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Contact	Stephanie Spain: Trauma Program Manager
Area	Trauma Surgical Critical Care
Applicability	Tennessee Hospitals ONLY

Chest Tube Practice Management Guideline

1. Process/Procedure Description

Placement of chest tubes occurs relatively frequently for the treatment of traumatic hemopneumothorax and barotrauma in ventilated patients. Management schemes often require individualization but there are some guidelines that may be followed to hasten chest tube removal and minimize complications such as residual pneumothoraces and retained or recurrent hydrothorax.

2. Who Should Read This Process/Procedure?

Trauma Residents, Trauma Attendings, Critical Care Nurse Clinicians (Redshirts), Nurses,

3. Process/Procedure

Step:	Process Instructions/Description:
A	General management of chest tubes Patients with indwelling chest tubes generally should have periodic chest x-rays until the tube has been removed. These films should be portable even on floor patients so that no misadventure occurs with the tube on transport to radiology. 1. Non-ventilated patients a. Chest tubes are generally put on suction for 24 hours after placement for evacuation of air and fluid. Fluid, however, will generally drain satisfactorily by gravity and suction can be removed generally when all air leaks have resolved. b. Presence of an air leak is determined during deep breathing and/or coughing by examining the bubble chamber for any air coming through the line. Simple fluctuation of the fluid in the chest tube system tubing is not an air leak and only indicative of physiologic pleural pressure changes during ventilation. c. Patients with residual pneumothoraces may have the suction increased on their chest drainage/collection system to 30 or 40 mm of H20. If a large (>15%) pneumothorax does not resolve with increased suction, consult with the chief resident because a 2nd tube may be necessary. If the residual pneumothorax (i.e. < 15%) does not change with increased suction and remains unchanged on water seal, the chest tube may be clotted or nonfunctional and ready for removal. d. Nonfunctioning or clotted tubes have little or no output and no physiologic motion on deep breathing or coughing. Clots may sometimes be manually striped from the tubing. The system should not be disconnected. Any attempts to aspirate any clots or material from the tubing should only attempted after discussing with the chief and attending and should be done with the assistance of a senior resident. e. Chest tubes, as a general rule, should never be clamped. 2. Ventilated patients a. Same guidelines apply to chest tube management for ventilated patients as far as air leak and output. (See Removal of chest tubes below) b. Patients on high levels of PEEP, generally considered over 10 cm H2O, or patients with high peak airway pressures, > 35 cm H20, may be at an increased risk for recurrent pneumothorax following tube removal. c. Patients with stable ventilator settings and stable chest x-ray after 24 hours on water seal may be candidates for tube removal if output is within stated guidelines. d. Extremely high levels of PEEP demand careful consideration concerning chest tube management. e. Chest tubes, as a general rule, should never be clamped. 3. Removal of chest tubes a. For patients with hemothorax, the timing of chest tube removal is dependent on chest tube output. Chest tubes may be removed when the drainage is less than 200 ml/24 hours. Tubes still draining gross blood

		should generally be left in place. b. Patients with pneumothorax and/or a history of an air leak may have their tube removed when the lung has been “up” on CXR for 24 hours while on H20 seal provided the 24 hours output < 200 ml. c. When placing a chest tube to water seal or increasing/decreasing/ discontinuing the suction, it is best to wait 4-6 hours before repeating a chest x-ray. d. When pulling a chest tube: • Prepare a dressing of Xeroform and 4 x 4's and several pieces of 2" silk or adhesive tape. • Cut the suture when the dressing is ready. • Instruct the patient to take a full inspiration, hold their breath, and Valsalva maneuver. Practice this sequence several times. • Repeat the above sequence, briskly withdraw the thoracostomy tube with the patient performing Valsalva at full inspiration • Immediately apply the occlusive dressing to the thoracostomy wound. This dressing should remain in place for 48-72 hours (unless soiled). • Patients on a ventilator should have the chest tube pulled during the inspiratory phase of their ventilatory cycle. e. Once a tube has been removed, generally wait 2-4 hours to repeat a chest x-ray to assure no recurrent pneumothorax.

References:

Orlando Regional Medical Center. (2016, September 28). Chest Tube Management. Retrieved September 17, 2020, from https://www.citationmachine.net/apa
Sacco, F., & Calero, K. R. (2014). Safety of early air travel after treatment of traumatic pneumothorax. International Journal of Circumpolar Health, 73(1), 24178. doi:10.3402/ijch.v73.24178

Approval Signatures

Step Description	Approver	Date

COO	Robert Maloney: Executive VP & Chief Operating Officer	06/2023
Trauma Services Committee Approval	Stephanie Spain: Trauma Program Manager	05/2023
	Stephanie Spain: Trauma Program Manager	05/2023

History

Sent for re-approval by Spain, Stephanie: Trauma Program Manager on 5/16/2023, 4:58PM EDT

> Added correct review date

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