

# Mediastinoscopy

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The surgical and anaesthetic technique used in mediastinoscopy during the investigation of 124 patients is described. A histological diagnosis was made in 109 cases (88%). Of the 22 cases other than sarcoidosis a positive diagnosis was obtained in all. In 102 cases with suspected sarcoidosis, the histological appearances of the nodes were compatible with sarcoid in 86 (84%). No serious complications were encountered. It is concluded that this procedure should be carried out by an experienced thoracic surgeon and will yield better diagnostic tissue than other comparable procedures.

In recent years there have been a number of publications from which the value of mediastinoscopy as a diagnostic procedure has become increasingly evident (Carlens, 1959; Carlens and Hambræus, 1967). In 1966 this technique was introduced at Central Middlesex Hospital for the investigation of patients with paratracheal and/or hilar gland enlargement. The object of this paper is to describe the technique employed and to report the findings in a consecutive series of 124 patients. They were, in general, referred from various outpatient departments of Central Middlesex Hospital and from Willesden Chest Clinic. The hospital and chest clinic have a sarcoidosis unit and, because of this, a large number of the patients in the series had suspected or probable sarcoidosis. In many of the patients bronchoscopy was also performed.

## ANAESTHESIA

General anaesthesia was always employed. Induction of anaesthesia was performed with thiopentone and suxamethonium and oxygenation prior to passing an oral cuffed tube or bronchoscope. A topical spray of lignocaine 4% was applied to the vocal cords and trachea and a 2% water-soluble lignocaine gel was applied to the cuffed tube or bronchoscope. Anaesthesia was maintained with nitrous oxide, oxygen, and halothane (0.5 to 1.0%) using a semi-open circuit. Gallamine (40–80 mg.) was used as a relaxant.

## SURGERY

The method adopted was that described by Nohl-Oser (1965). The patient was positioned on the

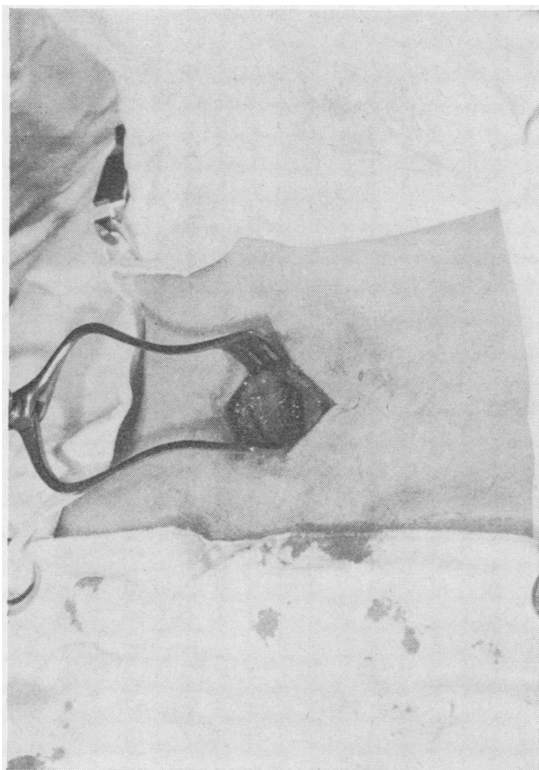
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operating table with the neck extended and the head turned to the right, the operator standing to the patient's left. A 3-cm. skin-crease incision was made approximately 2 cm. above the suprasternal notch extending equally either side of the midline (Fig. 1). This was deepened through the platysma and the pretracheal fascia to expose the trachea below the isthmus of the thyroid gland. Occasionally a suitable lymph node for biopsy was found in, or just deep to the pretracheal fascia. Once the plane deep to the pretracheal fascia had been entered, a tunnel into the mediastinum was developed with the index finger. This passed downwards, backwards, and to the right behind the aortic arch into the right paratracheal region. In this area enlarged lymph nodes could sometimes be palpated and, on occasion, mobilized by the exploring finger. A straight-bladed laryngoscope was then introduced into the tunnel (Figs 2 and 5) and the paratracheal lymph nodes were located under direct vision. With experience, the greyish-coloured lymph nodes were readily distinguished from other structures, such as the azygos vein. A long aspirating needle was used to differentiate between vascular structures and lymph nodes. Blunt-nosed bronchial biopsy forceps were used to break gently through the thin fascia overlying the lymph node, which was then biopsied (Fig. 3). Mobile nodes were sometimes removed whole. In the series described, serious bleeding never complicated the biopsy procedure. The wound was closed without drainage.

## COMPLICATIONS

The only complication was that the right pleura was entered during the course of the operation on two occasions. In both instances a chest drainage tube was passed into the right pleural cavity from the wound in the neck after completing the



**FIG. 1.** *Skin incision deepened through platysma and between the strap muscles.*



**FIG. 2.** *The laryngoscope introduced into the tunnel made into the mediastinum.*

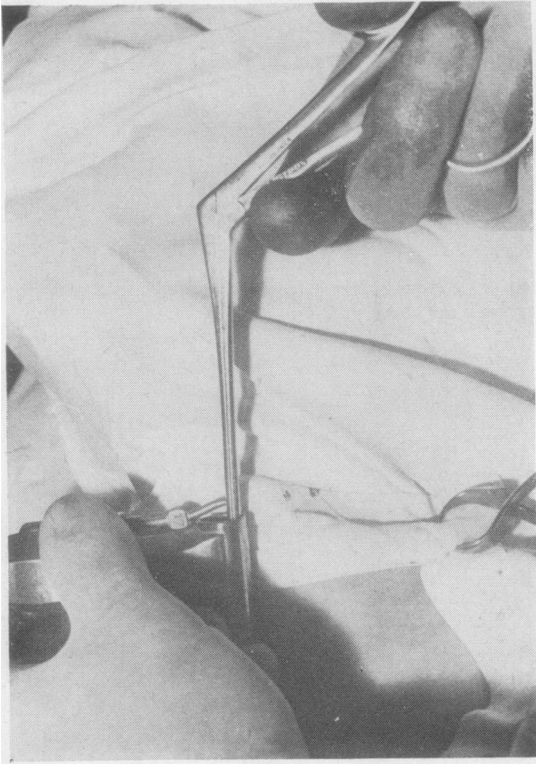
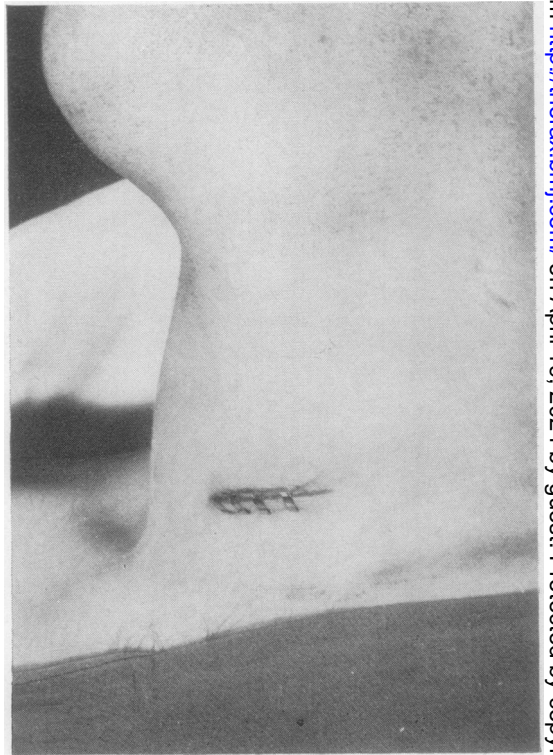


FIG. 3. *Biopsy of paratracheal lymph node under direct vision.*

FIG. 4. *Wound closed without drainage.*





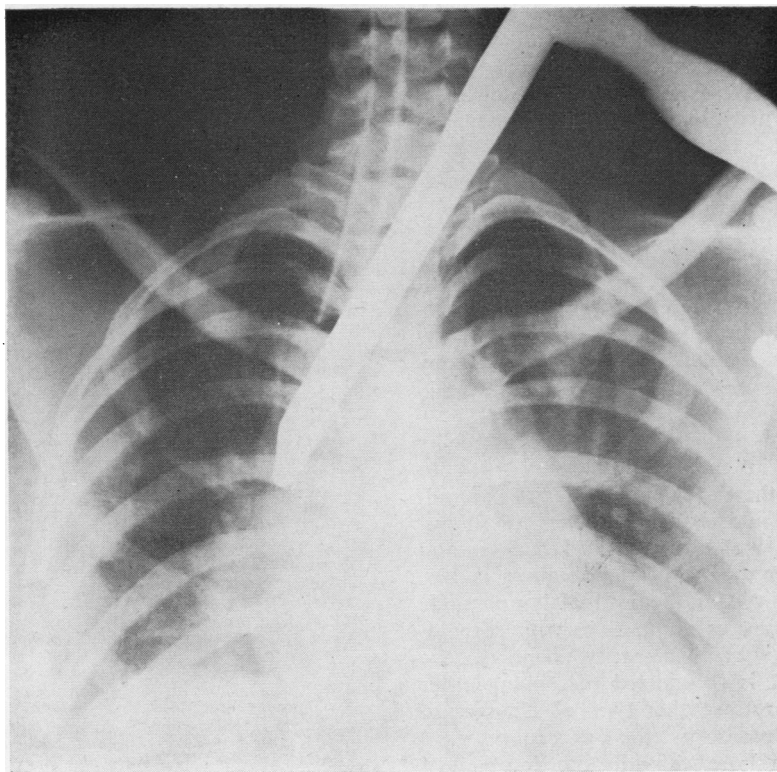


FIG. 5. Radiograph showing laryngoscope in position.

biopsy. In one, the tube was attached to an underwater seal drainage bottle for 24 hours, and in the other the tube was withdrawn as the skin was being closed, while the lungs were forcibly inflated by the anaesthetist. Post-operatively neither patient was left with a pneumothorax. Post-operative bleeding and wound infection were not encountered.

RESULTS

**SARCOIDOSIS** This group of patients had clinical evidence suggestive of sarcoidosis, but the chest radiograph did not always show hilar or paratracheal gland enlargement; patients with lung reticulation only were also subjected to mediastinoscopy. A total of 102 patients whose final diagnosis was sarcoidosis were investigated in this way. A lymph node was found in 93 of these; 86 (92%) showed histological changes compatible with sarcoidosis. Thus histological confirmation of the diagnosis was obtained by this procedure

in 84% of all patients. Nine (7%) were classified as 'failed'; of these, eight had tissue removed which was histologically found to be other than lymph node tissue, and in the remaining patient a pulsatile swelling was observed and biopsy was therefore not performed. The Table shows our results and the results of other authors.

TABLE  
SARCOIDOSIS—COMPARISON OF MEDIASTINOSCOPY SERIES

Author	Year	No. of Patients	% Positive
Löfgren, Snellman, and Stavenow ..	1963	34	94
Friedel, Dorscheid, Kirsch, and Mucke ..	1964	30	100
Bergh, Rydberg, and Scherstén ..	1964	33	100
Palva .. .. .	1964	28	96
Carlens .. .. .	1965	123	96
Jepsen .. .. .	1966	43	85
Nielsen and Olsen ..	1966	121	95
Maassen .. .. .	1967	115	100
Present series .. ..	1969	102	84

**OTHER CONDITIONS** In fifteen of the patients with mediastinal lymph node enlargement this was found to be due to tuberculous infection; in seven there was malignant disease. A definite histological diagnosis was obtained in all 22 cases.

#### DISCUSSION

If bronchoscopy was to be carried out as well as mediastinoscopy, the mediastinoscopy was always done first. Had the procedures been carried out in the reverse order, there was always the possibility of bleeding into the bronchial tree following bronchial biopsy whilst the mediastinoscopy was in progress, especially as general anaesthesia depresses the cough reflex.

A total of 124 patients were investigated by mediastinoscopy in the period March 1966 to March 1969. Of these, 102 were cases of sarcoidosis, 15 of tuberculosis, and 7 other conditions. Lymphatic tissue was obtained in 115 cases and of these a positive diagnosis was obtained in 109. Although histology of a mediastinal lymph node may show appearances compatible with sarcoidosis, this does not necessarily confirm the diagnosis, since it is recognized that many other conditions can produce this type of change. In the cases of sarcoidosis, this procedure gave superior results to those which have been obtained by other procedures, such as scalene fat biopsy (Daniels, 1949; Israel and Sones, 1964; Foti and Moser, 1969), liver biopsy (Foti and Moser, 1969), and bronchial biopsy (Liot, Lemoine, and Chrétien, 1963; Friedman, Blaugrund, and Siltzbach, 1963; Carlens, 1964; Bybee, Bahar, Greenberg, and Jenkins, 1968). In cases where there is a superficial lymph node, biopsy of this is preferable (Israel and Sones, 1964; Scadding, 1967). In all the 22 cases other than those of sarcoidosis, histological proof was obtained and,

despite the relatively small number of patients, these findings emphasize the value of mediastinal lymph node biopsy in the investigation of undetermined chest lesions.

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