



Case report

Subcutaneous implantation of oncocytic thyroid cell aggregates nine years later from thyroidectomy. A case report

Fausto Famà^{a,*}, Antonella Pino^a, Vittorio Cavallari^b, Guido Fadda^b, Antonio Ieni^b, Gianlorenzo Dionigi^{c,d}^a Division for Endocrine and Minimally Invasive Surgery, Department of Human Pathology in Adulthood and Childhood "G. Barresi", University Hospital G. Martino, University of Messina, Messina, Italy^b Section of Pathological Anatomy, Department of Human Pathology in Adulthood and Childhood "G. Barresi", University Hospital G. Martino, University of Messina, Messina, Italy^c Division of Surgery, Istituto Auxologico Italiano IRCCS, Piazzale Brescia, 20, 20149 Milan, Italy^d Department of Pathophysiology and Transplantation, University of Milan, 20122 Milan, Italy

ARTICLE INFO

Keywords:

Subcutaneous implantation
Oncocytic adenoma
Hurthle cell
Thyroid tissue
Seeding
Case report

ABSTRACT

Introduction and importance: Subcutaneous implantation of thyroid tissue is a rare clinical condition that involves the head and neck region and occurs after surgery, diagnostic procedures or cervical trauma.**Case presentation:** A 90-year old woman with two skin nodules on her thyroidectomy scar was hospitalized and treated by two surgical excisions. Histologically, these lesions were two aggregates of cutaneous oncocytic thyroid cells. In the patient's clinical history there was a total thyroidectomy for multinodular goiter, performed 9 years previously and at which a well-encapsulated subcapsular oncocytic adenoma of the left lobe was also incidentally discovered. At 12 months of follow-up, the patient is showed well and her wounds healed.**Clinical discussion:** Subcutaneous colonization or seeding of thyroid tissue is a rare occurrence reported in the literature for both benign and malignant pathologies; among the malignant ones, the implantation of follicular carcinoma cells is the most frequent. Only in one previous case, to our knowledge, subcutaneous colonization originating from oncocytic thyroid (or Hurthle) cell neoplasms has been described.**Conclusion:** We report an unusual case of double subcutaneous implantation of oncocytic thyroid cells on the cervical scar of an elderly woman, nine years after total thyroidectomy.

1. Introduction

Subcutaneous implantation of thyroid tissue, also called cutaneous *thyromatosis* or *thyroidosis*, is a rare occurrence, developing when the thyrocytes pass through the thyroid capsule to spread locally during thyroid surgery and diagnostic procedures. These lesions are usually localized in the head and neck region and described early following to a fine-needle aspiration biopsy throughout the length of the needle tract (thus causing the dissemination of cells during the needle withdrawal) or after thyroidectomy [1–3]. Recently, cases of subcutaneous implantation of thyroid tissue were observed even after endoscopic or robot-assisted procedures [4,5].

2. Case presentation

A 90-year old woman presenting two round cutaneous suspicious nodules was admitted to the Endocrine Surgery Unit. On examination she showed two palpable yellowish painless non-tender masses (33 mm and 10 mm in diameter, respectively) on the post-thyroidectomy cervical scar, which developed approximately one year earlier and were rapidly growing (Fig. 1). Nine years earlier, she underwent total thyroidectomy for a multinodular goiter that caused compressive symptoms, and an incidentally discovered subcapsular well-encapsulated oncocytic adenoma 25-mm in the left lobe. Her history included more-over mild hypertension, atrial fibrillation, and depressive syndrome; she was taking levothyroxine, olmesartan, bisoprolol, rivaroxaban, and fluoxetine. The hormonal panel showed a marked increase in thyrotropin as well as in thyroglobulin, while thyroxine, calcitonin, and

* Corresponding author at: Via P. L. Ruggeri n.119, Complesso MITO - Residenza Belvedere pal.2 int.1, Messina, Italy.

E-mail address: ffama@unime.it (F. Famà).<https://doi.org/10.1016/j.ijscr.2022.106935>

Received 8 February 2022; Received in revised form 8 March 2022; Accepted 8 March 2022

Available online 10 March 2022

2210-2612/© 2022 The Authors. Published by Elsevier Ltd on behalf of IJS Publishing Group Ltd. This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

parathormone were within the limits. Routine laboratory investigations and chest radiography were normal. Soft tissue sonography showed two heterogeneously hypoechoic nodules at the cervical scar. The patient underwent a double excision and histology was consistent with two dermal oncocytic thyroid (or Hurthle) cell aggregates (Fig. 2). The hospital stay was uneventful and she was discharged on the same day of the surgical procedure. At the 12 months follow-up check, the patient is showed well and her wounds healed.

3. Discussion

Subcutaneous colonization of thyroid tissue was described for the first time in 1976 [6]; later there have been reports concerning the implantation of both benign and malignant pathologies, histotypes either papillary or follicular [2,3,7,8]. In particular, the review by Koller et al., which considered less than 50 cases of collected skin lesions (i.e. follicular, papillary, or mixed follicular-papillary carcinomas), showed that follicular carcinoma was the prevalent histotype where the head and the neck region was involved most frequently [7]. Among the possible mechanisms of skin involvement by thyroid tissue, in particular with regards to scar localizations, the most accredited pathogenetic hypothesis is the one in which the implantation of thyroid cells was brought about during surgical manipulation or was as a consequence of blunt cervical trauma [8].

Moreover, to our knowledge, the seeding of cells originating from oncocytic thyroid cell neoplasms has been reported in the world literature only in another article published in 2004 [8].

4. Conclusions

We report, according to SCAR guidelines [9], an unusual case of a double subcutaneous implant of oncocytic thyroid (or Hurthle) cells on the cervical scar, as a result of an intraoperative colonization of cells from a well-encapsulated subcapsular oncocytic adenoma in an elderly

woman, nine years after total thyroidectomy. In our case, an important etiological aspect was the multiple interruptions of the thyroid capsule described in the histological examination that occurred during the first surgical procedure.

This represents an extremely rare pathological condition, the second one reported in the worldwide literature, suggesting that clinicians should be well aware of to ensure proper patient management.

Provenance and peer review

Externally peer-reviewed.

For the revision of the manuscript, we wish to thank Mr. Sam Palella, an English native speaker, with an extensive experience in reviewing scientific papers.

Sources of funding

This report research received specific grant from Eurocrine project protocol (n. 2022_01_25_05 - Istituto Auxologico Italiano).

Ethical approval

Ethical approval has been given.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

- Conceptualization: G.D.



Fig. 1. Clinical appearance of yellowish nodules at the post-thyroidectomy scar.

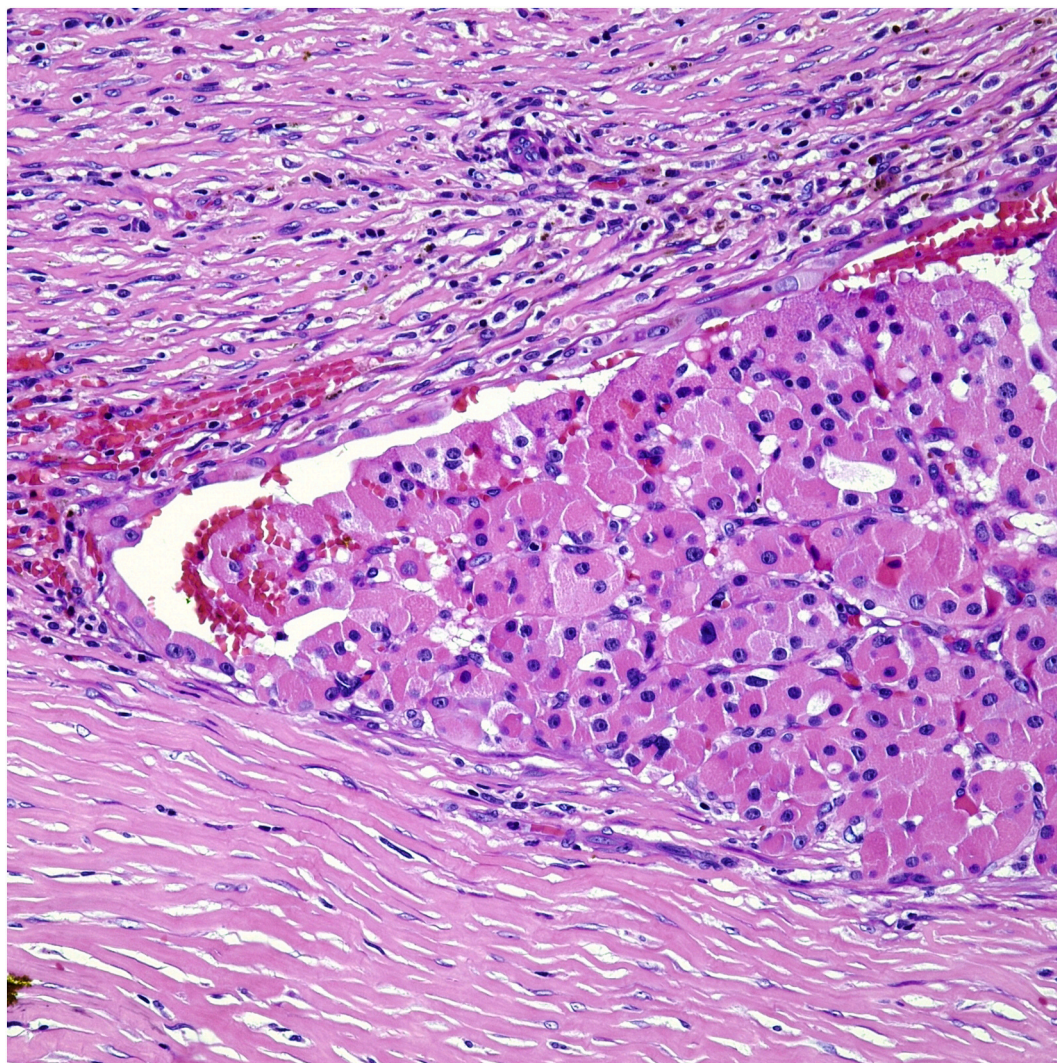


Fig. 2. Dermal colonization of thyroid oncocytic cells (haematoxylin and eosin stain; original magnification $\times 20$).

- Data curation: G.D., F.F., A.P. and V.C.
- Patient management: G.D., F.F., A.P. and V.C.
- Writing - original draft: F.F., A.P. and A.I.
- Writing - review & editing: G.D., F.F. and G.F.
- Supervision: G.D. and G.F.

All authors have read and approved the final manuscript and all materials before submission.

Research registration

Not applicable.

Guarantor

DIONIGI Gianlorenzo.

Declaration of competing interest

All authors declare no conflicts of interest.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ijscr.2022.106935>.

References

- [1] S.A. Polyzos, A.D. Anastasilakis, A systematic review of cases reporting needle tract seeding following thyroid fine needle biopsy, *World J. Surg.* 34 (4) (2010) 844–851, <https://doi.org/10.1007/s00268-009-0362-2>.
- [2] X. Dong, S. Lv, X. Zhang, Q. Li, Subcutaneous recurrences of thyroid cancer after conventional transcervical thyroidectomy: a case report, *Front. Surg.* 7 (2020), 586106, <https://doi.org/10.3389/fsurg.2020.586106>.
- [3] M. Beghdad, Y. Oukessou, K. Choukry, H. Radhi, A. Mkhatri, M. Mahtar, Recurrence of thyroid carcinoma in cervical soft tissue following surgical implantation: case report, *Int. J. Surg. Case Rep.* 79 (2021) 101–103, <https://doi.org/10.1016/j.ijscr.2021.01.008>.
- [4] L. Fregoli, S. Bakkar, P. Papini, L. Torregrossa, C. Ugolini, L. Rossi, A. Matrone, R. Elisei, G. Materazzi, First report of benign track seeding after robot-assisted transaxillary thyroid surgery, *Am. J. Otolaryngol.* 42 (2021), 102811, <https://doi.org/10.1016/j.amjoto.2020.102811>.
- [5] K.W. Koh, T.H. Lee, S.Y. Cho, S.S. Lee, J.M. Kim, K.H. Yi, Y.Y. Lee, Subcutaneous implantation of adenomatous goiter: an unpredicted complication of endoscopic thyroid surgery, *Thyroid* 20 (2010) 441–443, <https://doi.org/10.1089/thy.2009.0314>.
- [6] D.C. Moses, N.W. Thompson, R.H. Nishiyama, J.C. Sisson, Ectopic thyroid tissue in the neck. Benign or malignant? *Cancer* 38 (1) (1976) 361–365, [https://doi.org/10.1002/1097-0142\(197607\)38:1<361::aid-cnrc2820380152>3.0.co;2-8](https://doi.org/10.1002/1097-0142(197607)38:1<361::aid-cnrc2820380152>3.0.co;2-8).
- [7] E.A. Koller, J.B. Tourtelot, H.S. Pak, M.W. Cobb, J.C. Moad, E.A. Flynn, Papillary and follicular thyroid carcinoma metastatic to the skin: a case report and review of

- the literature, *Thyroid* 8 (11) (1998) 1045–1050, <https://doi.org/10.1089/thy.1998.8.1045>.
- [8] H.R. Harach, J.A. Cabrera, E.D. Williams, Thyroid implants after surgery and blunt trauma, *Ann. Diagn. Pathol.* 8 (2) (2004) 61–68, <https://doi.org/10.1053/j.anndiagpath.2004.01.001>.
- [9] R.A. Agha, T. Franchi, C. Sohrabi, G. Mathew, for the SCARE Group, The SCARE 2020 guideline: updating consensus Surgical CAse REport (SCARE) guidelines, *Int. J. Surg.* 84 (2020) 226–230.