Longstanding Endobronchial Foreign Body:  
A Case Report

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There are many circumstances in which the diagnosis of endobronchial inhalation of a foreign  
body (FB) can be missed. Generally, in such cases, within weeks or at most months from the  
event, clinical bronchopulmonary symptoms develop which allow a correct diagnosis to be  
made and significant complications to be avoided. We report the case of a patient in whom  
an endobronchial FB remained undiagnosed, because of lack of symptoms, for almost three  
years, and then caused significant complications before being identified and removed.  
Problems related to diagnosis and therapy are discussed.

Keywords: Endobronchial foreign body, Fiberoptic bronchoscopy, Pneumonia,  
Spiral CT scan

INTRODUCTION
Aspiration of a foreign body (FB) is a rare event in  
adults, particularly in the absence of predisposing  
conditions such as deglutition disorders, neuro-  
muscular disorders or alcohol or sedatives abuse,  
although it is quite frequent and dangerous in  
children (asphyxia caused by the presence of FBs  
in the airways is the 4th most common cause of  
death in children between the ages 1–4)[1–3]. What  
is more, foreign bodies in the adult are usually  
identified and removed promptly. Here we report  
the case of a 56 year old patient who had an  
endobronchial foreign body, asymptomatic and  
undiagnosed for about 33 months before the abrupt  
onset of symptoms, following which the FB was  
diagnosed and removed.

CASE REPORT
A male, non-smoking, 56 year old patient was  
referred to our department in April 1997 with a  
three day history of fever, pain at the base of the  
right lung, dyspnea and a productive cough. His past
clinical history included a right sided pneumonia in 1972 (he suffered afterward from frequent episodes of bronchitis) and an acute cerebrovascular accident in 1994.

On admission his blood pressure was 120/90 mmHg and heart rate was 120 beats·min⁻¹. Physical examination revealed a total absence of breath sounds in the middle and basal right lung fields and a relevant hepatomegaly. A chest X-ray showed an abundant pleural effusion on the right side and an increased heart shadow, in particular in the region of the left ventricle. Electrocardiography (ECG) was normal. Arterial blood gas values breathing under oxygen supplementation at the flow of 21·min⁻¹ (prescribed by the emergency room of our hospital) were: PaO₂ 73 mmHg; PaCO₂ 26 mmHg; pH 7.43. The blood count showed an increase in white blood cells (WBC = 15,330/mm³) and in particular in neutrophils (88%).

Despite a week of antibiotic treatment and a thoracentesis, the radiological examination did not show any improvement, so we performed a fiberoptic bronchoscopy which revealed the presence of a white object, surrounded by granulation tissue, almost completely obstructing the intermediate bronchus (Fig. 1). When specifically asked, his wife remembered that the patient could have swallowed the cap of the intravenous catheter that had been used during his home convalescence after the cerebrovascular accident in 1994; after which, he had a mild non-productive cough for a short period of time. Spiral computed tomography (CT) of the chest, performed after the endoscopy, confirmed the presence of a foreign body and showed retraction and fibrosis of the lower and middle lobes of the lung parenchyma (Fig. 2(a) and (b)). The middle lobe also had bronchiectasis.

The patient underwent a new course of antibiotic therapy with a significant improvement of the clinical picture (remission of the fever, dyspnea and chest pain) and of the arterial blood gas values, while the CT findings remained substantially the same. At this point, steps were taken to remove the FB with a rigid bronchoscope after a failed attempt with the fiberoptic bronchoscope.

**DISCUSSION**

Adult patients who have aspirated an FB can be divided into two groups (acute and chronic) based upon the amount of time between aspiration and diagnosis [4]. The indications for performing endoscopy differ between the two groups.

According to the most comprehensive studies, the main indications for diagnostic bronchoscopy in patients in the “acute group” (retention of an FB for
FIGURE 2  (a) 3D appearance of right bronchial system: the main, the upper, the stenotic intermediate and the lower bronchi are easily discernible. (b) Paracarinal section corresponding to Fig. 2(a): arrows show the low density membrane occluding the intermediate bronchus.
not more than one week) are a positive history and
the presence of a visible object on the chest X-ray,
whereas the main indications in the "chronic group"
(retention for more than one month) are a positive
history of swallowing an FB and the suspicion of an
endobronchial lesion.

Most scientific articles on tracheobronchial FBs
in adults are concerned with acute aspiration which,
being generally symptomatic, are rapidly diagnosed
and removed. Even when aspiration results in few or
no symptoms and an early diagnosis is not made,
there are often, in the first weeks or months after the
event, clinical symptoms caused by early or delayed
complications [4–8]; these symptoms are investi-
gated by a series of examinations which lead to the
identification and then removal of the FB [9–11].

The peculiarity of the case we report is that the
acute aspiration, causing few (or even no) symp-
toms, was followed by a healthy period of 33
months; in fact examining the clinical history of
the patient we see that, from the time of the event
until the diagnosis, he suffered only a few bouts of
bronchitis, not dissimilar to the ones he had
experienced in the years before the aspiration and,
therefore, not definitely attributable to the presence
of the FB.

The initial unimportance given to any symptoms
can be linked to the compromised neurological
condition of the patient, who was convalescing after
an acute cerebrovascular accident, while the lack of
symptoms and/or complications for such a long
period of time after the event could be explained, as
was already hypothesised by Jackson in 1921 [12], by
the inert nature of the object (which made inflam-
mation less likely and less intense in the resting
place); the rounded shape (which did not cause
trauma), and the size of the object (which was not
large enough to obstruct the intermediate bronchus
completely). Another important factor was the
absence of chronic pulmonary diseases, which
would have already limited respiratory function by
the time of the event.

The first point of reflection offered by this case
is an epidemiological one. The ever-increasing use
of invasive diagnostic and therapeutic methods
is paralleled by an increased risk of "iatrogenic
aspirations". In fact, in some large surveys, dental or
medical appliances account for a substantial num-
ber of aspirated FBs, and our case is but one
example.

Furthermore, we believe that bronchopulmonary
changes, particularly in the presence of the more
common predisposing situations, should make the
clinician suspicious of FB aspiration. Particular
attention should be given to taking the patient's
history. Direct questioning about the possibility
of having "swallowed" an object is necessary since
patients and their families often do not mention the
aspiration of an object because they do not realise
its importance.

From the clinico-radiological point of view greatest
attention should be paid to a suspicious endo-
bronchial lesion: in fact, in most cases with a
negative history a diagnostic bronchoscopy is per-
formed to investigate conditions such as: recurrent
pneumonia in the same area, delayed resolution
pneumonia, pneumonia with lung volume loss and
pneumonia with continued fever despite adequate
treatment.

The treatment of choice is the endoscopic removal
of the FB, which is effective in around 98% of cases.
Although the rigid bronchoscope must today be
considered the safest and most effective instrument
for removing an FB, in recent years more and more
studies have demonstrated that good results can be
obtained with fiberoptic bronoscopes, which can
be of great importance in avoiding surgery in
specific cases such as the presence of cervico-facial
traumas which do not allow effective hyperexten-
sion of the neck or when the FB is too distal to be
reached by a rigid bronchoscope [13,14].

The possibility of surgery, which is quite rare,
must be considered carefully case by case and
limited to these three types of situation: FBs not
removable by endoscopy due to their size and/or
shape; FBs which have been in situ for a long time
and which have provoked pathologic changes in the
tissue beneath the obstruction; small objects which
have reached the periphery and are impossible to
reach or extract by endoscopy [15].
In conclusion, when a patient presents with an endobronchial lesion of unknown origin, particularly if associated with predisposing factors, the wise clinician should question the patient directly about the possibility of FB aspiration and not discount its relevance even if many months antecedent to the onset of the patient’s symptoms. Fiberoptic bronchoscopy is usually diagnostic and can also often be successfully used to remove the FB.

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