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SHORT COMMUNICATION

Ultrasound-guided wire localisation to facilitate removal of an abnormal neck lymph node – a technical note

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Abstract

Background: Ultrasound-guided wire localisation is a technique that is well established in breast surgery, but is not well described in head and neck practice. It can be used to locate impalpable lesions for surgical removal, without the need for more extensive surgery.

Method: This paper describes a case where the technique was used to assist in the removal of an impalpable but radiologically abnormal lymph node.

Conclusion: The technique offers a safe and effective method for removing lesions within the head and neck.

Key words: Ultrasound Guided Wire Localisation; Head And Neck

Introduction

Ultrasound-guided wire localisation is an imaging technique allowing the surgical excision of radiologically abnormal but impalpable lesions. Its use is well established in the removal of breast lumps, but is not well described in head and neck surgical practice.[1,2] We present a case where an impalpable lymph node, which was suspicious on initial core biopsy, needed to be removed to confirm a histological diagnosis. Ultrasound-guided wire localisation allowed accurate identification and safe removal of the node, whilst enabling the avoidance of full neck dissection.

Case report

A 71-year-old female with a history of angioimmunoblastic T-cell non-Hodgkin's lymphoma, diagnosed in 2009, was referred to the ENT clinic by the haematology department following a neck ultrasound because of discomfort. This had shown an atypical lymph node on the right at level III. The node measured 17 mm × 9 mm and was elliptical in shape, but of hypoechoic and heterogeneous echotexture, with absent central fatty hilum. Diffuse intranodal vascularity was observed on colour Doppler assessment.

Ultrasound-guided core biopsy was undertaken. This revealed histological changes that were suspicious but not diagnostic of lymphoma recurrence. Hence, excision was recommended.

Clinical examination findings of the neck were normal, with no lymph nodes palpable. The relevant clinicians agreed that a tissue diagnosis of recurrence would have implications for future treatment options, and surgical excision was planned to confirm diagnosis prior to any further imaging.

As the nodes were impalpable, to accurately locate the correct lymph node for excision, and avoid the need for full neck dissection and associated morbidity, it was decided that ultrasound-guided wire localisation would be used to locate the lymph node pre-operatively.

Technique

The technique used for ultrasound-guided wire localisation has been previously described by Breeze *et al*.[2]

On the morning of surgery, pre-operative localisation of the node was performed with ultrasound. Using an aseptic technique, 3 ml of 1 per cent lidocaine was infiltrated into the skin and soft tissue surrounding the lesion. A small skin incision was made, and a 19-gauge localisation needle (Figure 1) was introduced and passed towards the node under ultrasound guidance. In this case, this involved partially traversing the right sternocleidomastoid muscle. When the needle tip was in position near the node capsule (Figure 2), the wire was gently pushed, thereby extruding the expanding tip from the end of the needle (Figure 3) so that it was positioned adjacent to the node (Figure 4). The tip was deployed adjacent to the node and not within it in order to reduce disruption to nodal architecture and avoid potential interference with histological assessment. A marker was also placed on the skin overlying the node.

Intra-operatively, the surgeon was able to follow the route of the wire, traversing the sternocleidomastoid muscle, to access the radiologically abnormal lymph node. The node was surrounded by fibrotic tissue and was lying very close to the internal jugular vein. The node was excised and sent for histological analysis. The procedure was uncomplicated and the patient was discharged from hospital later that day. The specimen was sent for analysis by a tertiary pathology

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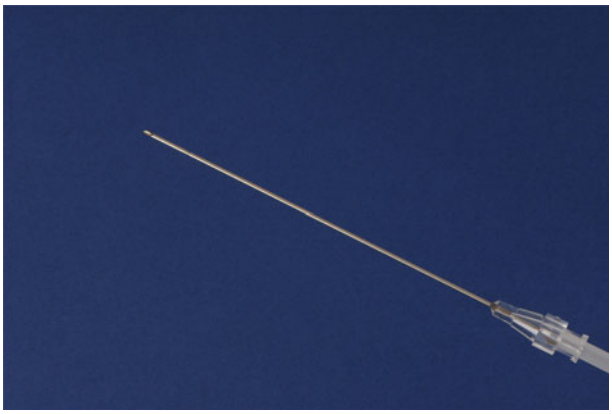

FIG. 1
A 19-gauge localisation needle prior to deployment of localisation wire.

centre; no definitive evidence for relapsed non-Hodgkin's lymphoma was demonstrated. The pathology centre advised continued close monitoring.

Discussion

Ultrasound-guided wire localisation is a well-recognised technique within breast surgery for the removal of impalpable lesions.[1] There are also reports within the literature of its use in the excision of pulmonary lesions such as peripheral lung tumours, and in orthopaedic surgery, where its use has been described in the removal of a femoral schwannoma and sacroiliitis with a pelvic abscess.[3,4] Within the head and neck, the technique has been utilised to remove a collapsed, impalpable branchial cyst, a parotid oncocytoma, and a symptomatic but impalpable thyroglossal cyst.[2,5–7] There is so far no documented case of its use to remove an abnormal lymph node within the head and neck.

As this case demonstrates, ultrasound-guided wire localisation is useful in cases where there is an impalpable lesion that would be difficult to find intra-operatively without reverting to more extensive surgery. In this case, the surgeon was able to directly follow the route of the guide wire, and therefore minimise unnecessary damage to surrounding tissue and avoid more formal neck dissection.

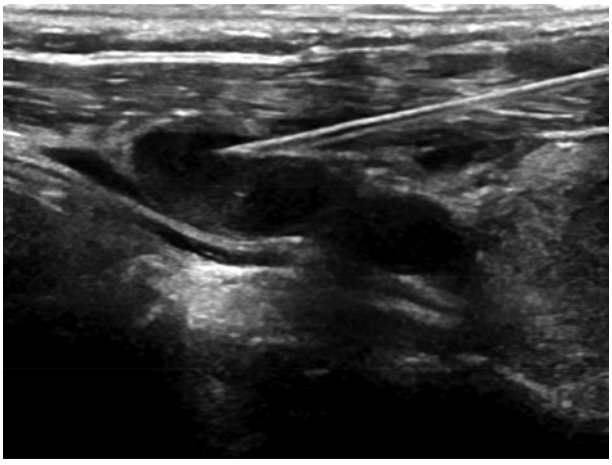

FIG. 2
Localisation needle prior to deployment of the wire, with the tip lying adjacent to the abnormal lymph node for planned excision.

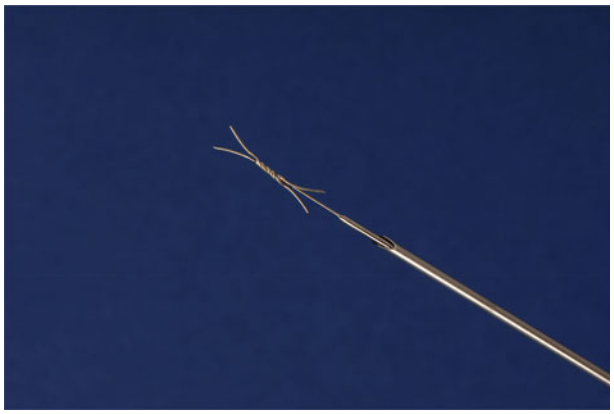

FIG. 3
Localisation needle after deployment of wire.

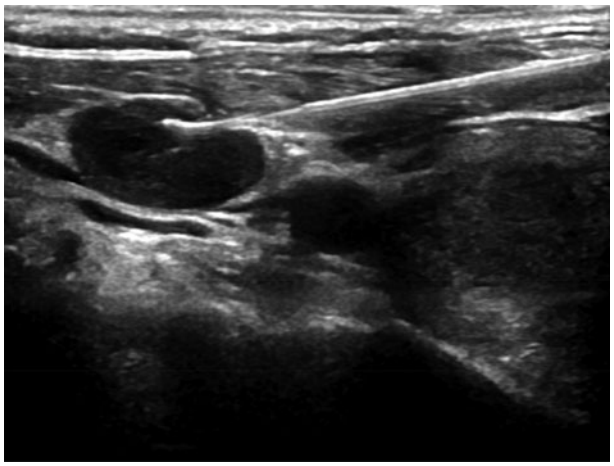

FIG. 4
Localisation needle with tip deployed, lying adjacent to the abnormal lymph node.

The use of ultrasound guidance allows precise needle placement and wire deployment, and enables the avoidance of adjacent structures. There are risks of discomfort because of the wire and the potential migration of the wire away from the target. It is therefore recommended that the time between wire insertion and surgery is kept to a minimum.

In summary, ultrasound-guided wire localisation is a technique already widely used within breast surgery, but not currently established within head and neck practice. It offers a minimally invasive way of accurately marking impalpable lesions for surgical excision. It is a safe and quick procedure that can reduce the need for more major surgery. In order to maximise the utility of the procedure, it is useful if the case is discussed by the operating surgeon and the radiologist preoperatively, to decide on the best route of wire placement to facilitate operative success.

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