – all occurring with a DPG greater than the observed median value.

(Word count = 334; 1 Figure)

Figure 1. Post-operative PVR as a function of pre-operative DPG

