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## Minimally invasive pulmonary embolectomy

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Acute massive pulmonary embolism (PE) with hemodynamic compromise is best treated with surgical pulmonary embolectomy, performed through standard median sternotomy on cardiopulmonary bypass with central aortic and right atrial cannulation. Surgeons, most often, perform the embolectomy under cardiac arrested conditions, although some may prefer to perform the procedure under beating heart conditions.

This approach is however does require sternotomy with the ensuing functional morbidity associated with such a major operative procedure.

Over the last couple of years, we had several patients who presented with massive pulmonary emboli and hemodynamic instability, complicated with co-morbid conditions that would have made a median sternotomy a risky condition. One patient had had fresh multiple abdominal procedures for colon resection complicated with ongoing long midline abdominal incision infection and indwelling drains. A median sternotomy would have caused high risk of mediastinal spoilage.

The second patient had had hip fracture and was using crutches and would have been at risk for sternal wound strain post operatively.

Accordingly we opted to utilize a novel minimally invasive, thoracoscopically assisted approach to pulmonary embolectomy, utilizing a small 5-cm left parasternal thoracotomy and femoral cardiopulmonary bypass to conduct thoracoscopically assisted surgical pulmonary embolectomy.

This novel minimally invasive approach has been developed and successfully utilized in 5 patients with massive PE.

All five patients had uneventful recovery and prompt hospital discharge. The thorocoscope was valuable to enable complete visualization and clot extraction of the main and segmental pulmonary arteries bilaterally.

We conclude that the use of a non-sternotomy approach sped both functional and pulmonary recovery times and decreased length of stay. Our initial experience suggests that non-sternotomy minimally invasive surgical pulmonary embolectomy with thoracoscopic assistance is a feasible and safe approach for acute massive PE and may result in enhanced recovery times and decreased hospital length of stay.

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