Short reports

Fatal mediastinal compression as a late complication of surgical plombage

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Abstract

Surgical plombage was used as a form of collapse therapy for pulmonary tuberculosis before the advent of reliable chemotherapy. A patient developed stridor, recurrent laryngeal nerve paralysis, and obstruction of the superior vena cava and eventually died as a result of haemorrhage into a large intrathoracic cyst, secondary to a polystan pack inserted 38 years previously.

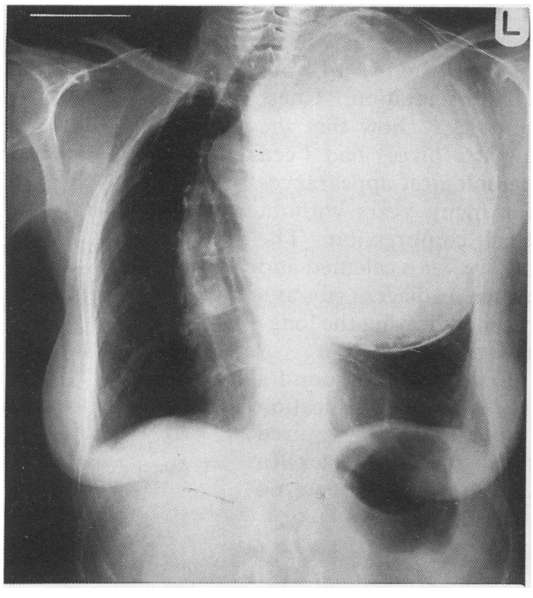
Surgical plombage, one form of collapse therapy for pulmonary tuberculosis, was used routinely before the advent of reliable chemotherapy. Various materials were used in the plomb, which in the early days was removed at a second operation[1] but latterly was left in place unless complications arose.[2] A review in 1985 of patients who still had a plomb identified 119.[3] We report a fatal complication in one such patient.

Case report

A 65 year old woman presented with a four month history of hoarseness. In the 1950s she had been treated for extensive sputum positive pulmonary tuberculosis with a two stage thoracoplasty on the right, a phrenic nerve crush, and later plombage with a polystan pack on the left; she received three months' treatment with streptomycin and para-aminosalicylic acid.

She was a lifelong non-smoker with a history of cough and sputum, increasing dyspnoea over five years, and very restricted exercise tolerance. Her forced expiratory volume in one second (FEV_1) was 0·4 l and forced vital capacity (FVC) was 0·5 l. Indirect laryngoscopy confirmed a left vocal cord paralysis and a chest radiograph showed a giant, rounded opacity in the left hemithorax (fig 1). Radiographs from 1982 and 1986 showed the appearance to be unaltered. She developed stridor and, over the next week, superior vena caval obstruction and a fluctuant mass over the apex of the left lung posteriorly. Bronchoscopy confirmed the left vocal cord paralysis and external compression of the trachea, 10 cm below the vocal cords. Computed tomography showed a partially calcified, fluid filled cyst, 16 cm in diameter, displacing the aorta and mediastinal structures and compressing the trachea. There was no enhancement after contrast and the mediastinal vessels were not directly affected. Within the cyst there was an area of low attenuation, which was thought to be the original polystan pack. The 2nd, 3rd, 4th and 5th ribs were destroyed posteriorly. There was no hilar or mediastinal lymphadenopathy (fig 2).

A percutaneous drain was inserted posteriorly and 2 litres of haemorrhagic fluid



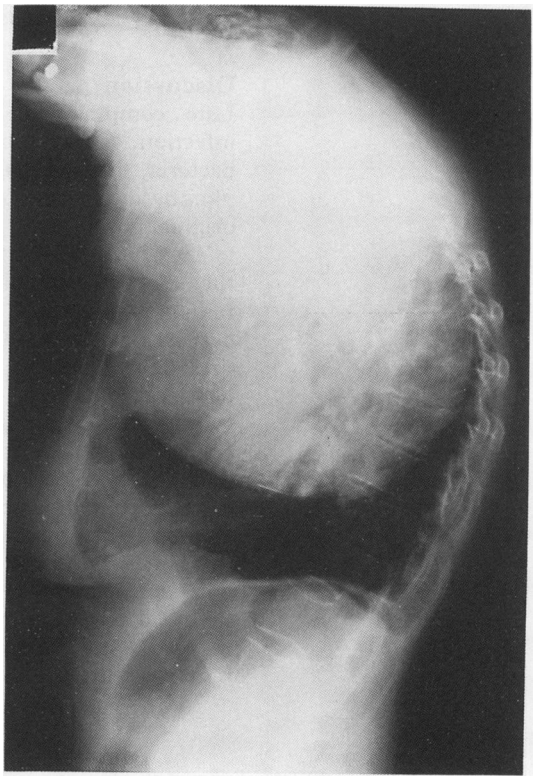


Figure 1 Chest radiographs of the patient at presentation: left—posteroanterior; right—lateral.

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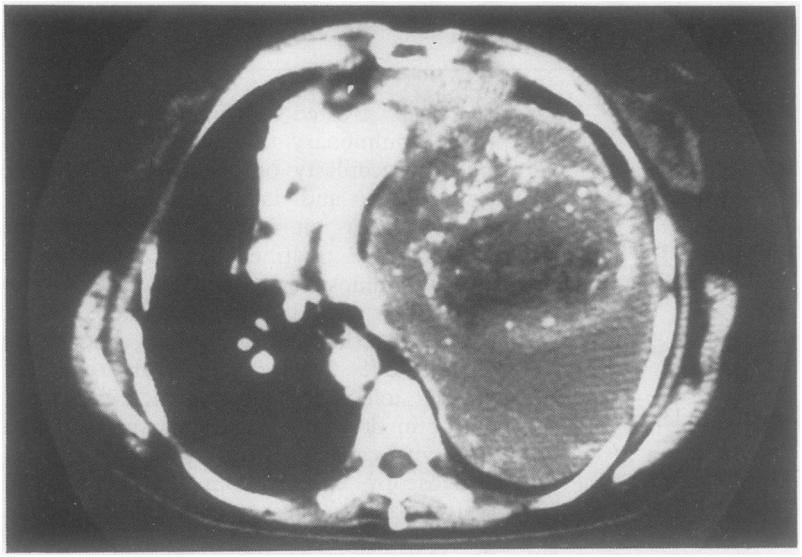

Figure 2 Computed tomogram of the thorax showing the compression of the mediastinal structures and the original polystan pack within the cyst.

containing amorphous debris were aspirated over the following 11 days. Although there was no change in the size of the cyst radiologically the stridor and superior vena caval obstruction resolved. Specimens for cytological examination, Gram stain and culture, Ziehl-Neelsen's stain, and culture for acid fast bacilli were all repeatedly negative. The haemoglobin concentration fell by 3 g/dl to 10·8 g/dl over 11 days. Although *Mycobacterium tuberculosis* was not isolated, a course of antituberculosis treatment was started and antibiotics were instilled into the cavity before removal of the drain. Within three days of removal all the symptoms and signs recurred. The patient declined further treatment, deteriorated slowly, and died 10 days later. Permission for a postmortem examination was refused.

Discussion

Late complications of plombage included infection, either tuberculous or from other bacteria, haemorrhage into or around the plomb, and migration of the plomb from its original position.[3]

This patient had no formal follow up from the early 1960s until presentation. Chest radiographs in 1982 and 1986 show that the cyst (estimated volume 2·2 litres) had been present and that the radiological appearances had been unaltered for many years without symptomatic mediastinal compression. The walls and internal structure were calcified and bone had been resorbed from adjacent ribs as a result of pressure necrosis, indicating the long-standing nature of the cyst.

The accumulation of excess fluid around a polystan pack was a recognised complication within a few days of operation and required repeated aspiration or removal of the pack. In most cases the fluid was sterile and there was no adequate explanation for its occurrence.[4] The late complication of enlargement of a plomb cavity has been reported in two patients; in one this was thought to be due to a pleural exudate as a result of degeneration of the polystan pack and in the other to low grade infection.[5] In our case computed tomography showed the pack to be intact within the cavity and there was no evidence of infection.

We postulate that increased tension within the cavity produced the sequence of events our patient experienced, with compression first of the recurrent laryngeal nerve, and then of the trachea and superior vena cava. There was clear evidence clinically and from computed tomography of rupture through the chest wall posteriorly even though there had been no demonstrable change in cavity size on chest radiographs. Swelling of the neck and arm veins, which resolved spontaneously, was recognised as an early complication after surgery[6]; and superior vena caval obstruction as a result of acute infection has been noted as a late complication.[3] In our case increased tension was not a consequence of infection, either simple bacterial or tuberculous, and the heavily blood stained fluid and fall in haemoglobin concentration suggested haemorrhage into the cyst, presumably from erosion of intercostal or other chest wall blood vessels. The recurrence of symptoms after decompression was due to further haemorrhage and the consequent rise in tension.

The possibility of surgical exploration was discussed but would have resulted in an extensive left thoracoplasty or possibly a pneumonectomy with a high risk of haemorrhage[7] or secondary infection. The patient's general condition and poor respiratory function were absolute contraindications.

This case illustrates two late complications of plombage with a polystan pack—firstly, the formation of a giant intrathoracic cyst and, secondly, haemorrhage into this cyst, producing increased tension within it, which resulted in displacement of mediastinal structures with hoarseness, stridor, and superior vena caval obstruction.

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5 Moran A, Stableforth DE, Matthews HR. Treatment of late complications of plombage by simultaneous removal of plomb and decortication. *Thorax* 1989;44:1051–2.
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