# The Outcome of Emergency Lung Resection for Massive Hemoptysis in Tuberculosis: An Evidence Based Case Report

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## CASE PRESENTATION

A 36 year old male presented to ER with massive hemoptysis. The volume expectorated was about 600 ml in 12 hours prior to admission. The patient had complained for untreated productive cough followed by weight loss and night sweat in the last 3 months, but had no personal or family history of hemoptysis. During examination, the patient gradually become hypotensive followed by desaturation. Intubation and fluid rescucitation was performed, followed by laboratory and chest radiography examination.

Chest radiography showed multiple patchy consolidation in both lung, and left lower lobe consolidation. Laboratory findings showed anemia with respiratoric acidosis. Emergency bronchoscopy was performed and the result was active bleeding from segments 6 to 8 of the left lung. Then the patient was rushed to the operating room for emergency lower left lung resection.

Our consideration for emergency lung resection was the young age, localized bleeding from lower left lobe segments, and we predicted that the patients will not survived if we delayed the surgery for tuberculosis diagnostic test and anti tuberculosis coverage. Intraoperative findings was hepatisation of the left lung, but we decided to resect the lower lobe only because the bronchoscopy findings showed active bleeding only come from the lower lobe segments. Anti tuberculosis drugs was started post operatively, combined with empiric antibiotics. The hemoptysis gradually resolved post operatively, but the patient died in 7 days post operatively due to severe septic shock and severe respiratory failure.

## BACKGROUND

Hemoptysis is the most common complication of lung tuberculosis. The bronchial artery or its branches erosion due to cavitary infiltration, bronchiectasis, or destroyed lung can lead to massive bleeding and becoming life threatening. Lung resection plays an important role in the management of massive hemoptysis, and remains a life saving procedure. However, the high postoperative morbidity and mortality still remain a challenge, and causing dilemma in deciding lung resection. To determine the outcome of lung resection in massive hemoptysis due to tuberculosis.

## METHODS

Literature searching was done using PubMed, Science Direct, and Cochrane Library. The outcome was postoperative mortality. The clinical question is **"What is the mortality rate of patients with tuberculosis that underwent pulmonary resection? "**

## RESULT

15 articles that address the clinical question was retrieved. The overall literatures indicated that the overall postoperative mortality rates is ranging between 2% to 24%, which is considerably low because it is not higher than the mortality rates of lung resection due to other causes.

| Articles | Validity | | | | Importance | Applicability | | |
|---|---|---|---|---|---|---|---|---|
| | Assembled early course | Follow up sufficiently | Outcome criteria "blind" | Prognostic factors | Effect size | Similar Patient | Feasible | Benefit ^ Harm |
| Salami MA, *et al* (2018) | Yes | Yes | Yes | Yes | 10% | Yes | Yes | Yes |
| Yazgan S, *et al* (2021) | Yes | Yes | Yes | Yes | 5.1% | Yes | No | Yes |
| Yun JS, *et al* (2018) | Yes | Yes | Yes | Yes | 3.2% | Yes | Yes | Yes |
| Patel R, *et al* (2014) | Yes | No | No | Yes | 18% | Yes | Yes | Yes |
| Kiral H, *et al* (2015) | Yes | Yes | Yes | Yes | 6.5% | Yes | Yes | Yes |
| Halezeroglu S, *et al* (2014) | No | No | No | Yes | 7% | Yes | Yes | Yes |
| Brik A, *et al* (2011) | Yes | Yes | Yes | Yes | 2.2% | Yes | Yes | Yes |
| Soedarsono, *et al* (2019) | Yes | No | No | Yes | 18% | Yes | Yes | Yes |
| Kosasih KA, *et al* (2016) | Yes | Yes | Yes | Yes | 23.8% | Yes | Yes | Yes |
| Radchenko C, *et al* (2017) | Yes | No | Yes | Yes | 7.1% | Yes | Yes | Yes |
| Dewan RK, *et al* (2016) | No | No | No | Yes | 0-12% | Yes | Yes | Yes |
| Rifaat A, *et al* (2014) | Yes | Yes | Yes | No | 1.7% | Yes | Yes | Yes |
| Byun CS, *et al* (2012) | Yes | Yes | Yes | No | 6.8% | Yes | Yes | Yes |
| Bai L, *et al* (2012) | Yes | Yes | Yes | No | 5.8% | Yes | Yes | Yes |
| Tuncozgur B, *et al* (2007) | Yes | Yes | Yes | Yes | 1.2% | No | No | Yes |

## DISCUSSION

Massive hemoptysis is a life threatening condition that requires proper treatment. It remains dilemmatic for clinician to decide between early surgical resection or conservative therapy using anti-tuberculosis drugs. Several clinicians also prefer to administer anti-tuberculosis drugs for 1-2 weeks before surgery.

The most common mistaken effort is to use anti-tuberculosis drugs to resolve hemoptysis, because the destroyed lung had thick walled cavitary lesions which is impenetrable to drug agents. Lung resection should be performed to resect active TB lesions to achieve a relatively effective treatment. In massive hemoptysis, the purpose of lung resection is not only to resect active TB lesions, but also for life saving.

This study proved that the mortality rate of early lung resection in massive hemoptysis was lower. Several studies also indicated that the mortality rate was higher in chemotherapy group than the lung resection group. However, clinicians should be also considered other factors that contribute to mortality such as age and comorbiditied in order to reduce the risk of postoperative complications

This study still has limitations, because there is no studies that compare mortality rate between patients with massive hemoptysis who underwent surgery and those who doesn't operated. However, it is unethical to do that research because it will be unethical to not performed surgery to those who is indicated for surgery

## CONCLUSIONS

The lung resection is recommended as the life saving procedure for massive hemoptysis. As the postoperative morbidity and mortality rates are acceptable, the lung resection is considered safe and should be performed earlier to prevent further complications