

THE IMPORTANCE OF RADIOGRAPHIC EXAMINATION OF THE OESOPHAGUS AND ROUTINE CHEST RADIOGRAPHY AFTER OESOPHAGOSCOPY

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Oesophagoscopy is usually performed on an oesophagus suspected of being diseased. Owing to its taut suspension between points of fixation at both its upper and lower ends, the normal oesophagus is a particularly friable organ.¹ The pathological oesophagus, because of the disease process present, is even more friable, and particularly prone to rupture of its wall, with fistula formation.

Reports on the incidence of acquired oesophageal fistula place trauma due to instrumentation as the second commonest cause.² They suggest that the commonest is carcinoma of the oesophagus.² Another common group is said to be that of 'unknown aetiology'.²

In a recent series of 29 radiographically investigated cases of carcinoma of the oesophagus, in all of which the patient had undergone oesophagoscopy and some had had a Souttar's tube installed, no less than 13 presented with fistulae in one direction or another (i.e. 45% of those examined). Three (23%) of the fistulae could definitely be traced to instrumentation. In each of these 3 cases radiographic examination of the chest and oesophagus was performed both before and after oesophagoscopy. It is our contention that if all oesophagoscopy patients were subjected to both pre- and post-oesophagoscopic radiographic examinations the reported frequency of fistulae due to this instrumentation would be much higher. Furthermore, we feel that the statement that carcinoma of the oesophagus *per se* is the commonest cause of acquired oesophageal fistula should not be automatically ac-

cepted. Instrumentation, which is a routine investigation in these cases, is probably a much more frequent cause of fistula in a malignant oesophagus than is realized. We further suggest that the percentage of acquired fistulae of truly 'unknown aetiology' would be less if all possibility of instrumental causation was excluded.

It may be argued that a fistula produced by oesophagoscopy would present with signs and symptoms which would result in a quick request for contrast medium studies and chest radiography. On the contrary, of the 13 cases with fistula found in our series, only one presented with the symptoms of gangrenous mediastinitis or pneumonitis that are expected in such cases. This absence of signs and symptoms has been

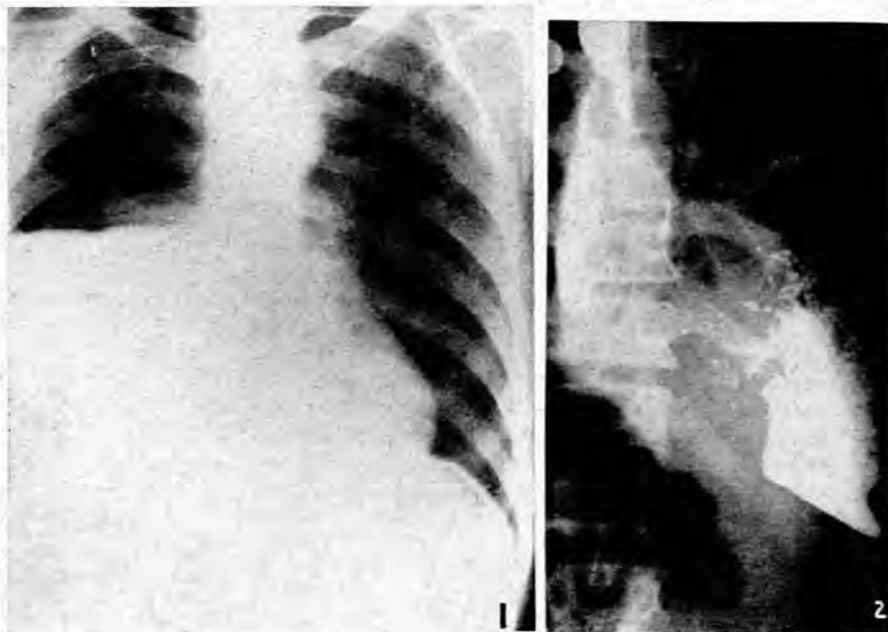


Fig. 1. Case 1. Oesophago-pleural fistula. X-ray of chest.
Fig. 2. Case 1. Oesophago-pleural fistula.¹ See text.

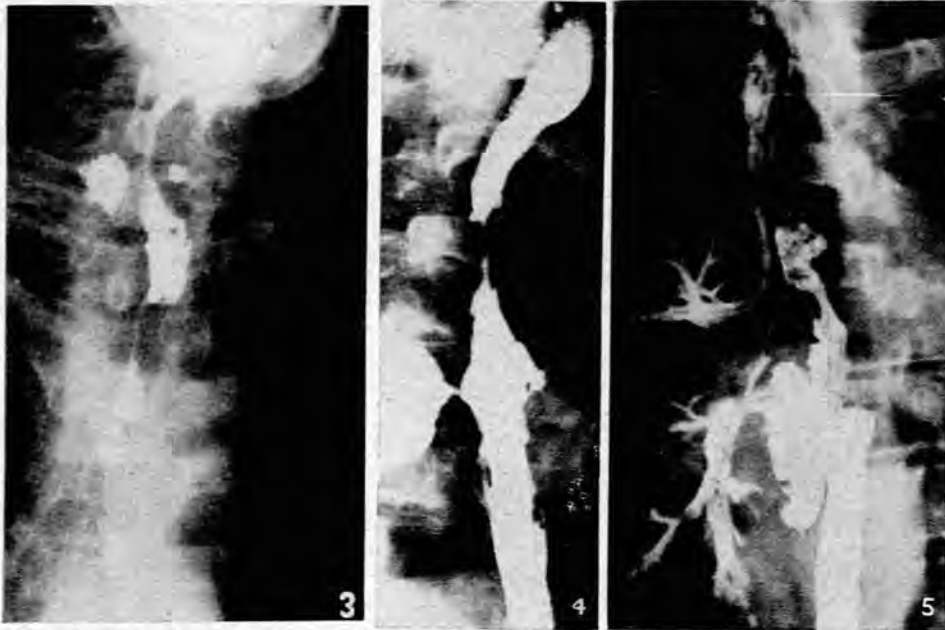


Fig. 3. Case 2. Oesophago mediastinal fistula. See text.

Figs. 4 and 5. Case 3. Oesophago-mediastino-bronchial fistula.¹ See text.

noted by Abrams,² who stated that 'regurgitation, often attributed to nervousness, may be the only complaint'. He also wrote: 'Fistulae of acquired origin may be present for years before producing symptoms. The latter may be due to a small slit or valve-like opening in the oesophagus, or to closure of the tract by contraction of the oesophagus, and possibly of the trachea and bronchi, during deglutition.'

Radiological Technique

We suggest that, in all cases which are to undergo oesophagoscopy, a pre-operative contrast-medium swallow and straight X-ray of the chest should be instituted, and that both these investigations should be repeated after instrumentation.

In addition, the routine procedure for a contrast-medium swallow should be altered. The usual positions for radiography in the erect and supine and/or prone positions are inadequate. It has been found that if a fistula passes from the oesophageal wall in a somewhat upward direction either to the mediastinum or to part of the respiratory tree, it will not be demonstrated either partially or in its entirety if this routine procedure is followed. The patient should therefore be placed in the supine and/or prone position with the head tilted downwards and then asked to swallow the contrast medium. In addition further views are advisable. If a fistula passes from the oesophageal wall in an upward direction and to the left then, in addition to the supine position with the head tilted down, a position should be taken in which the chest is tilted with the right side upward, i.e. the right anterior oblique position. If the fistula passes to the right and upwards, then the patient should lie supine with the head tilted down and the chest tilted with the left side up, i.e. in the left anterior oblique position.

The importance of these radiological manoeuvres is demonstrated in the following case reports:

Case 1

This case has previously been described as the first demonstration of an oesophago-pleural fistula outlined with contrast medium.¹

A middle-aged male African was to be treated for an inoperable carcinoma of the middle third of the oesophagus. His chest was radiographed pre-operatively and was found to have normally transradiant lung fields. A contrast-medium swallow demonstrated the carcinoma but no fistula was present.

A Souttar's tube containing radium was inserted and a routine chest radiograph was ordered on the patient, who was comfortable and symptom-free. The radiograph revealed the presence of a right-sided haemorrhage or hydropneumothorax. An immediate diagnosis was made of an oesophago-pleural fistula. (Fig. 1.)

A contrast-medium swallow was done and the above diagnosis confirmed. (Fig. 2.)

Case 2

A diagnostic oesophagoscopy on an African male had revealed the presence of a carcinoma in the upper third. After the operation the patient was symptom-free, but a routine chest X-ray

then instituted revealed surgical emphysema of the neck and shoulders. A diagnosis of oesophago-mediastinal fistula was made and was confirmed on contrast-medium swallows. (Fig. 3.)

Case 3

A radium-containing Souttar's tube was placed into an oesophagus for a lower-third carcinoma. A routine post-operative radiograph of the chest revealed surgical emphysema in the region of the left shoulder. This patient, unlike cases 1 and 2, was not completely asymptomatic—he had developed a post-operative cough.

A contrast-medium swallow revealed the presence of an oesophago-mediastinal fistula (Fig. 4), which was demonstrated on the right border of the oesophagus and appeared to pass in an upward direction. The technique described above of tilting the patient with the head downwards and the left side raised resulted in the demonstration of the entire course of the fistula, which was now found to penetrate the right lower-lobe bronchus; that is to say, it was an oesophago-mediastino-bronchial fistula (Fig. 5).

SUMMARY

1. In a series of 29 cases of carcinoma of the oesophagus 43% were found to have fistulae present either pre- or post-operatively. Three could be demonstrated for the first time post-operatively by routine chest radiography, confirmed on contrast medium swallow.

2. Most patients with fistulae were asymptomatic.

3. Radiological studies of chest and oesophagus are considered to be essential routine procedures both before and after oesophagoscopy.

4. The usual radiological positions for oesophageal examination are inadequate and inaccurate. Procedures varying from the usual technique were found to be more thorough and accurate.

5. The importance of routine post-oesophagoscopy X-rays and the importance of the altered technique is demonstrated in 3 case reports.

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REFERENCES

1. Katz, J. and Cohen, G. (1959): *S. Afr. Med. J.*, 33, 773.
2. Abrams, H. S. (1954): *Arch. Otolaryng.*, 60, 371.