BRONCHIAL RUPTURE ASSOCIATED WITH FLAIL CHEST TREATED BY EXTERNAL TRACTION

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SUMMARY

Bronchial rupture complicated by flail chest is described. Treatment consisted of bronchial repair at thoracotomy, intra-medullary nailing of a rib and external fixation of the flail segment. The patient made a satisfactory recovery with minimal residual after-effects. In view of the hazards of controlled ventilation in some clinical situations, consideration should be given to alternative methods of fixation.

CASE REPORT

A 40-year-old African male was admitted to hospital after being crushed between a reversing lorry and a wall. On examination he was conscious, slightly dyspnoeic but not obviously cyanosed. The pulse rate was 80/min and the arterial pressure was 120/80 mm Hg. The main injury was sited in the left nipple region where a large penetrating wound, 8–10 cm in diameter, communicated with the left pleural cavity. This section of the chest wall was moving paradoxically with respiration. Chest X-rays showed posterior and posterolateral fractures of the left 4th, 5th, 6th, 7th and 8th ribs. The wound was closed under local anaesthesia, an intravenous infusion commenced and the patient was transferred to the operating theatre. An underwater seal-drain was inserted under local anaesthesia in the left mid-axillary line away from the fracture sites. General anaesthesia was induced with thiopentone. Endotracheal intubation was performed following suxamethonium injection. Anaesthesia was maintained with oxygen, nitrous oxide and halothane. Controlled ventilation was commenced using intermittent suxamethonium for muscle relaxation while a 39F cuffed tracheostomy tube was inserted. A large leak of gases continued into the underwater seal-drain. It was then decided to proceed with exploratory thoracotomy. The patient was curarized and the inflation pressure of the East-Radcliffe ventilator was increased to compensate for continued into the underwater seal-drain. It was then decided to pass a bronchoscope. Eight days after admission bronchoscopy under general anaesthesia was performed through the tracheostomy. The silk sutures of the intact bronchial repairs were noticed. Only a small amount of bronchial secretion was obtained on suction and there was no evidence of collapse or obstruction. During the subsequent weeks air entry into the left lung increased while the X-ray appearances improved considerably. The tracheostomy tube was removed after 21 days. The patient was discharged from hospital fit and well on the 35th day. At outpatient follow-up he remained well. Chest X-rays were virtually normal and there was only slight distortion of the thoracic cage.

DISCUSSION

Before the availability and widespread use of IPPV in crushed chest injuries, fixation of rib fractures by nails or wires with or without external traction were popular methods of management (Proctor and London, 1955). The apparent simplicity and the success rate of IPPV caused many authors to advocate its use (Ambiavagar et al., 1966; Brewer and Steinier, 1968). However, over the years there has been a growing list of complications associated with IPPV. Most of these are complications of tracheostomy but movement of the tracheostomy tube during ventilation and traction exerted by the ventilator tubing undoubtedly make a contribution. The list of complications includes tracheal ulceration by pressure or by residues of ethylene oxide, tracheomalacia with dilatation of the trachea and even tracheo-oesophageal fistula. One of the most dramatic sequelae is ulceration into the innominate vessels with resulting torrential haemorrhage. Tracheal stenosis requiring resection and reconstruction has been reported with variable incidence.
Other hazards are chest infection, atelectasis, tension pneumothorax and accidental disconnection or failure of the ventilator. The major problem in developing countries is the lack of suitably trained personnel to supply the minute-to-minute supervision and care which these patients require.

The successful management of five cases of chest wall injuries by external traction has been described (Jeffery, 1970). The advantages of this method over controlled ventilation were enumerated. The patient is immediately more comfortable and the tidal volume increased, as traction is applied. He is able to speak and eat normally and move about in bed without assistance. In uncomplicated cases neither intubation nor tracheostomy is required. Many cases do occur in which treatment by IPPV is mandatory and life-saving. There are other situations such as described in this case where a satisfactory result may be achieved by alternative management, thus avoiding the many real hazards of controlled ventilation.

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REFERENCES


THE EDINBURGH AND EAST OF SCOTLAND SOCIETY OF ANAESTHETISTS

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1974
Saturday, October 26. Combined meeting with Glasgow and West of Scotland Society of Anaesthetists in Edinburgh Royal Infirmary at 5 p.m. “Recent Advances in the Treatment of Overdoses”. Dr L. F. Prescott, University Department of Therapeutics, Royal Infirmary, Edinburgh.

Tuesday, November 5. “Recent Advances in Intensive Care”. Drs A. Muir, R. Burtles and I. Davidson.

Tuesday, December 3. “The Manpower Situation in Anaesthetics”. Professor J. Parkhouse, Manchester University.

1975
Tuesday, January 7. “Theatre Pollution”. Dr G. Parbrook, Royal Infirmary, Glasgow.

Tuesday, February 18. Members’ Night.


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