

# Management Issues in Haemoptysis: More Questions than Answers

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Haemoptysis is one of the commonest yet complex and challenging clinical symptom encountered in the practice of routine and emergency respiratory medicine. Massive haemoptysis is a significant event that frightens the patients and often frustrates the treating physicians. Currently, there are many divergent views surround the management of major/massive haemoptysis. This may partly be due to the wide variety of causes that lead to this event. Although the list of conditions associated with haemoptysis is very long, the common causes in India are tuberculosis, bronchiectasis, neoplasm, chronic bronchitis, pulmonary aspergilloma, etc.<sup>1</sup>

Management of this condition (especially major/massive haemoptysis) has multiple component that include protection of the airways and healthy lung, identification and treatment of the underlying disease and the maintenance of the haemodynamic status of the patient. To maintain and protect the airways, intubation with a single lumen endotracheal tube is recommended till the bleeding is localised. Once localised, persistent bleeding may require a double lumen endotracheal tube insertion or endobronchial tamponade with a Fogarty catheter to isolate and ventilate the healthy lung.<sup>2</sup> Although unquestionable, this sound approach is often difficult to practice, especially at the primary and secondary health care levels. When the patient is still bleeding, identifying the underlying cause may be difficult, especially in the absence of pre-existing lung disease. Maintaining the haemodynamic status by intravenous fluids, blood transfusion or plasma expanders is recommended but some believe that it may actually increase the bleeding by increasing the pressure gradient across the bleeding bronchopulmonary anastomosis that is often the cause of bleeding in chronic lung cavities.<sup>3</sup> Some centres target a state of slight but safe hypotension to arrest bleeding specially in cavitory pulmonary tuberculosis patients, although this approach needs to be examined by evidence-based data. Protecting the

airways and healthy lung by positioning the patient with the diseased lung side down, is useful.

Alleviating anxiety and suppressing cough by giving anxiolytics and cough suppressants is a very common practice. However, these drugs should be used judiciously and the patient should be observed closely during such therapy to avoid retention of blood in the airways due to resultant altered sensorium and poor cough reflexes.

Use of oral or parenteral haemostatic agents, i.e., n-butanol, botropase derived from bothrops venom, tranexamic acid, ethamsylate, conjugated oestrogen, vasopressin, vitamin K, vitamin C, adenochrome preparations, adrenaline nebulisation and other herbal preparations, etc is debatable. In spite of unproven efficacy, these are used frequently and are claimed to give fair results.<sup>4</sup> However, the agent of choice, dose, duration and cost of therapy are major debatable issues.

Non-responsive haemoptysis despite the above measures often frustrate the physician and patients alike. There are reports of using intra-muscular dehydroemite therapy early in such situations with good results.<sup>3</sup> However, cardiac adverse effects and availability is a major issue in and there are no randomised controlled trials to support its efficacy. There are reports of using indomethacin and cimetidine to suppress the haemoptysis. These drugs probably act by reducing the bronchial blood flow.<sup>5</sup> There are also reports of using external beam radiotherapy in life threatening haemoptysis secondary to mycetoma without any side effects.<sup>6</sup> Pneumoperitoneum, an old approach to manage and arrest haemoptysis in patients with pulmonary tuberculosis is hardly ever used at present.<sup>7</sup> However, we have found this approach very effective with similar outcomes, compared to patient receiving intravenous haemostats (unpublished study) over the last 10 years. Unfamiliarity and lack of experience render this procedure mostly of historical significance. Other measures that have been tried include 1% ferracrylum (insoluble, incomplete iron

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salt of polyacrylic acid) intracavitary through percutaneous transthoracic approach or via bronchoscopy<sup>8</sup> and intra-bronchial instillation of glue (n-butyl cyanoacrylate) through a polyethylene catheter via working channel of video bronchoscope.<sup>9</sup> Despite initial good results, lack of control arm, strict selection criteria, availability and invasive approach are limitations of these techniques and are not evidence based.

Bronchial artery embolisation has evolved into a valuable therapeutic option to control massive haemoptysis. This approach is preferred when the bleeding is not controlled by conservative medical management and patient has contraindication to surgery. Although a palliative and temporary procedure, it provides sufficient time to stabilise the patient to plan future surgery.<sup>10</sup> Despite varying success rates, there are still major issues surrounding its application. These include its availability, experience of the interventionist, risk of neurological complications, immediate mortality, cost of procedure and of utmost importance, the recurrence of haemoptysis in up to 20% to 46% cases.<sup>11</sup>

Management of life-threatening haemoptysis in patients with active pulmonary tuberculosis requires consideration of several issues. Discussions usually centre upon surgical resection, however the high mortality, morbidity, risk of anaesthesia, suppurative and other complications make this approach risky in active tuberculosis patients.<sup>12</sup> In healed tuberculosis cases, especially those with localised disease and aspergilloma, surgery is the definitive modality of treatment that may cure a patient with recurrent haemoptysis. The problem may be compounded by the lack of a thoracic surgeon at every tertiary care centre of our country. Infrastructure, financial constraints, surgical fitness of the patient and limited number of thoracic surgeons are other major issues in surgical management of haemoptysis.

Literature also supports the use of bronchoscopy in the management of haemoptysis with both diagnostic and therapeutic intent. Debate exists over the use of rigid versus flexible bronchoscope to assess the massive haemoptysis. The rigid bronchoscope provides better suctioning and airway control while the flexible bronchoscope allows better visualisation and access to distal airways. Often the flexible instrument is used through the lumen of the rigid scope. Various bronchoscopic approaches include iced-saline lavage, topical agents (1:20,000 epinephrine), endobronchial tamponade, laser photocoagulation, etc.<sup>13</sup> Unfortunately, rigid bronchoscopy is hardly used by the pulmonologist now with flexible bronchoscopy mostly reserved for diagnostic purposes. This limits the

use of bronchoscopy in the management of massive haemoptysis.

To conclude, there are many controversies and unresolved issues that surround the ideal and practical management approach to a case with major/massive haemoptysis. Various treatment modalities are practiced depending upon the physician's discretion, expertise, and available resources, and hence, management varies from centre to centre. Most strategies and interventions have weak or no evidence-based support. Therefore, there is need to address this issue by professional scientific bodies by developing consensus-based practical guidelines. Medical personnel managing such patients need to constantly upgrade their training and knowledge as newer methods and techniques evolve.

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