CRYOTHERAPY CLOT REMOVAL THROUGH A DOUBLE-LUMEN ENDOTRACHEAL TUBE: A THERAPEUTIC APPROACH IN MANAGEMENT OF MASSIVE HEMOPTYSIS

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INTRODUCTION: The use of a double lumen endotracheal tube (DL ETT) in the critical care setting is essentially limited to the pursuit of two goals; either to protect a healthy lung from pathologic materials (blood, exudate, etc) arising from the opposite lung, or to protect a damaged or anatomically vulnerable lung (with bullae, fistula, etc) from the force of positive pressure ventilation. The major limitation of the DL ETT is the smaller intraluminal diameter which precludes the use of therapeutic bronchoscopic interventions such as cryotherapy in management of massive pulmonary hemorrhage.

CASE PRESENTATION: A 67 year old woman with stage III squamous cell lung cancer presented to the emergency department with massive hemoptysis and subsequently emergently intubated with a single lumen endotracheal tube. CT angiography revealed a right hilar mass encasing the right lower lobe pulmonary artery. In the intensive care unit, the patient continued to have massive pulmonary hemorrhage and worsening hypoxic respiratory failure. The decision was made to exchange the single lumen ETT for a 37 French DL ETT to isolate the affected lung and protect the non-affected lung. After isolation of the bleeding lung, a slim flexible bronchoscope (working channel 1.2mm) was inserted through the bronchial lumen. A significant clot burden was noted in the left main bronchus. A cryoprobe was passed through the bronchial lumen of the tube. Subsequently the slim flexible bronchoscope was introduced side by side with the cryoprobe into the bronchial lumen. Cryotherapy was applied repeatedly and the clots were evacuated successfully resulting in complete clearance of the left main bronchus.

DISCUSSION: We present a case of cancer related massive hemoptysis where a DL ETT was placed to isolate the bleeding lung and cryotherapy was successfully used for clot extraction from the other lung. This case is unique in its approach as the cryoprobe and slim bronchoscope were inserted in parallel through a DL ETT.

CONCLUSIONS: Double lumen ETT placement can isolate a bleeding lung and preserve the oxygenation of the contralateral lung. It allows diagnostic and therapeutic bronchoscopic interventions. A slim bronchoscope through double lumen ETT can be an effective intervention for clot extraction in the critical care setting.


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