Clinical case 5: Flexible bronchoscopy with transcarinal needle aspiration

EE is a 71 year old male smoker with a three month history of cough and increasing shortness of breath. Physical examination reveals decreased breath sounds bilaterally. Laboratory studies, including complete blood count, platelets, and chemistries are normal. He has a history of moderately severe chronic obstructive pulmonary disease and coronary artery disease but no history of myocardial infarction. Chest radiograph reveals a right upper lobe mass and subcarinal adenopathy. The patient is married and lives with his wife. His advance directives state no resuscitation in case of cardiac arrest and he wishes no mechanical ventilation or other means of prolonging life support should he be in a comatose or irreversibly dying state. He wishes to undergo systemic treatment for lung cancer should this be diagnosed.

After addressing items of the four boxes, briefly respond to the following questions:
1. Describe three ways to protect a flexible bronchoscope from damage during needle aspiration?
2. Describe three different techniques that can be used to perform transbronchial needle aspiration?
3. What techniques might be used in case of bleeding during transbronchial needle aspiration?