



## COMMENT

# The Egyptian technique revisited (Sersar-Mansoura technique). How to remove some inhaled foreign bodies through rigid bronchoscopy without using a forceps

## A Técnica Egípcia revisitada (Técnica de Sersar-Mansoura): como remover alguns corpos estranhos inalados através de broncoscopia rígida, sem recorrer ao uso de fórceps

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The most common cause of accidental death at home among children under 6 years of age is foreign body aspiration (FBA).<sup>1</sup>

A high index of clinical suspicion, combined with the medical history, physical signs and radiology is more conclusive than any one of these in isolation. The greater the availability of expertise and endoscopic equipment the more likely there is to be a favorable outcome without significant morbidity and mortality.<sup>2</sup>

In order to limit the risk of complications, early diagnosis is vital and this is why fiberoptic bronchoscopy is so valuable in diagnosing suspected inhalation when there is no clinical or radiological confirmation. Rigid bronchoscopy is the only procedure that allows diagnosis and removal of the foreign body (FB).<sup>3</sup>

Kiyan et al.<sup>4</sup> found the clinical history and symptoms to have highest sensitivity compared to physical examination and radiology. They found the radiology to have the highest positive predictive value while physical examination had the highest negative predictive value and the clinical history the lowest.<sup>4</sup>

Radiological signs related to foreign body inhalation are usually due to obstruction of the valve which may be any of the following: bypass, check, ball and stop valve obstruction.

The radiological signs of FBA include hyper inflation, atelectasis, radiopaque foreign bodies, pneumonic infiltration, bronchiectasis, pulmonary abscess or no abnormality detected.<sup>5</sup>

Swanson et al.<sup>2</sup>, proposed the following algorithm to evaluate and manage cases of suspected foreign body inhalation:

1. Rigid bronchoscopy if any of the following are present; asphyxia, a radiopaque foreign body, or associated unilaterally decreased breath sounds and obstructive emphysema.
2. Flexible bronchoscopy in all other cases.
3. If flexible bronchoscopy identifies a foreign body, a rigid bronchoscopic extraction should be performed.<sup>2</sup>

Focal hyperinflation, witnessed choking crisis, and elevated white blood cell count are closely associated with FBA; bronchoscopy is strongly recommended in the presence of at least 2 risk factors when FBA is suspected.<sup>6</sup>

Cohen et al.<sup>7</sup> 2009 suggested the following algorithm for cases with history suggestive of FBA:

1. For symptomatic children and/or abnormal physical findings and/or abnormal chest x-ray; either flexible or rigid bronchoscopy is indicated. If flexible bronchoscopy shows a FB, then rigid bronchoscopy is indicated to extract it. The indications for rigid bronchoscopy are; asphyxia,

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radiopaque FB, mediastinal shift and localized findings on chest clinical or examination.

2. If the patient is asymptomatic without physical and radiological findings, then a follow up should be sufficient.<sup>7</sup>

Rafanan and Mehta<sup>8</sup> suggested the following guidelines for bronchoscopic foreign body removal:

1. Complications occur when a bronchoscopy is performed for unclear reasons or for the wrong indications.
2. Preparation ensures 50% success.
3. Bronchoscopy is a three-handed procedure.
4. A good bronchoscopist has excellent skills, but an excellent bronchoscopist is surrounded by excellent support and backup.
5. Time and commitment are essential.
6. Know your limitations.
7. Each case should be seen as a teaching opportunity.<sup>8</sup>

The bronchoscopic accessories of different sizes should include the Grasping Forceps, Balloon Catheters, Dormia Basket, Fish-Net Basket, Three-, Four-, or Five-Pronged Snares, Magnet Extractor, Cryotherapy and Neodymium-yttriumaluminum-garnet (Nd-YAG) Laser. A serious misconception is that the FB is removed through the working channel of the bronchoscope. The FB is never removed this way. The key to removing FBs lies in being able to secure the object properly by grasping or enclosing it with a forceps or basket. Once the object is snared, all three items (bronchoscope, grasping instrument, and FB) are removed from the patient simultaneously. During removal, the bronchoscopist should make every attempt to visualize the FB continuously, always keeping it in the center of the airway.<sup>8</sup>

We consider headscarf (veil) pins dangerous as they are very sharp and the number of cases presented is currently increasing in our area. They may traumatize the airway during removal. Our method of removal used to with the rigid bronchoscopy, either just pulling the pin out from its tip or simultaneously with the bronchoscope or pulling the pin from the middle against the end of the bronchoscope bending it and then again just pulling out the pin simultaneously with the bronchoscope. We had one catastrophic bleeding and some baro-trauma, which was actually the stimulus for us to think about our Egyptian technique; Sersar technique (Mansoura Technique) that was introduced in 2003-2004 and published later.<sup>9,10</sup>

It is a new technique for removing a FB from the airway by using the rigid bronchoscope without the extracting forceps. It depends on very good cooperation between the thoracic surgeon and the anesthesia team. The thoracic surgeon and/or the interventional pulmonologist need good patient sedation and muscle paralysis. He (she) must tell the anesthesiologist that a very short period of anesthesia and paralysis may be needed, with the possibility of retrials. Good anesthesia should provide rapid induction, good ventilation and oxygenation, and a satisfactory degree of muscle relaxation with no or minimal post-operative complications. The rigid bronchoscope is introduced into the airway very slowly until the FB is reached, and then the bronchoscope is manipulated until its tip completely surrounds the tip of the FB. The bronchoscope is pushed distally while the FB is in the center of the tip of the bronchoscope, and the

technician is asked to lower the head of the operating table gradually. Assisted by this postural drainage and chest percussions, the bronchoscope with the FB in the center of its tip is withdrawn under direct vision, maintaining the postural drainage. This procedure has the following advantages:

1. Minimal or no risk of airway tear.
2. A short time is needed.
3. It can be used for sharp objects with a small diameter as well as for friable organic rounded FB that cannot be caught by the forceps.
4. It can be easily taught to junior staff in the start of their career.

This method has the following disadvantages and risks:

1. It is not possible in all cases and it requires very good cooperation and harmony between the anesthesia and thoracic surgery teams.<sup>9-11</sup>

Harischandra et al.<sup>12</sup> stated that during pin extraction, it is important to ensheath the pointed end within the bronchoscope to protect the bronchial mucosa from damage. Two methods have been described, one using extraction forceps and the other using postural drainage to assist with suction, without forceps (the Sersar or Egyptian technique). When the pin point is impacted within the mucosa, pushing the pin distally or bending it in the middle may assist dislodgement.<sup>12</sup>

It is wise to stop and repeat the bronchoscopy if there is bleeding of granulation tissues or if a part of FB is difficult to extract. A second but safer session decreases complication rates.

Re-Re-bronchoscopy can even be advisable. It is better to perform a bronchoscopy to conclude that there is no FBA rather than to leave a FB in the bronchial tree.<sup>3-13,14</sup>

Delaying the removal of suspected inhaled foreign bodies to allow optimal circumstances for manipulation of the pediatric airway is a safe practice at some institutions.<sup>15</sup> We can conclude that this new type of foreign body inhalation (veil pins), and other sharp ended and some rounded organic and inorganic foreign bodies can be removed using the Egyptian technique (Mansoura Technique) in a reasonable percentage of patients.

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