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## Surgical Pulmonary Embolectomy Outcomes for Acute Pulmonary Embolism

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## **Surgical Pulmonary Embolectomy Outcomes for Acute Pulmonary Embolism**

**Jae Hwan Choi MD, Thomas J. O'Malley MD, Elizabeth J. Maynes MD, Matthew P. Weber MS, Nicholas D. D'Antonio BS, Martín Mellado MD, Frances M. West MD, Taki Galanis MD, Carin F. Gonsalves MD, Gregory D. Marhefka MD, Bharat K. Awsare MD, Geno J. Merli MD, Vakhtang Tchantchaleishvili MD\***

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**Introduction:** Acute pulmonary embolism (PE) is associated with significant mortality. Surgical embolectomy is a viable treatment option; however, it remains controversial due to variable outcomes. This review investigates patient outcomes following surgical embolectomy for acute PE.

**Methods:** Electronic search was performed to identify articles reporting surgical embolectomy for treatment of PE. 32 studies were included comprising 936 patients. Demographic, perioperative, and outcome data were extracted and pooled for systematic review.

**Results:** Mean patient age was 56.3 [95% CI 52.5; 60.1] years and 50% [46; 55] were male. 82% had right ventricular dysfunction [62; 93], 80% [67; 89] had unstable hemodynamics, and 9% [5; 16] experienced cardiac arrest. Massive PE and submassive PE were present in 83% of patients [43; 97] and 13% [2; 56], respectively. Before embolectomy, 33% of patients [14; 60] underwent systemic thrombolysis and 14% [8; 24] catheter embolectomy. Preoperatively, 47% of patients were ventilated [26; 70] and 36% had percutaneous cardiopulmonary support [11; 71]. Mean operative time and mean cardiopulmonary bypass time were 170 [101; 239] and 56 [42; 70] minutes, respectively. Intraoperative mortality was 4% [2; 8]. Mean hospital and ICU stay were 10 [6; 14] and 2 [1; 3] days, respectively. Mean postoperative systolic pulmonary artery pressure (sPAP) was significantly decreased from preoperative (sPAP 57.8 mmHg [53; 62.7]) to postoperative period (sPAP 31.3 mmHg [24.9; 37.8]),  $p < 0.01$ ). In-hospital mortality was 16% [12; 21]. Overall survival at five years was 73% [64; 81].

**Discussion:** Surgical embolectomy is an acceptable treatment option with favorable outcomes.