

CASE REPORT

IS MANUBRIUM LIMITED MINI-STERNOTOMY AN ALTERNATIVE FOR TRADITIONAL FULL STERNOTOMY IN CASES WITH MASSIVE MEDIASTINAL (RETROSTERNAL) GOITER? A CASE REPORT

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ABSTRACT

Abstract

Although most mediastinal goiters (MG) are operable by a cervical approach, some cases require sternotomy. Manubrium limited mini-sternotomy (MLMS) is an alternative method for traditional full sternotomy in subjects with MG. We present the case of a 45 year-old male subject who was operated for a total MG. The nodular mass was conical in shape and extended beyond the aortic arch and tracheal bifurcation. Sternotomy was decided, because excision via cervical Kocher incision was not safe. The nodular mass was extracted from the mediastinum easily via MLMS. The postoperative period was uneventful, without any complication, and the patient was discharged from the hospital after two days. He returned to his normal life within one month. This case shows that MLMS is a convenient and easy alternative for traditional full sternotomy in subjects with MG.

Key words: mediastinal goiter, manubrium limited mini-sternotomy, sternotomy.

RÉSUMÉ

Est-ce que la mini-sternotomie limitée par le manubrium est-elle une alternative à la sternotomie totale traditionnelle dans les cas avec goître rétrosternal ? Rapport de cas

Bien que la plupart de goîtres médiastinaux soit opérable par une approche cervicale, certains cas nécessitent une sternotomie. La mini sternotomie limitée par le manubrium est une méthode alternative à la sternotomie totale traditionnelle chez les sujets avec goître médiastinal total. Nous présentons dans cet article le cas d'un sujet mâle âgé de 45 ans, qui a été opéré pour un goître médiastinal. La tumeur en forme de cône s'était étendue au-delà de l'arc aortique et la bifurcation trachéale. On a décidé la sternotomie parce que l'excision à travers l'incision cervicale Kocher n'était pas sans risque. La tumeur a été extraite facilement du médiastin par la mini sternotomie limitée par le manubrium. La période post-opérationnelle s'était passée sans complications et le patient a quitté l'hôpital après deux jours. Il a repris la vie quotidienne après un mois. Ce cas a montré que la mini sternotomie limitée par le

manubrium est une alternative facile et convenable à la sternotomie totale traditionnelle chez les sujets avec goître médiastinal.

Mots clefs: goître médiastinal, mini sternotomie limitée par le manubrium, sternotomie.

INTRODUCTION

A vast majority of mediastinal goiters (MG) are successfully operated through a cervical approach¹. Sternotomy is an alternative and valuable method in patients in whom the gland cannot be safely removed via a cervical incision. This paper discusses the manubrium limited ministernotomy (partial upper sternotomy or manubriotomy) (MLMS) as an alternative for standard sternotomy in subjects with MG that could not be extracted by a cervical approach.

CASE PRESENTATION

A 45-year-old male subject was referred for total thyroidectomy by the National Endocrine Council of the Turkish Republic of Northern Cyprus due to a large pure MG. A chest X-ray first identified the MG at a routine check-up. His chest X-ray displayed significant right tracheal deviation (Fig. 1).

The patient was completely asymptomatic, the thyroid function tests were normal, and the thyroid gland was nonpalpable.

The cervical portion of the thyroid gland was normal at computed tomography scan (CT), but there

was a large multinodular mass originating from the inferior left lobe of the thyroid and descending to the mediastinum. The mass consisted of multiple nodules, the largest being solid, hypodense, with regular margins and over 4 cm. The cranio-caudal length was 11 cm and the axial length was 7 cm. It caused a significant rightward deviation of the trachea and esophagus. It was located between the spine and the sternum. The lower edge extended beyond the aortic arch and tracheal bifurcation. There was no detectable vascular or organ invasion around the nodule in the mediastinum (Fig. 2).

Pre-operative preparation with thoracic surgeons, including special equipment was arranged, due to a probable need for sternotomy. Written informed consent after explaining the probable complications of thyroidectomy and sternotomy was provided.

We initiated the thyroidectomy procedure, through a cervical Kocher incision. Safe excision of the mediastinal thyroid nodules, with gentle manipulations and blunt dissection from the cervical Kocher incision, were not possible, thus the need for sternotomy was decided intraoperatively. After resection of the cervical portion of the thyroid gland, with location and preservation of the parathyroid glands and

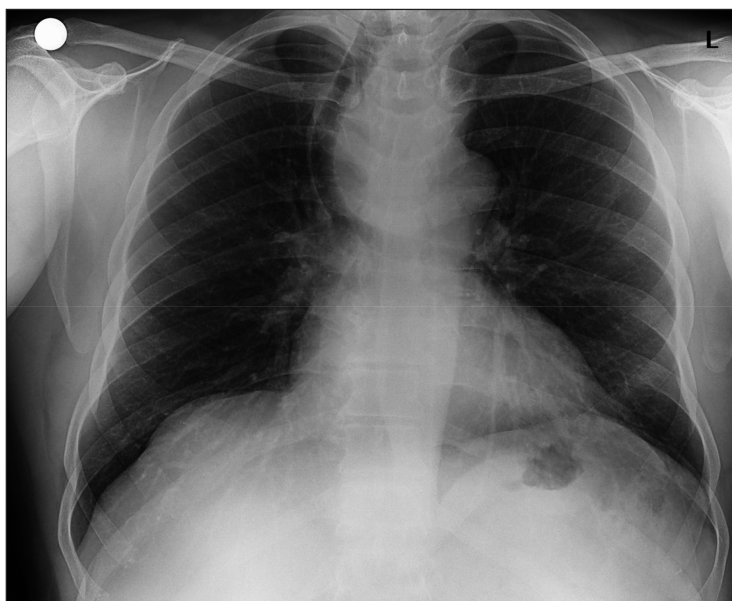


Figure 1. Chest X-ray showed significant right tracheal deviation.

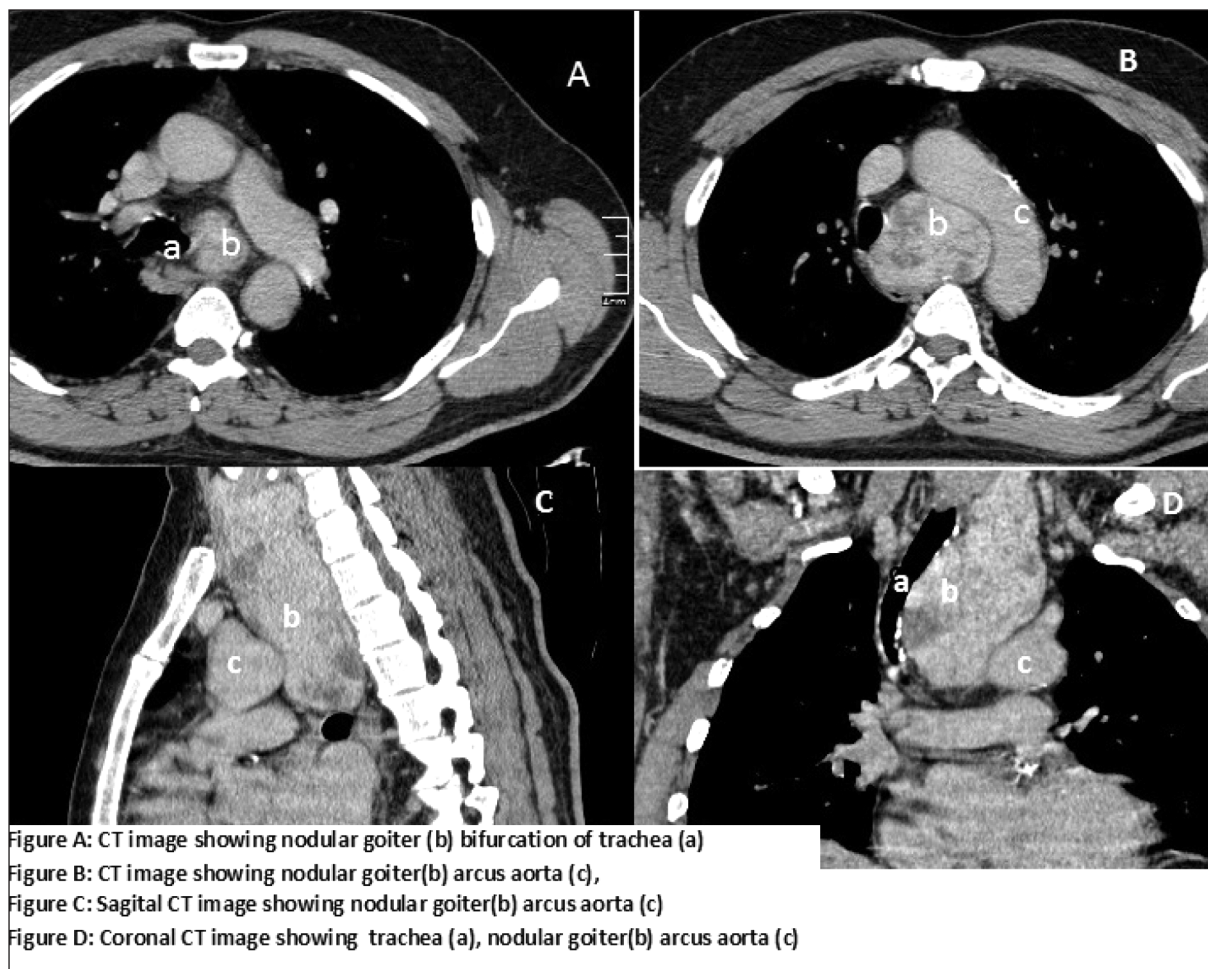


Figure 2. CT-scan of the patient, showing mediastinal goiter and its relationship with the mediastinal organs.

bilateral recurrent laryngeal nerves, preparation for sternotomy was arranged. Perpendicular skin incision, starting from the middle of the cervical incision, extending to lower than the manubrium sterni, was performed. The manubrium was divided longitudinally in the midline, from the sternal notch to the second intercostal space. Then, like a reverse T (⊥) shape, we performed a transection in both directions from the second intercostal spaces, until the midline incision was reached. With MLMS, the mediastinal part of the thyroid was extracted safely and easily. Intraoperative photography of MLMS and the nodular goiter is displayed in Fig. 3. The mass was conical in shape, and the wide portion was situated deep in the mediastinum. The sternum was closed with stainless steel, the fascia and skin were stitched with vicryl sutures. The postoperative period was uneventful, without any complication, and the patient was discharged from the hospital after two days. Pathologic examination showed nodular goiter without malignancy. He returned to his normal life within one month.

DISCUSSION

MG is defined as a goiter with more than 50% of its mass located in the mediastinum². Most of them are removable by a cervical incision. CT is a valuable preoperative tool of predicting the need for a thoracic approach for removal of the MG^{3,4}. Extension below the aortic arch, tracheal bifurcation or into the posterior mediastinum, being conical or a dumbbell shape, a thoracic component that is wider than the thoracic inlet, the presence of malignancy, ectopic goiter, severe venous obstruction and recurrent MG situations are associated with a need for a thoracic approach^{3,5}. It is important to identify the patients with MG requiring thoracic approach, in order to organise equipment and staff for a probable sternotomy³.

Sternotomy or lateral thoracotomy are options for the thoracic approach. Among these, a sternotomy is the most preferred. Although median sternotomy is the traditional approach used to resect MG, MLMS is less invasive⁶. The overall morbidity increases in cases of MG, so less invasive methods, which permit access to mediastinum, may decrease morbidity⁷.



Figure 3. Intraoperative photography of ministernotomy and the nodular goiter.

Data from cardiothoracic surgery for the treatment of the aortic diseases showed that MLMS was superior to other methods in terms of reduced postoperative bleeding and pain, lower risk of mediastinitis, better aesthetic results, and faster respiratory function recovery⁸. Shpitzer T et al emphasize that surgical exploration of the mediastinum, with ministernotomy, appeared to be an excellent alternative for full traditional sternotomy⁹. Also Pata G et al retrospectively evaluated 15 patients treated surgically for mediastinal goiter with ministernotomy¹⁰. Full sternotomy was never necessary in all cases and they concluded that ministernotomy allowed an adequate approach to both the anterior and the posterior mediastinum, thus permitting safe management of MG which required thoracic access¹⁰. Because of these potential benefits, MLMS was planned in our case^{6,8}. The surgery was completed without any difficulty. The postoperative period was uneventful, without any complication, and the postoperative recovery time, including the hospital stay, was very short.

CONCLUSION

MLMS is an easy alternative for traditional full sternotomy in the surgical excision of MG.

Conflict of interest: none

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