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Case Report

Survival After Emergency Department Pneumonectomy in a Rural Setting: Success of the Regional Trauma System

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Case Report

Traumatic pneumonectomy remains a highly morbid procedure, with mortality rates being reported as high as 100% due to right-sided heart failure, pulmonary insufficiency, and severe shock [1]. We present a case report of survival to discharge after emergency department (ED) pneumonectomy for a patient “in extremis” from multiple gunshot wounds. This case highlights the value of coordination between level I trauma centers and non-level I trauma centers in working together to improve patient outcomes.

Emergency medical services was called to scene to find an unresponsive 22-year-old male with eight gunshot wounds to the right chest, bilateral arms, right groin, and right leg. On scene, he had agonal respirations, a pulse rate of 70, and no obtainable blood pressure. On arrival to the ED at the American College of Surgeons-verified Level III trauma center, he was confirmed to be in PEA, for which he was immediately intubated, had IV access secured, and underwent placement of a right-sided chest tube. Ten minutes after arrival, the surgeon was at bedside at which time the right-sided chest tube had drained 1500mL of blood. An emergent thoracotomy was performed with right pneumonectomy for perforation of the right pulmonary artery. The patient received 14 units of PRBCs, 3

units of FFP, and 10 units of platelets. After the emergent pneumonectomy, the patient remained hypothermic, coagulopathic, and hypoxic so was transferred by helicopter to the regional Level I trauma center for continued care.

On arrival to the ICU, the patient was acidotic with a pH of 7.05, base deficit of 16, BP of 140/100 and pulse 96 requiring pressors. Echocardiogram demonstrated right heart dilation with generalized hypokinesis. Chest x-ray demonstrated pulmonary edema. He responded to diuresis and inotrope support, but with worsening respiratory failure. After a complex course, which included placement on the oscillator and nitric oxide for ARDS, he was eventually weaned and discharged home after a one-month hospital stay. This patient’s survival demonstrates the capability of an inclusive trauma “system” to provide high level trauma care, even in a rural community. The rural Level III trauma center brought an experienced general surgeon to the bedside within 10 minutes of arrival, capable of performing a thoracotomy and emergency pneumonectomy to control exsanguinating hemorrhage. Transfers from Level III centers to a Level I trauma center have demonstrated improved survival over transport from non-designated trauma centers in part due to early identification for needed intervention, stabilization and rapid transfer to the Level I center for advanced care as needed as demonstrated in this report [2]. The patient’s continued and ultimate

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survival is a product of a well-established regional trauma system, with rapid aeromedical transfer to the waiting Level I trauma center. At the Level I center, there were 24/7 in-house trauma and surgical critical care physicians who managed his turbulent and complicated post-pneumonectomy and profound sepsis course over the ensuing month to ultimate recovery and functional survival.

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