

## Conservative surgery for bronchial adenomata

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**Cooper, D. K. C. and Belcher, J. R. (1976).** *Thorax*, 31, 44–48. **Conservative surgery for bronchial adenomata.** Fifteen patients with bronchial adenomata have undergone surgical treatment and have been followed up for periods of one to 25 years. Management consisted of bronchotomy with local excision in six cases, segmental resection in two, lobectomy in six, and pneumonectomy in one case. One patient who underwent lobectomy subsequently died of an unrelated cause (gastric haemorrhage) in the early postoperative period; of the remaining 14, there have been no cases of recurrence, and all patients have remained symptom-free with normal chest radiographs. These results strongly support a conservative surgical approach where the clinical and histological diagnosis of carcinoid tumour is definite.

Bronchial adenomata constituted 5% of pulmonary tumours in Foster-Carter's series in 1941 but only 1% of recent series (Donahue, Weichart, and Ochsner, 1968). This diminishing proportion is related to an increase in the incidence of carcinoma of the bronchus, as the total incidence has not changed. The pathological nature and, therefore, the management of bronchial adenomata remain controversial subjects.

Various authorities have classified bronchial adenomata into major subgroups, and there now appears to be general agreement on the recognition of three such groups:

1. carcinoid tumours, or argentaffinomata, which constitute 80 to 90% of reported series;
2. adenoid cystic carcinomata or cylindromata, which constitute 10 to 15% of the total; and
3. mucoepidermoid adenomata, which form only 2 to 3% of the total.

A very rare fourth subgroup is recognized by some authors, the bronchial mucous gland adenoma.

### PRESENT SERIES

Fifteen patients with bronchial adenomata have undergone surgical management at the London Chest and The Middlesex Hospitals and have been followed up for periods extending from 21 years to 7 months. Of the 15 patients, 10 were men (age range 19 to 54, mean 41 years) and five were

women (age range 24 to 55, mean 42 years). The 15 patients constituted less than 1% of patients undergoing thoracotomy for pulmonary tumours during this period.

**PATHOLOGY** The sites of origin of the adenomata were spread throughout the bronchial tree, although there was a predominance of lesions arising in the left upper lobe and lingula (Fig. 1).

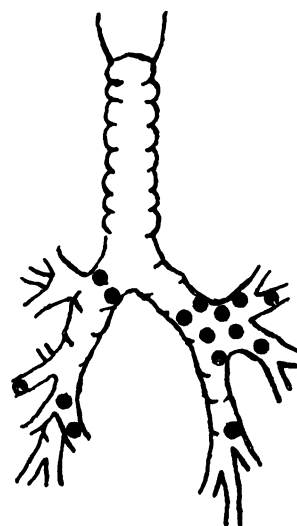


FIG. 1. Sites of origin of 15 bronchial adenomata.

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There were five adenomata in the right bronchial tree, and 10 in the left. Fourteen cases showed histology typical of bronchial carcinoid tumours; there was one example of adenoid cystic carcinoma occurring at the division of the left main bronchus.

No patient in the present series developed features of the carcinoid syndrome, but one presented with Cushing's syndrome from ectopic ACTH production by the tumour.

**MANAGEMENT** The diagnosis was made by bronchoscopy in 14 cases, with histological confirmation by biopsy. In one patient the tumour, lying in the substance of the right middle lobe, was too peripheral to be seen at bronchoscopy (Fig. 2).

A conservative approach to surgical management was made, and, whenever possible, bronchotomy and local excision was the treatment of choice. Where this was impossible, segmental resection or lobectomy was performed. Where reconstruction after local excision would have led to severe stenosis of the bronchus, a resection was carried out. If a lung abscess or bronchiectasis had developed distal to the site of obstruction by a tumour (Fig. 3), segmental resection or lobectomy was performed.

Treatment consisted of bronchotomy with local excision of the tumour in six patients, segmental resection in two, lobectomy in four, with bilobectomy in two, and a pneumonectomy in one case.

The pneumonectomy was performed in a patient with an adenoma in the left upper lobe bronchus with no extrabronchial extension, in whom a left upper lobectomy had been intended; the pulmonary artery, however, ruptured while being ligated, necessitating ligation at its origin and subsequent pneumonectomy.

#### RESULTS

One patient who underwent lobectomy subsequently died of an unrelated cause (gastric haemorrhage) in the early postoperative period; among the remaining 14, there have been no recurrences, and all have remained symptom-free with normal chest radiographs, though one has emigrated and was lost to follow-up after two years. Several have undergone bronchoscopy at intervals since their operation, and there have been no signs of recurrence in any.

In three patients histological examination of the tissue removed showed that the tumour extended to its margins in at least one area; they

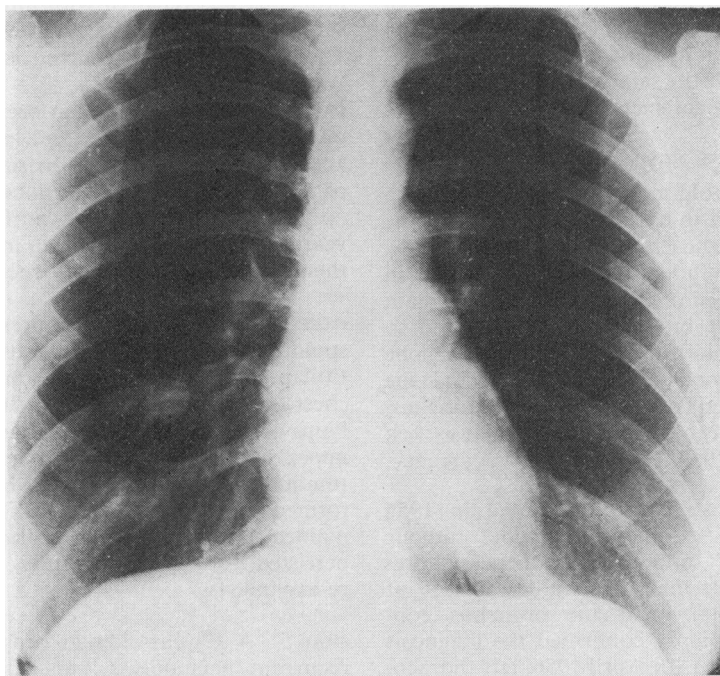


FIG. 2. *Peripherally situated carcinoid adenoma in right middle lobe.*

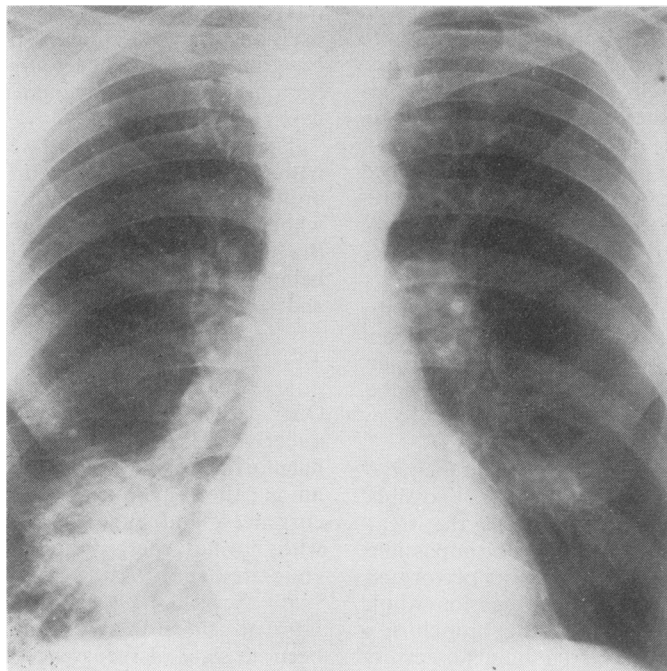


FIG. 3. Lung abscess distal to site of carcinoid adenoma.

must be assumed to have had residual carcinoid tumour in the bronchus. In none has there been any evidence of recurrence, although the first one was operated on as long as eight years ago.

Brief details of the six patients treated by bronchotomy and local excision are set out below.

#### CASE SUMMARIES

**CASE 1** A 44-year-old man developed a cough in 1952 and was found to have partial collapse of the left lower lobe in the chest film of March 1953. Medical treatment failed and a bronchogram in October 1953 showed obstruction of the left main bronchus, which at bronchoscopy was found to be due to a carcinoid tumour. The left lower lobe bronchus was opened at thoracotomy, and the tumour was removed from the left main bronchus. The patient has been followed up and was last bronchoscoped in 1969; he has had no recurrence.

**CASE 2** A 43-year-old man presented in 1956 with haemoptyses. A smooth polypoid tumour obstructing the left upper lobe orifice and presenting into the left main bronchus was seen at bronchoscopy. Distal to it the bronchus contained much pus. Biopsy confirmed the diagnosis of a carcinoid tumour. In April 1956, left thoracotomy, left main bronchotomy, and excision of the

tumour were performed. The defect in the bronchus was repaired with interrupted steel wire sutures, and the pleura was sewn over as a graft. There has been no recurrence.

**CASE 3** A 25-year-old man presented in 1956 and underwent bronchotomy and local excision of an adenoid cystic carcinoma arising at the junction of the left upper and lower lobes (Fig. 4). Follow-up bronchoscopies were performed for three years and he was last seen in December 1974; there have been no signs of recurrence.

**CASE 4** A 43-year-old man presented with a long-standing cough and a recent attack of bronchitis. Collapse of the right upper lobe was seen on the chest radiograph (Fig. 5). Bronchoscopy and biopsy revealed a carcinoid adenoma in the right upper lobe bronchus. Bronchotomy, excision of tumour, and reconstitution of bronchus were performed in September 1967. The bronchus remained narrowed, and collapse of the lobe persisted for several months, but it eventually re-expanded.

**CASE 5** A 32-year-old man presented in 1969 with recurrent haemoptyses; a chest film revealed a right hilar mass. Four years previously he had

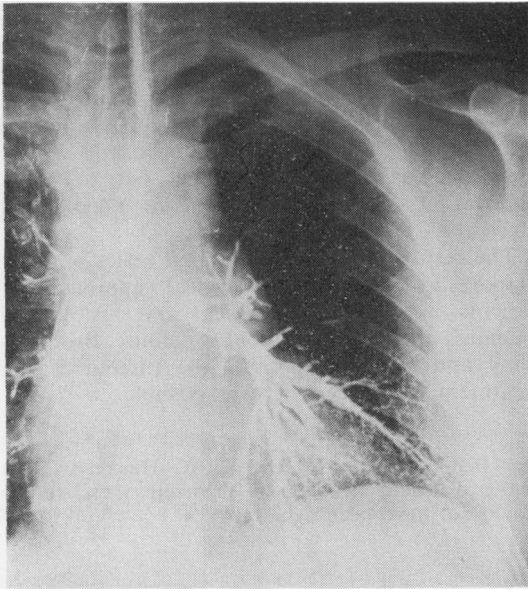


FIG. 4. Bronchogram showing filling defect of adenoid cystic carcinoma near origin of left upper lobe bronchus.

had an isolated haemoptysis; the chest radiograph had been clear at that time. Bronchoscopy and biopsy confirmed a carcinoid tumour of the right main bronchus. A bronchotomy and piecemeal excision of the tumour was performed; there has been no recurrence.

**CASE 6** A 19-year-old youth complained of recurrent haemoptyses for one year and recent left pleuritic pain. Physical examination and a chest radiograph revealed collapse of the left lower lobe. Bronchography showed complete obstruction of the left main bronchus (Fig. 6). Bronchoscopy confirmed the obstruction to be due to a carcinoid tumour, which was locally excised in July 1974 by bronchotomy. The collapsed lobe expanded fairly rapidly. The tumour was found to extend to the limits of the excised tissue on histological examination, but to date there have been no signs of recurrence.

#### DISCUSSION

The controversy over the pathological nature of bronchial adenomata is almost certainly due to

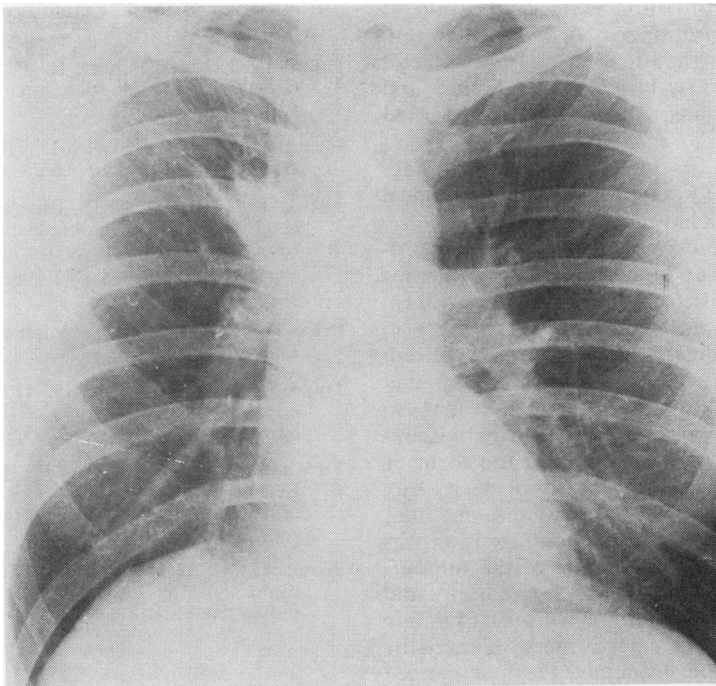


FIG. 5. Partial collapse of right upper lobe caused by the presence of a carcinoid adenoma in the lobar bronchus.

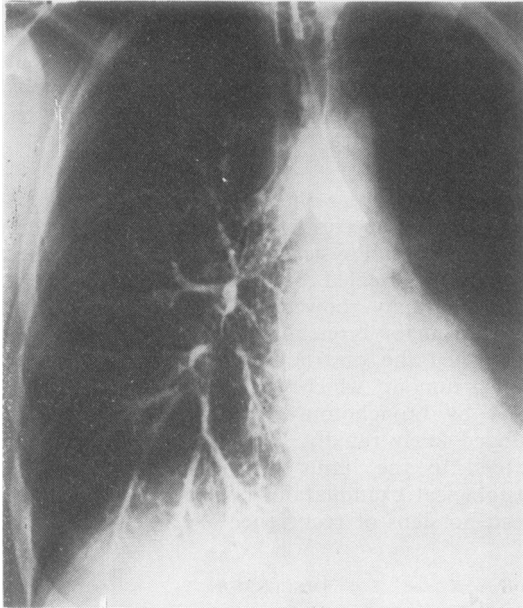


FIG. 6. Bronchogram showing complete obstruction of the left main bronchus (by a carcinoid adenoma).

differences in interpretation and classification of the histological appearances. A highly differentiated carcinoma of the bronchus may be difficult to distinguish from a bronchial adenoma, and even oat-cell lesions show certain marked similarities.

Such differences in interpretation would account for the widely varying results of surgical management which have been reported.

Many surgeons have advocated operative procedures as for carcinoma of the bronchus (Womack and Graham, 1938; Toole and Stern, 1972; Turnbull *et al.*, 1972) but, particularly in the United Kingdom, there has been a tradition of conservative approach. Brock (1938) and Foster-Carter (1941) were among the first to advocate bronchoscopic removal with or without local irradiation, which might be in the form of radon seeds, radium applied locally or deep x-ray therapy. Price-Thomas (1954) pointed out that local recurrence after endobronchial excision was due to the extrabronchial portion of the tumour. He reported five cases in which thoracotomy and local excision of the tumour with surrounding bronchial wall had been performed, followed by reconstruction of the bronchus. He first carried out this operation of bronchotomy excision in September 1947.

d'Abreu and MacHale (1952) carried local resection a step further by resecting the entire circumference of the left main bronchus over a short distance with end-to-end anastomosis and demonstrated that problems from stenosis did not result, though some narrowing did occur. Sleeve resection has also been carried out to avoid removal of functioning lung tissue (Toole and Stern, 1972; Jensik *et al.*, 1974).

The results of the present small series strongly support a conservative surgical approach in patients in whom the clinical and histological diagnosis of carcinoid tumour is definite. Bronchotomy and local excision of the tumour is the treatment of choice wherever possible.

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