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Intrathoracic goitre
Surgical treatment in an ENT department

by

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Thyroid surgery is often performed in ENT departments, especially when malignancy is suspected or when the gland is confined to the neck. Total or partial intrathoracic goitre, however, is often referred to thoracic surgical departments, usually because it is judged necessary to split the sternum or to perform a standard thoracotomy. Furthermore the risk of surgical complications is found to be high in such cases performed through a Kocher's incision.

The purpose of the present study is to demonstrate that patients with intrathoracic goitre, with very few exceptions, can be treated safely and effectively in ENT departments, by surgeons experienced in head and neck cancer surgery.

Material and Methods

The ENT department at the University Hospital of Aarhus, Denmark, performed partial or total thyroidectomies on a total of 284 patients in a four-year period from 1977–1981. Out of these, 41 had cervicothoracic goitre, but only 18 cases had a massive intrathoracic extension, in which at least half of the gland was located below the top of the sternum. A lesser mediastinal extension in an otherwise almost total cervical goitre was seen in the remaining 23 cases.

Thus the material comprises a total of 18 patients, 14 women and four men, with an average age of 64.2 years, range 29–86 years (Fig. 1). In 17 cases the goitre was benign, in one case a follicular carcinoma was found. Two patients had previously been operated on for goitre.

In all cases indirect laryngoscopy was performed pre- and post-operatively, with the exception of a single patient who was comatose both before and after surgery. X-rays of the chest and trachea were taken to evaluate the degree of intrathoracic extension of the goitre and possible tracheal compression. In cases with tracheal compression a control X-ray was taken post-operatively. All patients were investigated with technecium scintigraphy, and tests evaluating the thyroid hormone content and calcium level in the blood were performed.

The operations were performed through a wide Kocher's incision without sternal split under general anaesthesia with endotracheal intubation. A Zeiss operating microscope was used to facilitate the dissection of the recurrent laryngeal nerves and to lessen the associated risks.

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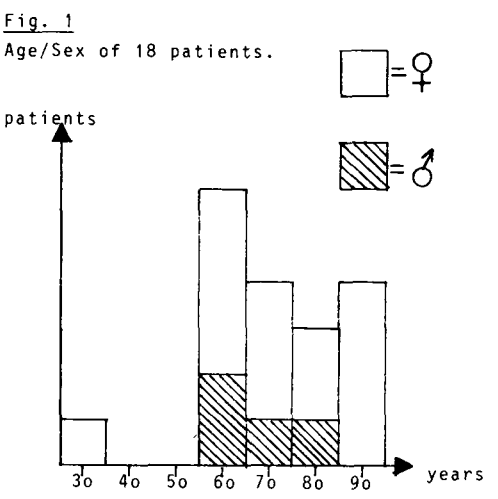


FIG. 1

Age and sex distribution in 18 patients with intrathoracic goitre.

Results

Two patients were totally free of symptoms pre-operatively and were operated on solely because malignancy was suspected. Respiratory distress was the dominant symptom in the remaining patients. Of 18 patients, 14 had respiratory symptoms and 11 patients were so extremely affected that periodic or manifest stridor was present. One patient had dysphagia because of eosophageal compression. The patients were bothered by cough and hoarseness to a lesser degree.

The average duration of symptoms in the 11 patients who had stridor was one year, in a single patient two years. Some patients had been examined several times because of respiratory symptoms, but tracheal compression was not discovered.

In all cases with respiratory symptoms, X-rays of the trachea revealed narrowing of the lumen up to ¼ of its normal diameter. Post-operative X-ray demonstrated that the trachea had returned to normal, as the respiratory symptoms disappeared (Fig. 2). Thus the degree of accordance between subjective respiratory symptoms and radiologically proven tracheal compression was high. Also radiological estimation of mediastinal extension proved to be reliable compared with operative findings.

A wide Kocher's incision was sufficient in all cases to allow the surgeon to remove the gland, which in general weighed several hundred grams, the largest weighing 565 g. (Fig. 3). Assistance by thoracic surgeons was not necessary in any case.

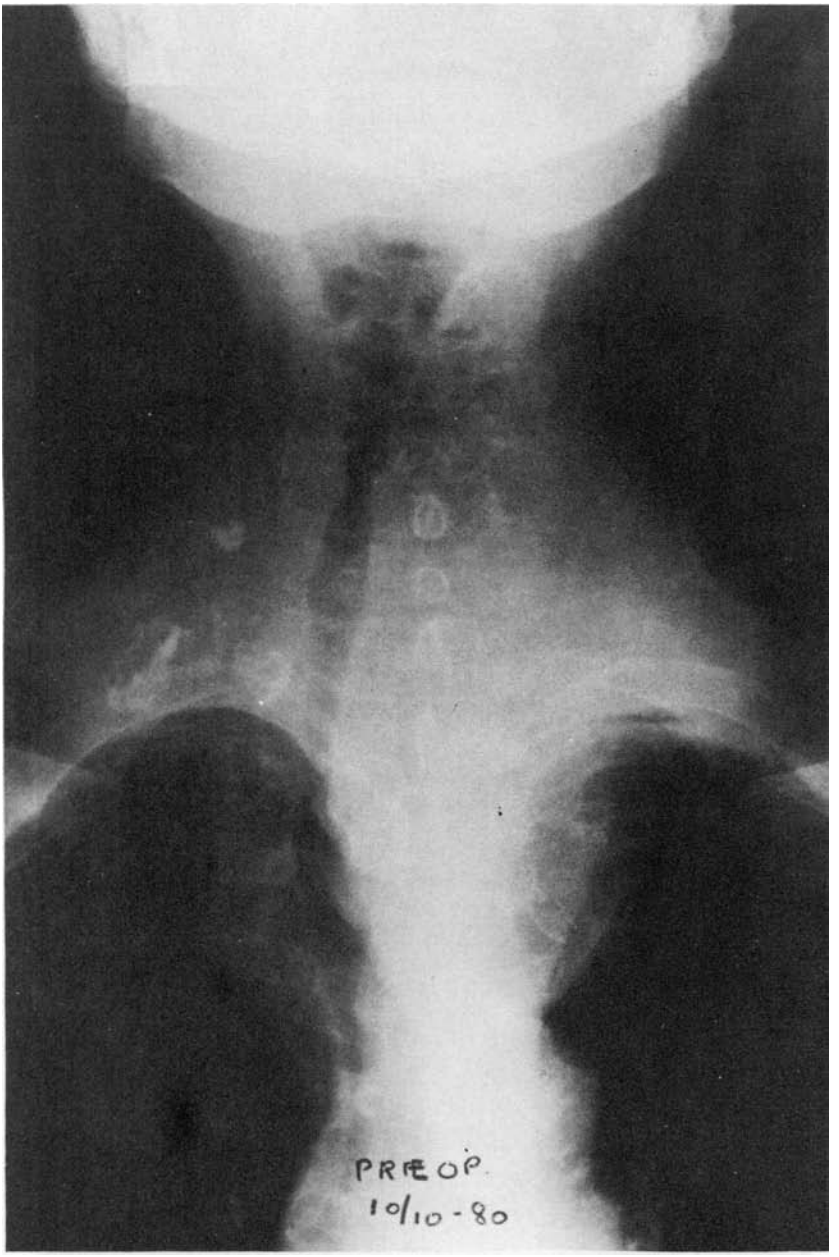
There were no operative complications and tracheostomy was not performed in any case. One patient developed pneumonia a few days after surgery, but antibiotic treatment cured her quickly. There were no complications in the post-operative period in the remaining cases. One patient, however, died three weeks after her operation. She was an 83-year-old woman admitted to the hospital comatose with marked stridor. Her goitre was malignant and even though her stridor disappeared after the operation she died later due to cardiac insufficiency. In the remaining cases the patients were rehabilitated quickly, including those with marked stridor pre-operatively. The average hospital stay was seven days.

No new paresis of the recurrent nerve appeared after surgery and in one case unilateral paresis was cured. Two patients, however, had unilateral paresis both before and after surgery. One patient developed hypoparathyroidism after the operation and was treated with calcium lactate and calciferol. All patients were treated with eltroxin post-operatively, partly to control a possible hypothyroidism and partly to suppress production of TSH.

Discussion and Conclusions

The reported frequency of intrathoracic goitre is dependent upon the material used and upon which definition is used. Ellis *et al.* (1952) state that the frequency varies between 0.2 per cent and 15 per cent, and that the frequency of entirely intrathoracic goitre is under 1 per cent. In our material the frequency was 6.3 per cent and all cases consisted of both a cervical and in intra-

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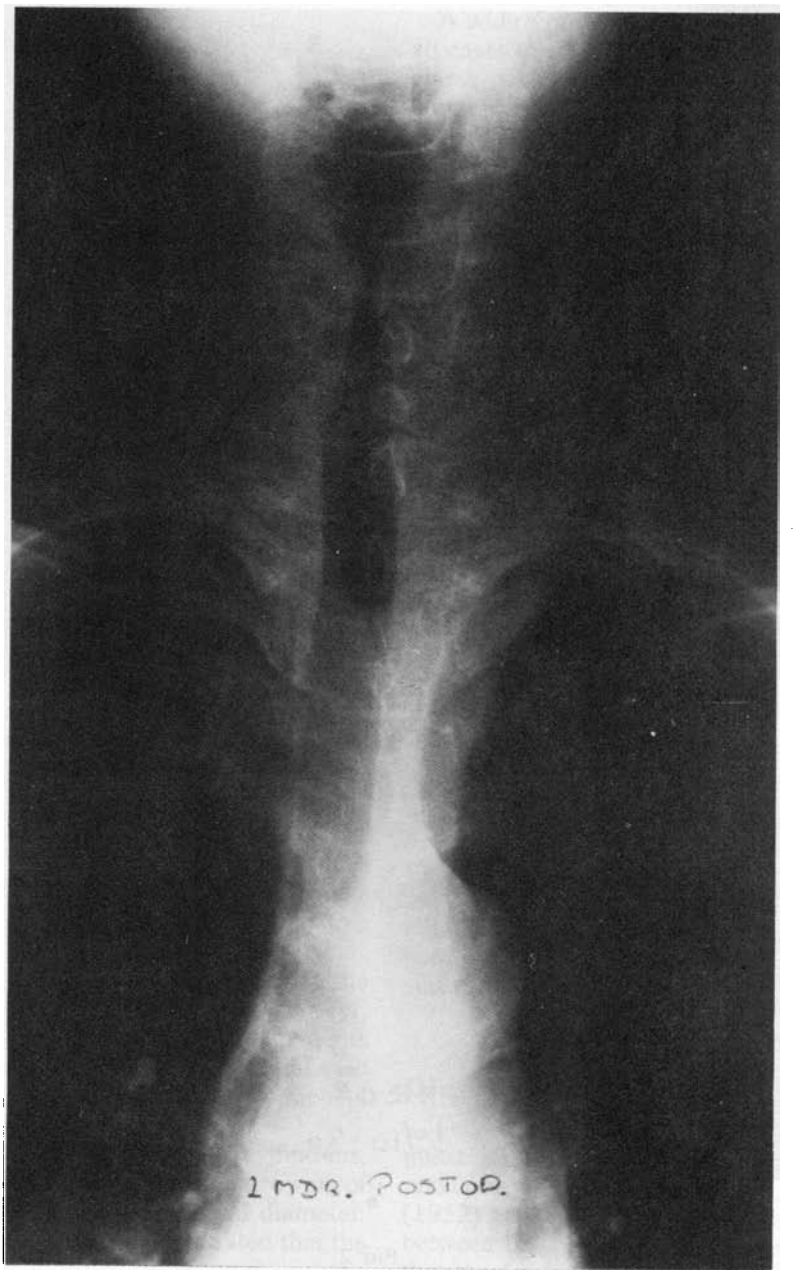


a

FIG. 2

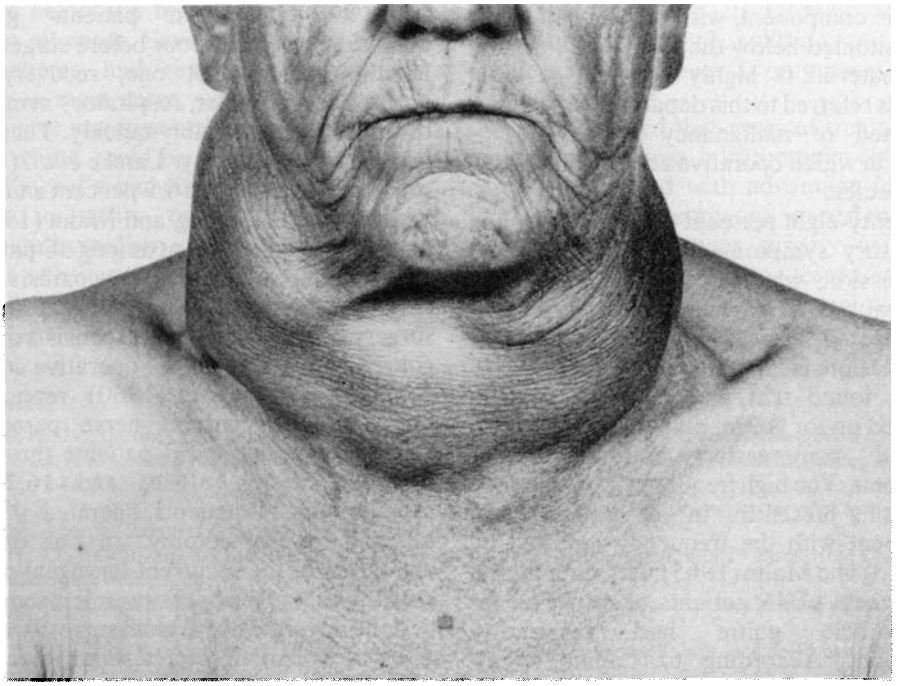
X-rays of the trachea in a 68-year-old woman with a large cervico-mediastinal goitre before (A) and after (B) surgery.

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b

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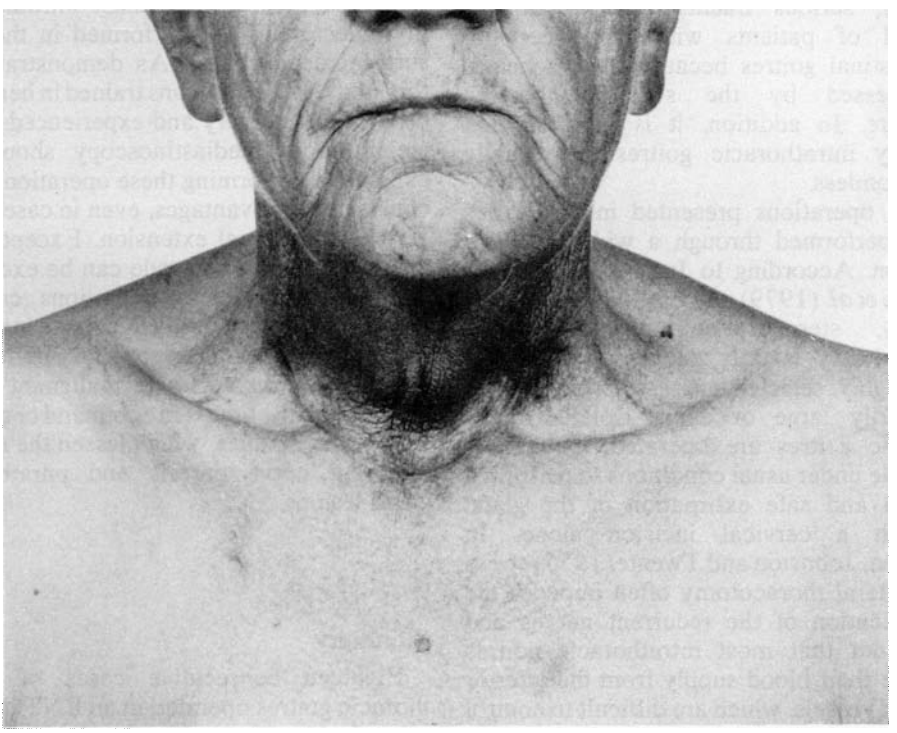


FIG. 3
The patient shown in Fig. 2 before (A) and after (B) surgery.

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thoracic component, with at least half of the gland situated below the top of the sternum. The material is highly selected as most patients referred to this department are either suspected of malignancy or have large goitres in which operative complications can be expected.

Seventy-eight per cent of the patients had respiratory symptoms because of tracheal compression, which in the majority of the cases caused periodic or manifest stridor. In non-selected series the frequency of compression is much less. Melliere *et al.* (1980) found that among 1,000 patients operated on for goitre, only 4.5 per cent had tracheal compression and respiratory symptoms. The high frequency of respiratory symptoms presenting in our material is in agreement with the frequency reported by Lindskog and Malm (1965). In their material 67 per cent of 46 patients operated on for intrathoracic goitre had respiratory symptoms. According to Lamke *et al.* (1979), serious tracheal compression is typical of patients with large cervico-mediastinal goitres because the trachea is compressed by the superior thoracic aperture. In addition, it is reported that entirely intrathoracic goitres are usually symptomless.

The operations presented in this series were performed through a wide Kocher's incision. According to Judd *et al.* (1960), Lamke *et al.* (1979) and Lindskog and Malm (1965), sternum splitting or lateral thoracotomy is only necessary in a very few highly selected cases in which extraordinarily large or deep, isolated intrathoracic goitres are operated. Thus it is possible under usual conditions to perform a radical and safe extirpation of the gland through a cervical incision alone. In addition, Johnston and Twente (1955) stress that lateral thoracotomy often impedes the identification of the recurrent nerves and point out that most intrathoracic goitres receive their blood supply from the inferior thyroid vessels, which are difficult to control through a thoracic approach.

The material is characterized by a high average age, with four patients older than 80 years. The patients' general condition was often poor before surgery but, in all cases except one, recovery was prompt. In particular, respiratory symptoms disappeared remarkably quickly. There was no operative mortality. Lamke *et al.* (1979) reported a mortality of 6.9 per cent among 29 patients, and Lindskog and Malm (1965) a mortality of 8.7 per cent among 46 patients.

It is remarkable that no new paresis of the recurrent laryngeal nerve appeared after surgery because the material consists of large goitres with a high risk of operative complications. Judd *et al.* (1960) reported a frequency of recurrent nerve paresis of 5.7 per cent among 88 patients through a cervical incision alone, and 16.7 per cent among 24 patients operated through a standard thoracotomy. In our opinion dissection of the recurrent laryngeal nerves with the help of the operating microscope is a definite advantage in thyroid surgery with the exception of small intracapsular resections.

At the present time most intrathoracic thyroidectomies are performed in thoracic surgical departments. As demonstrated in this study, ENT surgeons trained in head and neck cancer surgery and experienced in the technique of mediastinoscopy should be capable of performing these operations with considerable advantages, even in cases with severe mediastinal extension. Except for a few cases, which as a rule can be excluded pre-operatively, these operations can be performed through a wide Kocher's incision. The head and neck surgeon can perform a radical neck dissection in malignant cases and at the same time is in command of microsurgical techniques, which lessen the risk of recurrent nerve paresis and parathyroid gland lesions.

Summary

Eighteen consecutive cases of intrathoracic goitres operated in an ENT department during a four-year period from 1977–1981 are presented. Massive intrathoracic extension, with at least half of the gland

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located below the top of the sternum, was seen in all cases. Seventy-eight per cent of the patients had respiratory symptoms, which, in most cases, was so extreme that periodic or manifest stridor was present.

The gland could be extirpated through a wide Kocher's incision in all cases. There was no mortality, only a single case of hypoparathyroidism and no recurrent nerve paresis or other complications.

Traditionally operation of intrathoracic goitre is performed in thoracic surgical departments. Sternal splitting or lateral thoracotomy, however, is only necessary in a very few cases.

It is concluded that surgical treatment of patients with large intrathoracic extension can be performed with advantage in ENT departments by surgeons experienced in head and neck cancer surgery using the operating microscope to lessen risk of damage to the recurrent laryngeal nerves.

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