insertion is straightforward and minimally invasive, and the stent can be left in place long term without swallowing, voice, or coughing problems.

Our patient had a major and sustained improvement of his lung function with disappearance of his airway obstruction. We believe that restoration of airflow was the major factor in this clinical improvement. He still has copious purulent secretions colonised by *Pseudomonas* due to bilateral bronchiectasis, but eliminates secretions easily and infection is no longer a problem.


Commentary: yet more to see down the bronchial tree?

Martin R Hetzel

These three case reports illustrate the range of rare conditions that may be encountered from time to time at diagnostic bronchoscopy. Many may at least superficially resemble bronchial carcinomas, but lead to surprises when full laboratory results become available from bronchoscopic biopsy samples. The case described by Collard et al illustrates the usefulness of direct inspection at bronchoscopic examination in evaluating the dynamics of the airway wall. In the case of pulmonary actinomycosis described by Hsieh et al bronchoscopic examination gave the diagnosis by demonstrating a cavitating lesion which could be entered with the bronchoscope and provided positive microbiology samples. Interestingly, however, the authors were cautious in making a diagnosis of actinomycosis alone and were concerned at the possibility of a fungal infection – presumably because of the radiographic characteristics of the meniscus sign and the previous diagnosis of old tuberculosis.

Pulmonary actinomycosis is very rare and many cases are only diagnosed retrospectively from resected specimens (sadly the author's personal experience!) unless stronger clues such as sinus formation onto the chest wall with characteristic sulphur granules are present. The most common misdiagnosis is of bronchial carcinoma and, while some patients may not suffer too much if a resected "cancer" turns out to be actinomycosis, it is of course a tragedy if this rare but treatable disease is completely missed. Confusion with tuberculosis is a further problem, both from the radiological appearance and because *Actinomycosis israelii* can stain acid fast. Moreover, some reports have described cases of colonisation of tuberculous cavities. Actinomycosis is more common in the lower lobes but upper lobe lesions occur and are then more likely to mimic tuberculosis. In the case described here one presumes that the initial diagnosis of tuberculosis was erroneous. It is interesting to note that rifampicin has been tried in the treatment of actinomycosis1 so, if this drug was included in the three-drug regimen used, it might have held the disease under partial control during the previous period of empirical treatment for tuberculosis.

This patient was susceptible to pulmonary actinomycosis from two risk factors – namely, dental sepsis and diabetes. Because of the anaerobic conditions required for actinomycosis to flourish, response to penicillin and other appropriate antibiotics tends to be slow. Surgery alone is unlikely to cure, although surgical drainage is usually recommended where there is abscess formation. Some cases are cured by antibiotic treatment alone. In this case the authors imply that they elected for immediate surgery because of a tentative diagnosis of fungal infection although, somewhat paradoxically, they actually had proof of actinomycosis from their bronchoscopic samples. One might speculate on the possibility of curing this patient with prolonged antibiotic therapy and postural drainage. However, because of the possibility of a chronic infection in a diabetic subject, sacrificing some viable lung at lobectomy was probably still the best management option.

As reported by Farrell et al, primary malignant melanoma of the bronchus is very rare and many previous case reports have not fully
Commentary

excluded the possibility of a primary site else-
where. A review by Herbert² of 18 previously
published papers, for example, found only two
cases to be proven with a further eight con-
sidered near proven; thus at most only 50% of
these cases were likely to have been primary
tumours. The diagnosis is most unlikely to be
suspected at the time of bronchoscopy unless
the clue of pigmentation is present. Amelanotic
melanoma in the bronchus is likely to be mis-
interpreted as anaplastic carcinoma. The au-
thors gave a valuable review of criteria from
which the diagnosis of a primary tumour can
eventually be made with some confidence.

The very small numbers of convincing case
reports make it difficult to judge the prognosis
for primary malignant melanoma of the bron-
chus. It would appear logical to attempt surgical
resection when practicable. This particular
patient appears to have done well, which would
be surprising if there was enlargement of the
hilary lymph nodes. Unfortunately the authors
have not stated clearly whether these nodes
were examined for involvement by melanoma or
whether they reflect infection in the distally
collapsed lower lobe. Why primary malignant
melanoma occurs in the bronchial tree remains
a puzzle on which little can be added to the
discussion in this case report.

The case report described by Collard et al de-
stributes the value of direct inspection in
assessing tracheomalacia in the spontaneously
breathing patient. These authors showed im-
pressive improvements in the flow-volume loop
and arterial blood gas measurements after stent
insertion. It is not quite clear, however, why
this patient continued to have obstructive sleep
apnoea in spite of his dramatically improved
spirometric parameters. Presumably he had
some additional pathology in the upper airway
above the stent.

A considerable number of stents have been
developed in recent years because they all have
disadvantages.³ The expanding wire types (for
example, Gianturco stents) are popular, par-
ticularly with physicians in the UK because
they can be inserted with the fibreoptic bron-
choscope under local anaesthesia, although
radiographic screening is also required. They
avoid interfering with the mucociliary escalator
but will become embedded in the airway
mucosa and cannot subsequently be removed.
This is not often a problem in palliation of
advanced cancers but raises considerable an-
xieties for their use in patients with non-malign-
ant diseases in whom a longer survival is
anticipated, as in the case of tracheomalacia.
Silicone stents, amongst which the Dumon type
has probably been most widely used, have the
advantage of easy removal but need studding on
their outer walls or flanges on their ends to
prevent migration. The Dumon variety requires
an expensive purpose-built rigid bronchoscopic
system for insertion. Some thoracic surgeons
prefer to use tailor made stents cut from silicone
tubing inserted over bougies through the rigid
bronchoscope. All these types require con-
siderable skill with the rigid bronchoscope to
insert them. Moreover, long lengths of airway
cannot be stented without compromising the
mucociliary escalator, necessitating the Mont-
gomery T tube type of stent with a tracheo-
 stomy side arm for insertion of a suction cath-
er by the patient.

The stent described and developed by Col-
ard et al attempted to overcome this problem
by mimicking the natural trachea with a pos-
terior collapsible wall so that an effective cough
can be preserved. This device does, however,
require a purpose built forceps device to place
the stent. Stent insertion has to be done blind
since no bronchoscope can be used. The stent,
with its two bronchial limbs closed by the forc-
eps jaws, is pushed through the larynx into
the trachea and then opened when judged to
be in position. How long patients can be main-
tained with this new type of stent remains to
be seen.

We still need to develop stents that can be
inserted under direct vision, do not migrate,
can be easily removed, and do not compromise
the mucociliary escalator. Unfortunately,
manufacturers tend to be more interested in
developing vascular stents where there is a
much larger market to reward development
costs.

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Commentary: yet more to see down the bronchial tree?

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