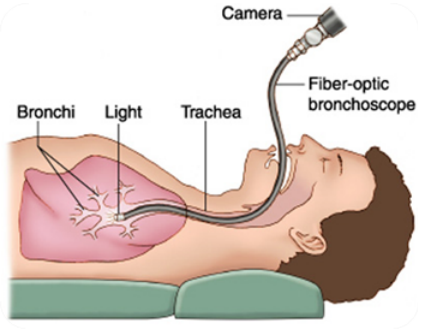
Bronchoscopy



AKA – “Bronch” “Hoover-up”

What is it?

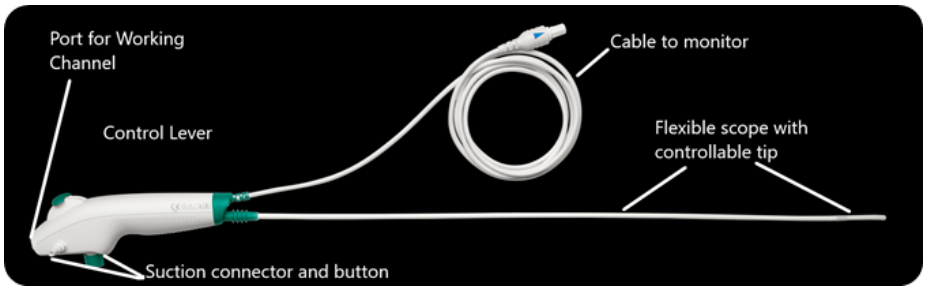
A fibre optic camera that can pass down either an ETT or tracheostomy that allows for visualisation of the lower respiratory tract. Also allows for some procedures to be performed, predominantly in critical care this is bronchoalveolar lavage (BAL) and targeted suctioning.

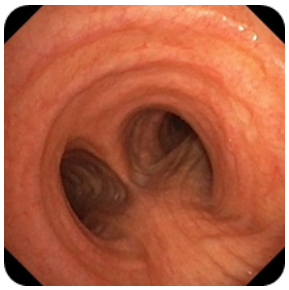
How does it work?

Similar to other scopes used in medicine, the bronchoscope uses a fibre optic camera with a controllable tip that can bend nearly 360 degrees in one plane of motion. The camera is fed down the airway and into the trachea and then into either bronchus and lower branches of the respiratory tree.

Along the length of the scope there is a ‘working channel’. This is a narrow tube down which instruments can be passed, but in Critical care it is predominantly used for flushing and suctioning (this is how BAL is performed). Flushing is achieved by inserting a syringe of saline (usually 20ml) into the port and pushing it through the channel down the length of the scope.

What does it look like?





What does it do?

Allows for direct access to the lower respiratory tract for visualisation and procedures (predominantly suctioning and BAL). It is also regularly used during percutaneous tracheostomies as a way to visualise the puncture of the trachea and insertion of various implements through the site.

What can go wrong?

Although not specific complications, there some concepts to understand when performing bronchoscopy:

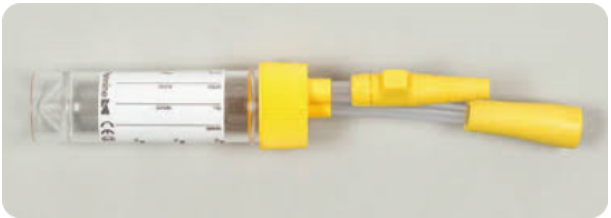
- Poor ventilation
    - The scope occupies a relatively large proportion of the area within the airway, partially obstructing it and there is also often a small leak at the port site where the bronchoscope enters the circuit. Both of these factors often combine to reduce tidal volumes and decrease effectiveness of ventilation.
    - As well as this, during bronchoscopy, it is common to perform suction repeatedly and for long periods. This not only interrupts the ventilator pattern but can severely decrease pressure within the airway and so intrathoracic pressure. This can not only affect oxygenation, but also venous return and therefore cause haemodynamic instability.
    - Both these features are often counteracted by pre-oxygenation/high inspired oxygen delivery during procedure.
- Trauma
    - Inserting any foreign body directly into the airway runs the risk of trauma for the patient, and bronchoscopy is no exception.
    - The main risk of this is bleeding, particularly in coagulopathic patients, but there is a small risk of penetrating trauma to the lung which could lead to pneumothorax
- Displacement of ETT/Tracheostomy Tube
    - As the scope is pushed in and out of the airway, some force is applied on the longitudinal axis of the airway. This can lead to movement of the airway.
    - A simple way to prevent this is for someone to manually support the ETT/Tracheostomy Tube

Key safety point

When performing bronchoscopy, it is easy for the bronchoscopist (often SpR or Consultant) to become very ‘task-focussed’ and lose some situational awareness. It is the responsibility of the wider team to monitor and feedback the patient's observations.

Other notes

To collect sputum/BAL samples, in-line sputum traps are used. They connect to the bronchoscope suction port and then to the wall suction, contents of the lung are drawn into the pot, but then fall to the bottom whilst the flow of air continues through the other opening in the lid.



Further reading

BJA Guide to Bronchoscopy - https://academic.oup.com/bjaed/issue/17/2