

Scientific letter

Foreign body reactions to oxidized cellulose in the follow-up of thyroid cancer

Reacciones de cuerpo extraño a celulosa oxidada en el seguimiento del cáncer de tiroides

Dear Editor,

Regenerated oxidised cellulose is a local haemostatic biomaterial widely used in thyroid cancer surgery due to its ease of use, favourable biocompatibility profile and bactericidal activity.¹ However, the development of foreign body reactions to oxidised cellulose (FBR-OC) could complicate the follow-up of these patients given the existence of sonographically indeterminate lesions in the

surgical site. To date, small series of isolated cases of FBR-OC in thyroid pathology have been described.^{2–4} The aim of this study is to describe a series of patients with cytologically confirmed FBR-OC after surgery for thyroid carcinoma, in an attempt to facilitate the presumptive diagnosis of similar cases in the future. We analysed 15 cases of FBR-OC observed on fine needle aspiration cytology of ultrasound lesions in the thyroid bed in a cohort of 83 patients operated on for differentiated thyroid cancer or non-invasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP) between January 2019 and December 2020. In all cases the way of detecting FBR-OC was by ultrasound finding of a lesion in the surgical site. All surgical interventions and clinical management were performed by expert teams estimating dynamic risk stratification for recurrence according to the system proposed by the *American*

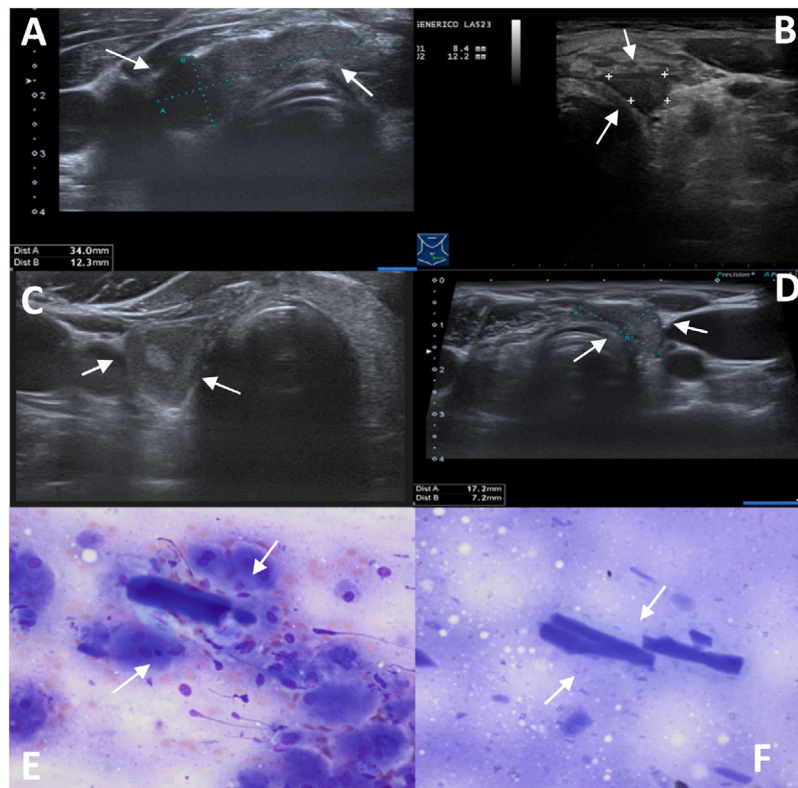


Figure 1. Representative images of some of the lesions with foreign body reaction to oxidised cellulose (FBR-OC).

A) Pretracheal hypoechoic image, lobulated, elongated and well-defined, suggesting thyroid tissue, less likely haematoma. B) Well-defined nodular hypoechoic left paratracheal image, non-vascularised and with triangular morphology, like a tear, suggesting post-surgical debris or haematoma. C) Hypoechoic right paratracheal image, very similar to the previous one, with central echogenic content suggestive of haematoma, but with recommendation to perform fine needle aspiration (FNA). D) Nodular isoechoic lesion with well-defined margins and tear-shaped morphology in the left surgical site. E) Rectangular, acellular and elongated structure associated with an inflammatory component consisting of macrophages and a protein-based background (40 \times , Diff Quick). F) Rectangular, acellular and elongated structure, on a protein-based background and without inflammatory components (40 \times , Diff Quick).

Thyroid Association.⁵ The median age of the patients was 51 years (27–77 years), and 10 (66.7%) were women. Total thyroidectomy was performed in 11 cases (73.3%) and hemithyroidectomy in 4 (26.7%). Pathology showed differentiated thyroid cancer in 11 cases and NIFTP in 4 cases. At the time of cytological assessment, the risk of recurrence was low in seven patients (63.6%), intermediate in three (27.3%) and high in one (9.1%). The median time between surgery and first ultrasound was 10 months (2–22 months). A second ultrasound was performed during the study period in 7 patients (46.7%), with a follow-up of 18 months (13–27 months). No changes in the size or appearance of the lesions were observed during follow-up.

FBR-OC lesions were bilateral in four cases (26.7%). Size ranged from 5 to 28 mm, with median values of 9.6 mm in the anteroposterior axis, 9 mm in the transverse axis and 17.4 mm in the craniocaudal axis. The lesions were hypoechoic in seven cases (46.7%) and isoechoic in eight (53.3%), with well-defined margins in all cases and zero Doppler flow. None of the lesions were hyperechoic (Fig. 1A–D). Cytological examination revealed small cellular structures consisting of oxidised cellulose. In some samples there was also an inflammatory component with macrophages (Fig. 1E), while in others no associated macrophage inflammatory reaction was observed (Fig. 1F).

Although we had already had some previous cases, our centre experienced an unexpected increase in the occurrence of FBR-OC, with the change in the brand of haemostatic material used during the study period being the only variation with respect to the previous period. As a result, there was a change in haemostatic policy and the agents used, and the situation was successfully reversed.

One of the critical points in the treatment of FBR-OC is to differentiate local recurrence from benign lesions. The sonographic appearance of the lesions in our study was of low radiological aggressiveness, characteristically solid, iso- or hypochoic, with well-defined borders and no Doppler flow. Most were subcentimetric in their transverse axis, very elongated craniocaudally. The absence of vascularisation and well-defined margins, together with knowledge of the use of oxidised cellulose-based haemostatic agents, could lead us to suspect the diagnosis, with persistence over time being essential in the differential diagnosis of haematoma.

Although its mere existence may imply its assessment as an indeterminate response after treatment, knowing the ultrasound characteristics of FBR-OC in a clinical context of low risk of recurrence could allow the follow-up of these lesions, avoiding the need for fine needle aspiration to confirm the diagnosis in the absence of other warning signs. Cytology material will provide a definitive diagnosis in uncertain situations.

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