

## CASE REPORT

**Anterior neck lipoma mimicking a massive goitre**Durr-e-Sabih<sup>1,\*</sup>, Muhammad Kashif Rahim<sup>1</sup>, Ayan Sabih<sup>2</sup><sup>1</sup>Multan Institute of Nuclear Medicine and Radiotherapy,<sup>2</sup>Aga Khan Medical University Karachi**Abstract**

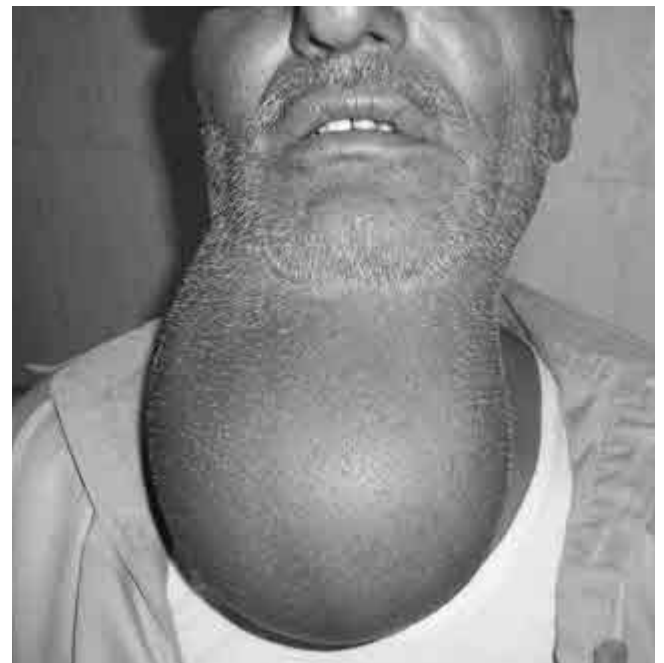
Anterior neck is an uncommon location for lipomas but when present these can be mistaken for thyroid masses. The few reported cases have usually described small lesions mimicking a thyroid nodule. We report here a case of a lipoma mimicking a huge goitre. Imaging of the mass was performed through thyroid scintigraphy, ultrasound and computed tomography, which together provided a clue to the diagnosis. On surgery, a large subcutaneous mass was removed from the anterior triangle of the neck, which was seen to consist of mature adipose tissue on histopathological examination. Large lipomas in the neck can mimic a goitre but this can be easily diagnosed using imaging, particularly with ultrasound, which is the best imaging modality in this situation.

**Key words:** anterior neck masses, anterior neck lipoma, mimics of goitre

**Introduction**

Lipomas are the most common of the benign mesenchymal tumours and are usually found in the subcutaneous tissue. These tumours can

occur anywhere in the body; common locations include the back, arms, shoulders, anterior chest wall, breasts, thighs, abdominal wall, legs, forehead and face, in decreasing order of frequency [1]. About 13 percent of lipomas are located in the head and neck [2] but anterior neck lipomas are very rare and only a few cases have been reported [3-4]. We present a case of a giant lipoma that mimicked a huge goitre and the findings on functional and anatomic imaging.



**Figure 1** Photograph of the patient showing the mass in the neck that looks like a large goitre

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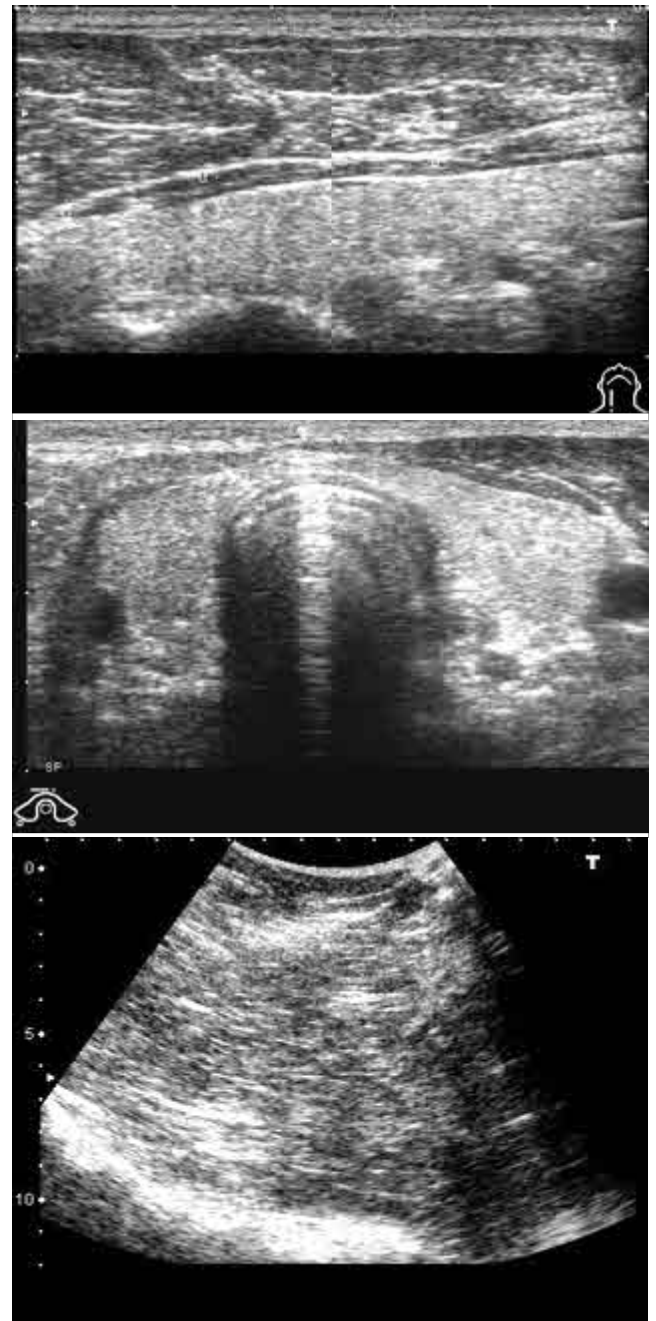


**Figure 2**  $^{99m}\text{Tc}$ -pertechnetate thyroid scan showing a large cold area over that appears to overlie the right lobe of the thyroid; there is some flattening of the right lobe lateral margin too

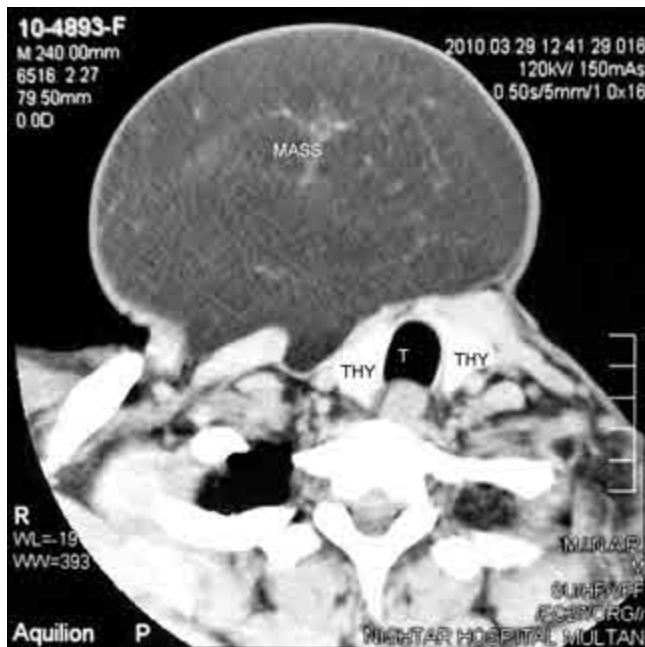
### Case Report

A 55-year-old man presented to our thyroid outpatient department with a history of a slowly growing swelling in front of the neck for the last 18 years. On examination, a large smooth swelling was noted in the front of the neck with appearance suggestive of large goiter (Figure 1). On palpation, the swelling was painless and non-tender, smooth and firm, and did not move with swallowing. There was no history of dysphagia or dyspnea.

Thyroid scan was performed 20 minutes after intravenous injection of 187 MBq  $^{99m}\text{Tc}$ -pertechnetate. The scan images showed a large cold area in the front of the neck, to the right of the midline. The thyroid could be seen "through" the mass; there was flattening of the lateral contour of the right lobe but no



**Figure 3** (Top) Ultrasound image, longitudinal section of the right side of the neck shows the mass lying anterior to the thyroid and also the pre-thyroid muscles and is separate from the thyroid, the mass is isoechoic with the muscles and has septations; (Middle) Transverse image showing the right lobe is slightly compressed comparatively; (Bottom) Ultrasound image using a 3.5MHz convex probe showing multiple small transverse streaks in the mass at this resolution



**Figure 4** CT scan showing the large hypodense mass in front of the neck. The right lobe of the thyroid (THY) and the trachea (T) are displaced by the mass



**Figure 5** The excised specimen. Note the lobulated surface, the arrow points to a small portion of the capsule

notches could be seen, no intrathyroidal nodules were noted, but there was slightly reduced uptake by the right lobe and the isthmus in comparison with the left lobe, presumably due to attenuation from the overlying mass, which was seen to extend to the right parotid distorting the gland contours (Figure 2).

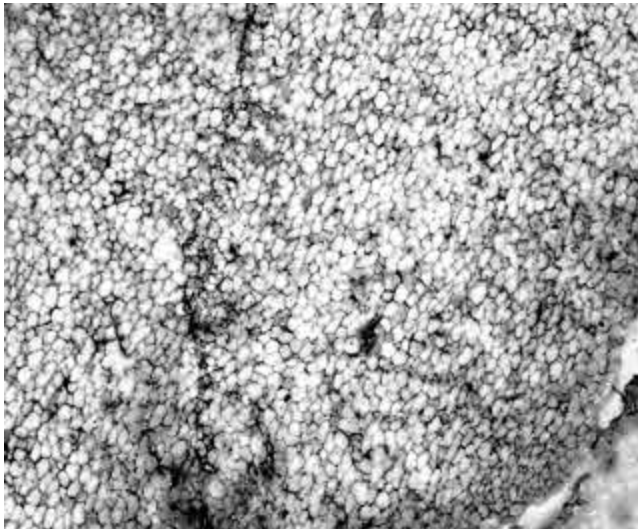
On ultrasound, the “mass” was isoechoic with subcutaneous fat. It lay in front of the thyroid lobes, and the thyroid moved freely with swallowing under the mass. The mass appeared to have an ill-defined capsule with several thin echogenic septa seen coursing through the substance of the mass (Figure 4).

The right lobe of the thyroid was slightly compressed but showed no focal disease. The vessels of the neck were not displaced. The mass was too big to be seen in one or appended sections using high-resolution probes so a 3.5MHz abdominal probe was used to try to see the whole extent and this revealed a nearly 15 cm mass with innumerable transversely

oriented thin linear echogenicities. The ultrasound findings were diagnostic of a massive lipoma.

CT of the neck showed a hypodense mass in the right side of the neck with fat density (-95 to -120 Hounsfield units) measuring 15.5 x 10.2 cm with internal septations. The mass originated in the anterior triangle of the neck and extended from the suprasternal notch to the submental region. The mass was seen to be causing mild compression of the airways and posterior displacement of the right sternocleidomastoid. It surrounded the right mandible without any expansion or erosion of the mandible and abutted onto the right hyoid bone; the trachea and major vessels were displaced to the left by the mass. Both lobes of the thyroid seemed normal (Figure 4).

A needle biopsy is recommended as an easy way of confirming the diagnosis [5-6] but the imaging findings in our case were considered to be sufficiently diagnostic, and therefore, preoperative cytological diagnosis was not considered to be essential. On surgery, a skin



**Figure 6** Histopathology slide showing mature adipose tissue

crease incision was made, and a large lobulated fatty mass was removed from the subcutaneous plane. The base was ligated and cut, and the mass was removed completely.

No localized lymphadenopathy or adherence to the surrounding tissues could be seen.

The excised specimen was yellow in colour and lobulated. It measured almost 9 inches (23 cm) in the longest diameter; parts of the thin capsule could be seen over the resected specimen (Figure 5). Histopathology showed mature adipose tissue with no evidence of malignancy (Figure 6).

**Discussion**

This report describes the unusual presentation of a relatively common condition and discusses the imaging characteristics of various modalities. Neck masses have extensive differential diagnoses and include neoplastic, developmental and inflammatory causes [7] (Table1). Lipomas are very common with a prevalence rate of 2.1:1000 to 1:100 [8-9]. The actual prevalence might be higher as many lipomas might escape unnoticed if on the back, and, even if noticed, may not be reported, unless

**Table 1** Differential diagnosis of neck masses

**Primary Tumours**

- Thyroid Masses
- Lymphoma
- Salivary Tumours
- Carotid Body and Glomus Tumours
- Lipoma
- Neurogenic Tumours
- Dermoid/teratoma

**Secondary tumours**

- Metastatic nodes and metastases to other tissues of the neck

**Congenital and Developmental Masses**

- Branchial Cleft Cysts
- Thyroglossal Duct Cysts

**Epidermal and Sebaceous Cysts**

**Vascular Tumours**

- Capillary haemangiomas

**Lymphatic malformations**

- Cystic hygromas
- lymphangiomas

**Inflammatory Disorders**

- Lymphadenitis
- Granulomatous lymphadenitis
- Abscesses

some anxiety is engendered. Lipomas are composed of mature white adipose tissue arranged in lobules surrounded by a thin fibrous capsule. The first case of a neck mass thought to be a lipoma was reported over 100 years ago [10]. Thirteen percent of the lipomas are located in the head and neck [2] but anterior neck lipomas are very rare and only a few cases have been reported [3-4].

Goitre is the commonest cause of a neck mass in most parts of the world. Non-thyroid masses mimicking a goiter or thyroid nodule are not uncommon and have been reported, these include tuberculous abscess [11], Zenker's diverticulum [12], Rhabdomyoma [13], lipoma [4, 6, 8, 14-18], aneurysms [19, 20], thyroglossal cyst [21], extraskeletal Ewing's sarcoma [22], Killian-Jamieson diverticulum [23] and foreign body granulomas [24, 25].

Patients with neck masses referred to our institute routinely undergo thyroid scintigraphy and ultrasonography as the first-line imaging modalities due to their associated high diagnostic specificity. The radionuclide thyroid scans maps the location of functioning thyroid tissue and is of use in characterizing the functional status of neck nodules regarding the presence of thyroid tissue, characterization of a thyroid nodule [26] retrosternal extension of goitre and diagnosis of some types of thyroiditis. The images in our case were suggestive of an extrathyroidal mass because of the minimal contour change and the absence of any intrathyroidal cold nodule.

Lipomas exhibit considerable variability in their ultrasound characteristics: the echogenicity can vary from hypoechoic to isoechoic or hyperechoic to the muscles [27-30]. Hyperechoic lipomas that are found in subcutaneous fat and some body organs are the easiest to confidently diagnose. In fact, with visceral lipomas and lipomatous masses, the ultrasound tissue characterization alone may be sufficient to establish an accurate diagnosis. [31-32]. There is however some difference of opinion here with some authors ascribing a relatively low specificity to ultrasound for confirmation of a lipoma [33]. Despite this known variability

and lack of specificity in other locations, head & neck lipomas might represent a subpopulation with stable and characteristic ultrasound findings [30]. CT with its capacity to generate Hounsfield numbers is unsurpassed in diagnosing the fat content of any mass [34-35]. In our case too, the CT findings were specific, though in this case complimentary to the ultrasound findings but did not contribute to patient management.

## References

1. Rapidis AD. Lipoma of the oral cavity. *Int J Oral Surg.* 1982; 11:263-275.
2. Barnes L. Tumors and tumor-like lesions of the head and neck. In: Barnes L, ed. *Surgical Pathology of the Head and Neck.* New York: Marcel Decker Inc; 1985.
3. Medina CR, Schneider S, Mitra A, Spears J and Mitra A. Giant submental lipoma: Case report and review of the literature. *Can J Plast Surg.* 2007; 15(4):219-222.
4. Lee SL, Rubin DJ. Anterior neck lipoma mimicking a goiter. *Endocrine today.* 2009. Available from: <http://www.endocrinetoday.com/view.aspx?rid=37676>
5. Limanova Z, Duskova J. Differential diagnosis of goiter using thin-needle biopsy- differences between the pediatric and adult population. *Cesk Pediatr.* 1993; 48(5):265-9.
6. Leonidas JR. Lipoma of neck mimicking thyroid nodule. *Lancet* 1(8127): 1195.
7. Turkington JR, Paterson A, Sweeney LE, Thornbury GD. Neck masses in children. *Br J Radiol.* 2005; 78(925):75-85.
8. Nickloes TA, Sutphin DD, Radebold K. 2010. Lipomas. Available from <http://emedicine.medscape.com/article/191233-overview>
9. Rydholm A, Berg NO. Size, site and clinical incidence of lipoma. Factors in the differential diagnosis of lipoma and

- sarcoma. *Acta Orthop Scand*, 1983. 54(6): p. 929-34.
10. Horne, W.J., Lipoma or Cystoma of the Neck. *Proc R Soc Med*, 1908. 1(Laryngol Sect): p. 38-39.
  11. Abdullah, M.A., et al., Tuberculous anterior neck mass simulating goitre. *Ann Trop Paediatr*, 1996. 16(4): p. 369-71.
  12. Kumar, A., S. Aggarwal, and D.H. Pham, Pharyngoesophageal (Zenker's) diverticulum mimicking thyroid nodule on ultrasonography: report of two cases. *J Ultrasound Med*, 1994. 13(4): p. 319-22.
  13. Adickes, E.D., T. Neumann, and R.J. Anderson, Sternomastoid rhabdomyoma mimicking a thyroid nodule. *Nebr Med J*, 1996. 81(11): p. 359-62.
  14. Guerra, L., [Lipoma of the Neck. (Presentation of a Clinical Case)]. *Pathologica*, 1963. 55: p. 463-70.
  15. Lenarcic Cepelja, J. and F. Kosokovic, [Recurrent Lipoma of the Neck.]. *Rad Med Fak Zagrebu*, 1964. 12: p. 185-8.
  16. Brozkova, V., A. Linhartova, and V. Cepelak, [Myxoid changes in lipoma simulating nodular goiter]. *Cas Lek Cesk*, 1988. 127(12): p. 370-1.
  17. Lepkowski, A., et al., [A case of giant size lipoma of the submental region]. *Otolaryngol Pol*, 1993. 47(2): p. 158-62.
  18. Yakubu, A.A., et al., Giant and complicated subcutaneous lipoma of the neck. *West Afr J Med*, 2008. 27(1): p. 44-6.
  19. Sabih, D. and S.M. Khan, When a thyroid cold nodule is not a thyroid cold nodule: a case report. *JPMA*, 1988. 38(6): p. 173-4.
  20. Selcuk, D., et al., Partially thrombosed fusiform inferior thyroid artery true aneurysm mimicking a thyroid nodule. *J Ultrasound Med*, 2006. 25(6): p. 805-8.
  21. Hung, W. and V. Abbassi, Thyroglossal duct cyst: an infrequently considered diagnosis in pediatric patients with anterior neck masses. *Endocr Pract*, 1999. 5(4): p. 191-3.
  22. Chung, C.H., et al., Extraskelatal Ewing sarcoma mimicking a thyroid nodule. *Thyroid*, 2006. 16(10): p. 1065-6.
  23. Pang, J.C., et al., Killian-Jamieson diverticulum mimicking a suspicious thyroid nodule: sonographic diagnosis. *J Clin Ultrasound*, 2009. 37(9): p. 528-30.
  24. Sanfilippo, F., J. Shelburne, and P. Ingram, Analysis of a polytef granuloma mimicking a cold thyroid nodule 17 months after laryngeal injection. *Ultrastruct Pathol*, 1980. 1(4): p. 471-5.
  25. Randolph, G.W., R.L. Fabian, and G.H. Daniels, Perithyroid Teflon granuloma mimicking a thyroid nodule. *Otolaryngol Head Neck Surg*, 1995. 112(3): p. 465-8.
  26. Wilhelm, S.M., Utility of I-123 thyroid uptake scan in incidental thyroid nodules: an old test with a new role. *Surgery*, 2008. 144(4): p. 511-5; discussion 515-7.
  27. Fornage, B., [Echographic aspects of superficial lipoma]. *J Radiol*, 1984. 65(12): p. 853-7.
  28. Fornage, B.D. and G.B. Tassin, Sonographic appearances of superficial soft tissue lipomas. *J Clin Ultrasound*, 1991. 19(4): p. 215-20.
  29. Salmaso, G.V. and F. Taricco, [Ultrasonographic characteristics of lipoma of the soft tissues]. *Radiol Med*, 1994. 88(4): p. 373-7.
  30. Ahuja, A.T., et al., Head and neck lipomas: sonographic appearance. *AJNR Am J Neuroradiol*, 1998. 19(3): p. 505-8.
  31. Pham, C.A., M. Atri, and M.K. Senterman, Ultrasonographic appearance of uterine lipoleiomyoma. *Can Assoc Radiol J*, 1993. 44(6): p. 463-5.
  32. Ikeda, A.K., et al., Small echogenic renal masses: how often is computed tomography

used to confirm the sonographic suspicion of angiomyolipoma? *Urology*. 1995; 46(3):311-315.

33. Coates M. Ultrasound and soft-tissue mass lesions-a note of caution. *N Z Med J*. 2003; 116(1187):U706.
34. Van der Kooy K, Seidell JC. Techniques for the measurement of visceral fat: a practical guide. *Int J Obes Relat Metab Disord* 1993; 17(4): 187-196.
35. Ivkovic-Lazar T. Current diagnostic methods of the specific distribution of adipose tissue. *Med Pregl*. 2000; 53(11-12):584-587.