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IMAGES IN OBSTETRICS AND GYNECOLOGY

Twinkle artifact in sonographic breast clip visualization

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Abstract
The 'twinkle' or 'twinkling' artifact represents a phenomenon observed using color Doppler ultrasound that leads to a rapid alternation of color in and immediately behind an echogenic and highly reflective object. It occurs during sonographic examination of kidney stones, and has been also described in clips used for marking breast and axillary lesions.

Keywords Twinkle artifact · Twinkling artifact · Breast ultrasound · Clip · Targeted axillary dissection

While the exact nature of this artifact remains poorly understood, it may prove useful when localizing a clip, for example for a targeted axillary dissection (TAD) in breast cancer patients receiving neoadjuvant chemotherapy (NACT). This surgical technique consists of the removal of a target lymph node, i.e., a biopsy-proven and marked node, and sentinel node biopsy, and can be offered patients converting from positive to negative node status through NACT (cN + → ycN0). Usually, the target node is marked using a clip/coil, but other probe-guided detection techniques, such as magnetic or radar localization, may be used as well [1]. In case a clip has been placed into the node, its detection depends mainly on its reliable ultrasound visibility. For this reason, larger clips and those with a 3D shape or hydrogel carrier are often chosen, but the ultrasound detection rate remains lower than expected (approx. 70–90% in previous studies). Therefore, additional tools such as the twinkle artifact may help to identify the clip. However, not all clip types produce this artifact, so the documentation of exact clip type and shape is recommended (Fig. 1).

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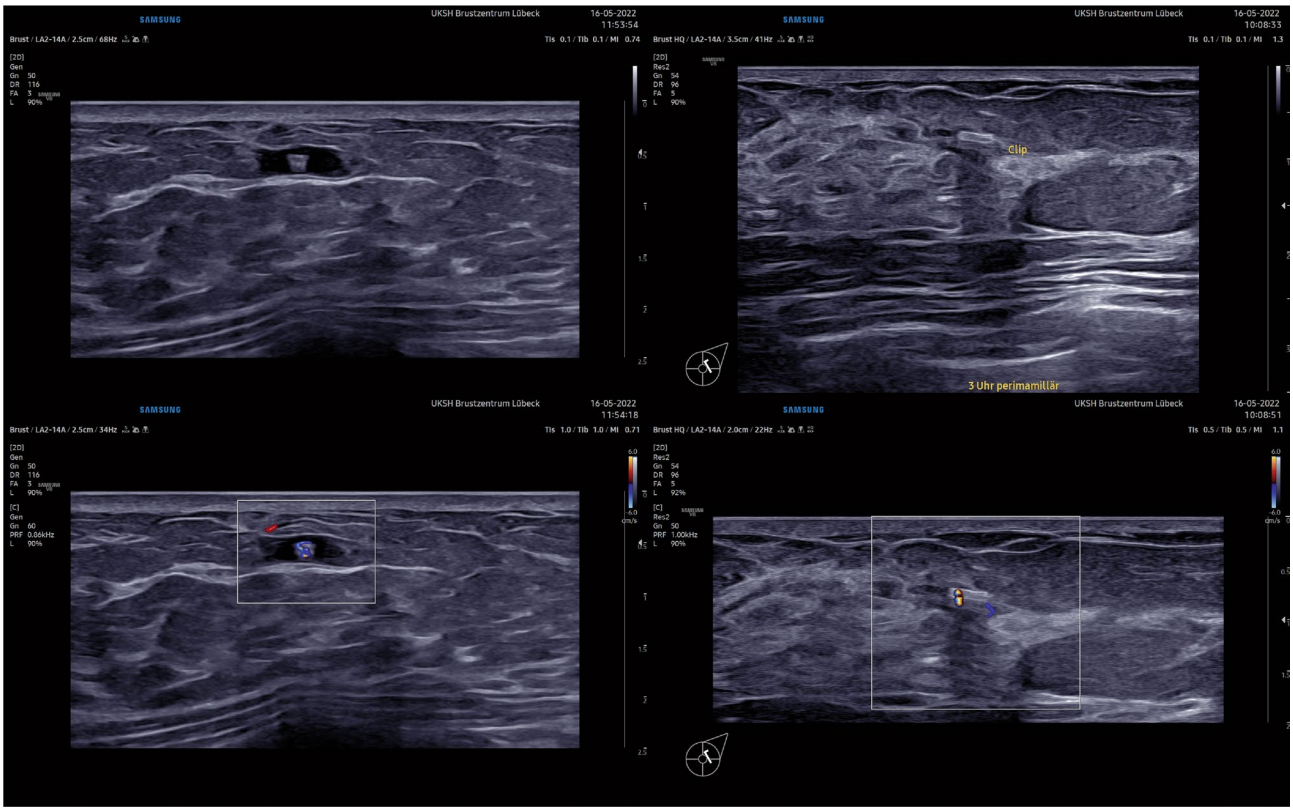

Fig. 1 Two different clips shown in B-mode (upper row) and using color Doppler (lower row). Left: small cavernous hemangioma, confirmed by core-biopsy with synchronous clip placement. The visible lesion with the clip was localized intraoperatively via ultrasound without the necessity for a preoperative localization step with, e.g., a wire. Right: core-biopsy confirmed breast cancer with complete remission upon imaging. The clip was placed before start of neoadjuvant chemotherapy

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Declarations

Competing interest MBP received honoraria for lectures and advisory role: Roche, Novartis, Pfizer, pfm, Eli Lilly, Onkowissen, Seagen, AstraZeneca, Eisai, AstraZeneca, Amgen, Samsung, MSD, GSK, Daiichi Sankyo, Gilead, Sirius Pintuition, Pierre Fabre, and study support from: EndoMag, Mammotome, and MeritMedical. PP and NK declare no conflicts of interest.

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Reference

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