tPA vs VATS

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Introduction

- The occurrence of a hemothorax following thoracic trauma is common, and in most cases can be successfully drained by the insertion of chest tubes. However, approximately 20% of these patients will develop a retained hemothorax and, of them 40% will require surgical drainage. [1] These drainage surgeries risk an infection of pneumonia, extensive bleeding, pulmonary embolism. [2] For surgical drainage, surgeons today have the choice to perform the more recent video-assisted thoracoscopic surgery (VATS) or the traditional thoracotomy. Research finds VATS to be the more balanced procedure, being minimally invasion and effective, reducing the risk of surgery. [3] Surgical drainage does not always clear the hemothorax the first time. Preforming multiple surgeries enhances the risk of serious complications. Research promotes the nonsurgical intervention of administering a dose of tissue plasminogen enzyme (tPA) and deoxyribonuclease (DNase) into the patient's chest tubes then clamping them shut. Research on tPA shows that it is a safe option, but its effectiveness with successfully clearing a retained hemothorax can be questioned. Previous research does not compare tPA to any of the golden standards of surgical interventions. This study is comparing tPA to video-assisted thoracoscopic surgery.

Study Objective

- Our primary objective is to identify the safer, more effective treatment of a retained hemothorax in adult trauma patients
- Our secondary objective is to determine the effectiveness of current clinical practices resolving a retained hemothorax
- Our tertiary objective is to determine factors that may lead to the success of tPA fibrinolysis therapy.

Methods to Evaluate Problem

- **Our population in this study are adult trauma patients from the trauma registry.**
- **Patient groups well matched in terms of race, gender, ISS, and mechanism of trauma.**
- **At what volumes and length of hospital stays is VATS more effective?**
- **When is tPA more effective?**
- **When is the risk of complications during surgery the highest?**

Anticipated Results

- **We expect VATS to be the better procedure. This surgery has been shown to be a more consistent procedure to treat a retained hemothorax. tPA is safe but it lacks the effectiveness of surgery.**
- **We believe the success of tPA fibrinolysis therapy is related to the combination of factors.**

Future Directions

- A study comparing tPA to VATS will have an important impact on the way surgeons view a retained hemothorax. Retained hemothoraces with large volumes are often quickly intervened by a thoracotomy. Smaller volumes, under 500 cc, are often met with chest tubes that may only be wasting days and surgeons then preform surgical measures. The conclusion of this study and the follow up prospective study may find the best procedure for smaller retained hemothoraces
- In the nature of a retrospective study, data is limited. The conclusion of this study will be followed up by a prospective study on tPA vs VATS. To ensure the prospective study is successful, this study will set a benchmark for the future study.

References

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