

# NeoNavia biopsy system: Our experience of a new device for more precise ultrasound-guided percutaneous core biopsy of axillary lymph nodes



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## Purpose

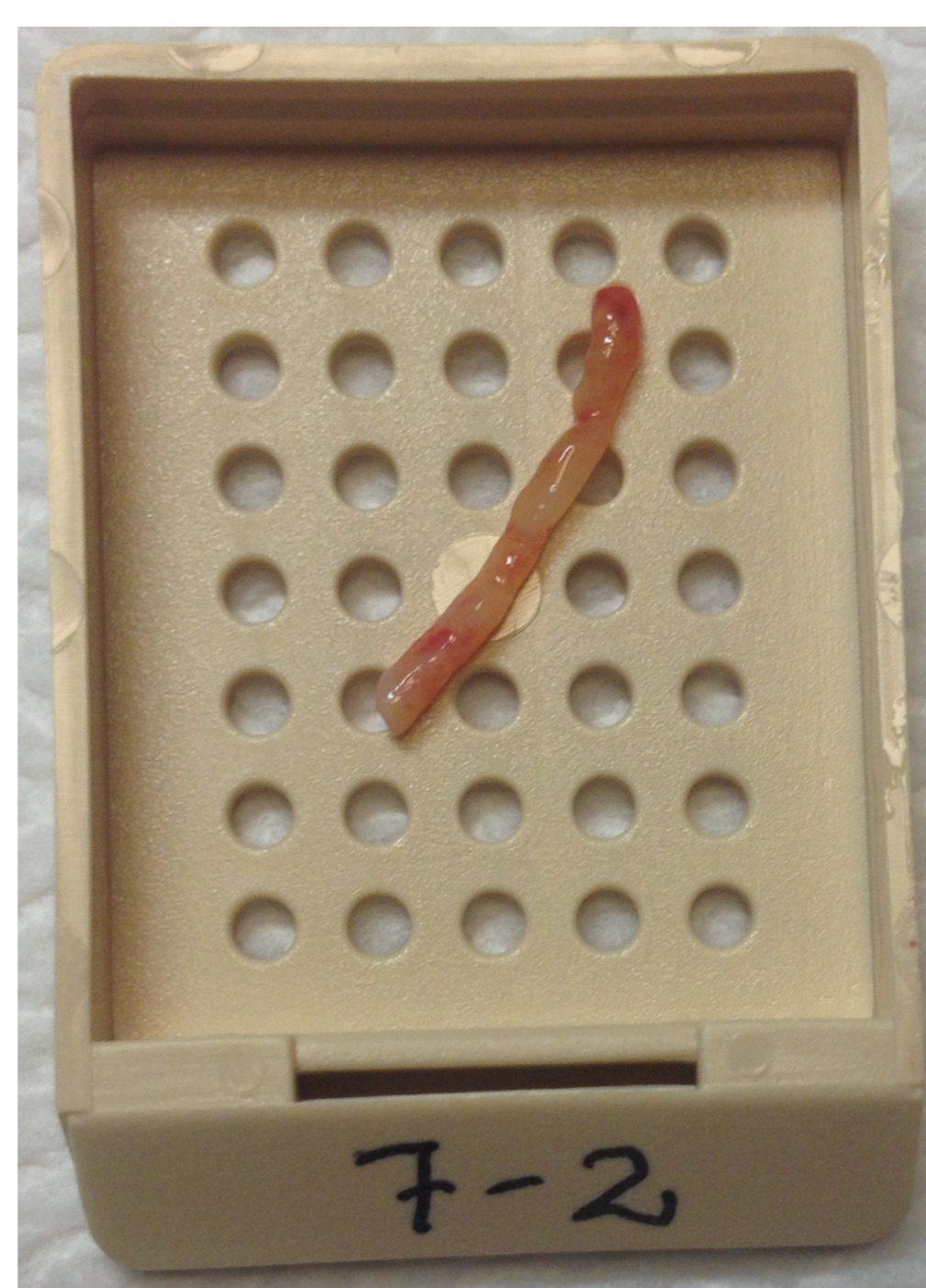
To present a case series and to describe our experience of using the NeoNavia biopsy device for ultrasound-guided core biopsy of axillary lymph nodes, assessing its acceptability, diagnostic yield and complications.

## Method

- Retrospective review of lesions targeted for ultrasound-guided core biopsy using the NeoNavia biopsy device. The device incorporates a pneumatic driver that enables a stepwise insertion of the needle under ultrasound guidance with end sampling.
- Data collected includes clinician experience, histology results and complications.
- All biopsies were performed by two consultant breast radiologists.

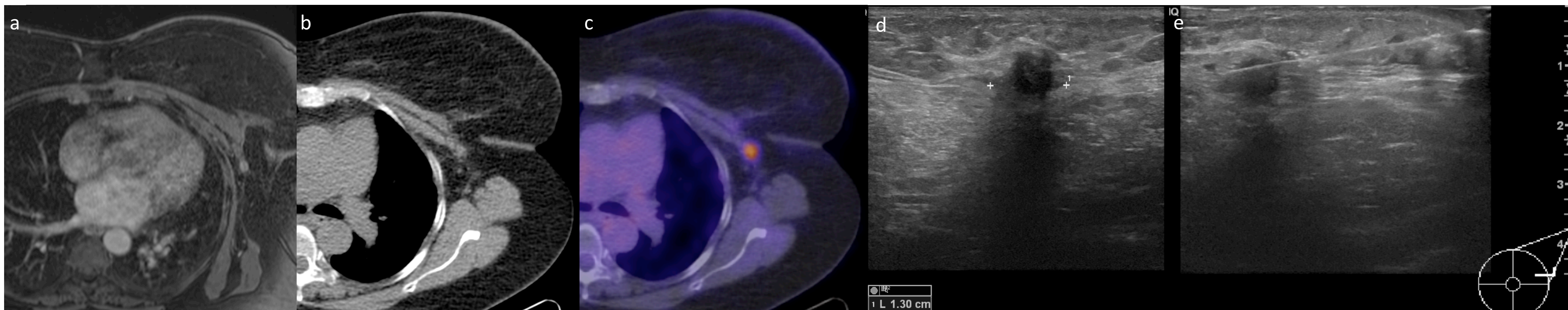
## Results

- We present a case series of six patients with axillary lymph nodes that were successfully biopsied. Of the lesions biopsied, half were considered to be "technically difficult"; prior ultrasound-guided aspirations, or biopsies with a conventional spring-loaded biopsy device, had yielded non-diagnostic (normal/benign) histology results.
- The device yielded 100% diagnostic histology results for all lesions.
- 50% (3/6) of the histology was upgraded from normal/benign to malignant (B5), significantly altering management.
- No complications were reported. A post-procedure questionnaire completed by the clinicians showed that the biopsy device had increased the clinicians' sense of control and technical precision during the biopsy of "technically difficult" lesions.

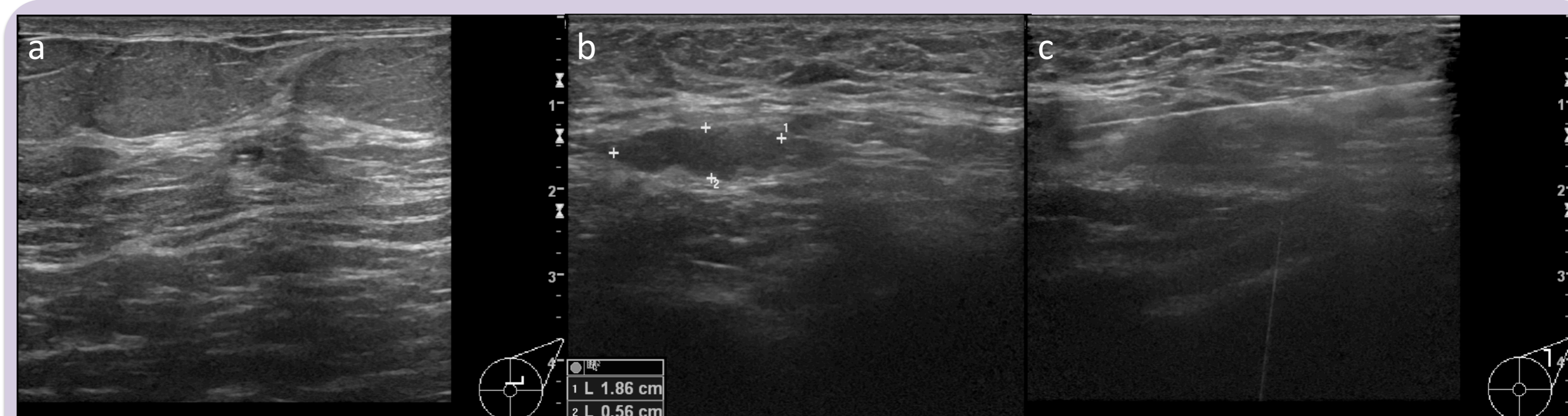
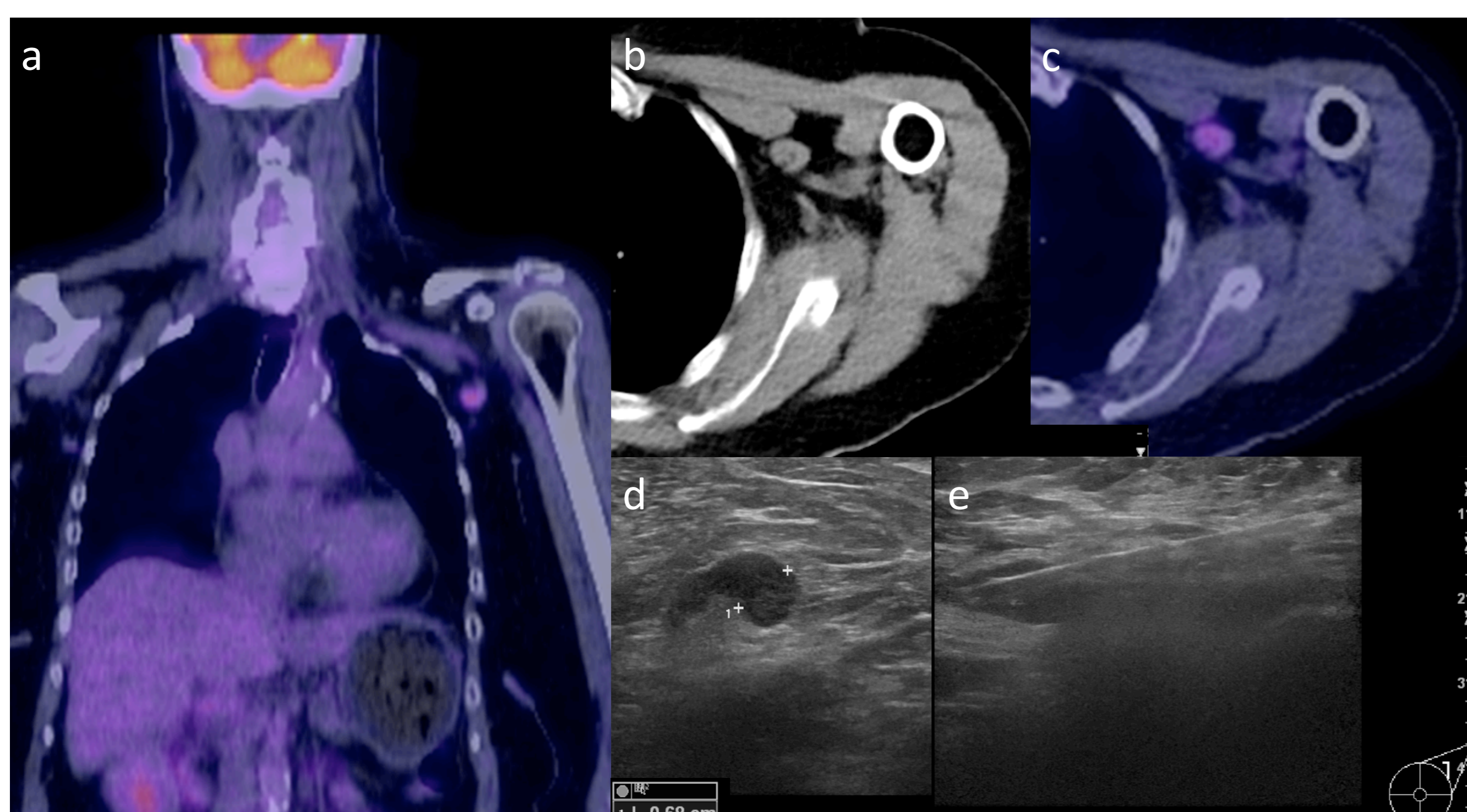


Above. Photo of a core biopsy sample using NeoNavia.

## Cases



Above. A patient with previous left breast cancer presented with a new deep enhancing small left axillary lymph node (a) within the ipsilateral axillary scar tissue. This demonstrated moderate FDG-avidity on a PET-CT scan (b-c). Prior ultrasound-guided aspirate and core biopsy of this lesion was considered non-diagnostic (C1 and B1). A targeted core biopsy of the left axillary lymph node (d) with the NeoNavia device (e) confirmed metastatic adenocarcinoma (B5), altering management.

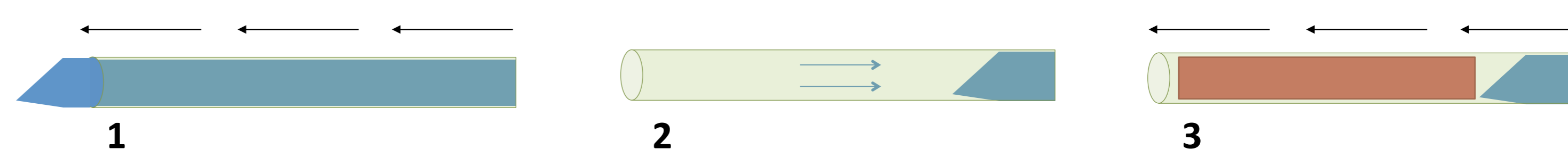


Above. A patient with left breast cancer had radiological complete response in the breast post-neoadjuvant chemotherapy (a, marker clip) but a residual enlarged left axillary lymph node (b). A prior ultrasound-guided fine needle aspirate of the lymph node suggested no residual cancer (C1), which was confirmed by ultrasound-guided core biopsy with the NeoNavia device (c).

Left. A mildly FDG-avid left axillary lymph node in a patient with oesophageal cancer (a-c) was confirmed as a reactive lymph node (B1) following ultrasound-guided core biopsy with the NeoNavia device (d-e).

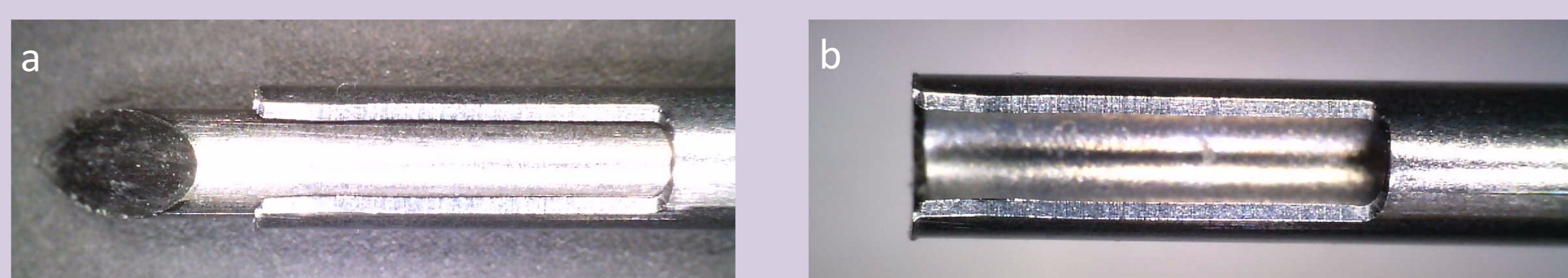
## Clinical Relevance

- The NeoNavia biopsy device can safely increase the precision of ultrasound-guided core biopsy of "technically difficult" lesions, including deep axillary lymph nodes.
- It would also be suitable for ultrasound-guided biopsy of small breast lesions and lesions close to the chest wall.



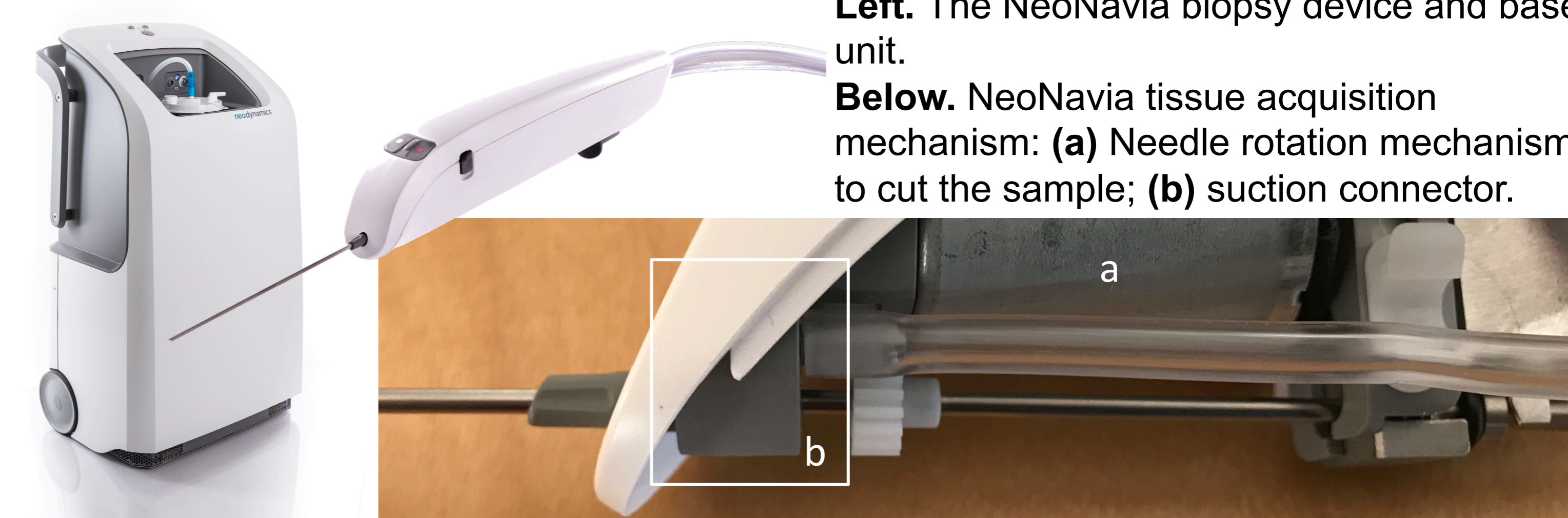
Above. Illustration of NeoNavia sampling methodology. The device uses micro-pulse technology to enable precise stepwise insertion of the needle tip towards, and into, the target (1). At the target position, the needle tip is withdrawn to expose the cavity of the biopsy needle (2). Sample acquisition (of up to 60mm in length) is aided by vacuum (3).

Below. Magnified (35x) of the distal tip of the biopsy needle with the needle in the extended position (a) and in the retracted position (b).



	Size (mm)	Prior aspirate/biopsy results	Histology with NeoNavia
1	13 x 8	C1 and B2	B5
2	13 x 5	C2	B5
3	15 x 7	-	B2 (Reactive)
4	19 x 6	C1	B2 (No residual carcinoma)
5	15 x 6	C4	B5
6	12 x 8	C2	B5

Above. Table showing the ultrasound-guided core biopsy histology results.



Left. The NeoNavia biopsy device and base unit.

Below. NeoNavia tissue acquisition mechanism: (a) Needle rotation mechanism to cut the sample; (b) suction connector.