

Guide wire surgery in breast cancer and why to avoid scissors

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Summary

Case: A 58-year old woman presented with microcalcifications in her left breast. A biopsy showed a low-grade ductal carcinoma in situ. A tumorectomy was performed using a harpoon-shaped guide wire to remove the entire lesion. No additional therapy was given. Six months later during follow-up the mammography revealed that the distal end of the guide wire was still present in the left breast. **Conclusion:** When performing a tumorectomy using a guide wire, the completeness of the wire should be checked during surgery. Additionally cutting of the wire can be prevented by using a scalpel instead of scissors during surgery.

Key words: Guide wire; Breast cancer; Breast sparing surgery; Cancer; Multidisciplinary; Breast clinic.

Introduction

The preoperative guide wire localization by ultrasound or mammography is the method of choice for guiding the surgical resection in non-palpable breast cancers [1]. In this way only the tumor with a minimal but sufficient amount of normal breast tumor (one cm) is removed. This approach will allow a good cosmetic outcome in well selected case for breast conservative surgery. During surgery, care should be taken not to cut the wire. After removal of the tumor, the specimen should be oriented and imaging should be performed. The preoperative imaging of the breast should be compared with the per-operative imaging of the specimen in order to check whether the tumor is removed with a sufficient amount of normal breast tissue and the wire is complete. Current case report is written to highlight the importance of performing imaging of the removed specimen.

Case Report

A 58-year-old female presented with micro-calcifications in her left breast on a screening-mammography. Her medical history was unremarkable and she never had used hormonal substitution therapy. There was no family history of breast cancer. Clinical examination was within normal limits.

An extra diagnostic mammography of the left breast showed a cluster of microcalcifications in the superolateral quadrant. This lesion was classified as BIRADS-Iva (Figure 1). A mammotome-biopsy revealed a low-grade ductal carcinoma in situ (DCIS) with microcalcifications.

A tumorectomy of the left breast was performed, after marking the lesion with a harpoon-shaped guide wire (Figure 2). The guide wire was excised together with the tumor and an X-ray of this specimen was taken. All microcalcifications were present, but it was unclear if the guide wire was complete. Unfortunately no additional mammography of the left breast was performed at this time to determine if the distal end of the guide wire was still present in the breast or not.

A pathologic assessment of the biopsy material confirmed the earlier diagnosis of fibrocystic lesions with a small focus of atypical ductal hyperplasia. No additional therapy was recommended. During the six months follow-up appointment in the Breast Clinic, a mammography was performed. The mammography was within normal limits (BIRADS-score I), no microcalcifications were seen, but the tip of the guide wire was still present in the breast (Figure 3). The patient was discussed during the multidisciplinary meeting and based on the fact that the previous surgery did not show DCIS and the core biopsy did, it was recommended to remove the distal end of the guide wire together with the surrounding tissue in order to exclude persistent DCIS. The definitive pathology report did not show any signs of atypia or DCIS.

Discussion

In the present case, the guide wire for marking the non-palpable breast lesion was accidentally cut and lead to confusion in the follow-up. When surgery is performed for a non-palpable lesion, the completeness of excision as well as the guide wire should be checked by taking a X-ray of the specimen. If there is a discrepancy between the biopsies and the guide wire is not completely removed, a re-excision should be done.

The complication was the result of an excision performed by scissors. If an excision is done by a scalpel the wire cannot be cut. Likewise electrocoagulation will not cut the wire, but this method has as disadvantage that it influences the pathological assessment of the margins and they can influence the analysis for estrogen and progesterone receptors. Furthermore the fume of electrocoagulation may cause cancer among the people who are standing around the operating table, like: nurses, anaesthesiologists, and surgeons if they inhale it.

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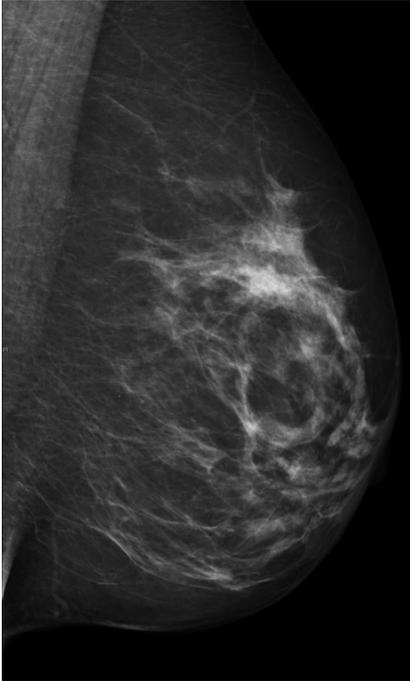


Figure 1. — A diagnostic mammography of the left breast showing a cluster of microcalcifications.

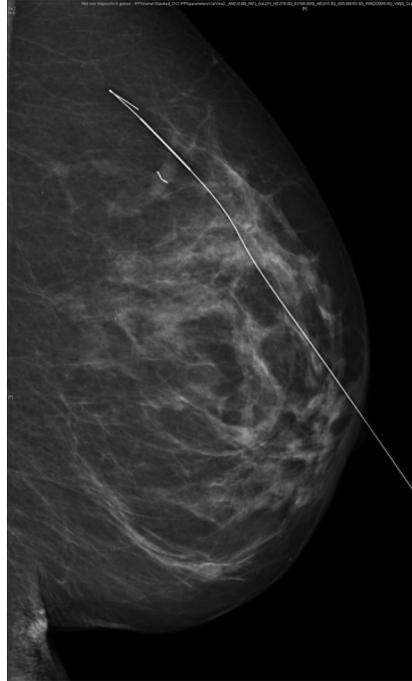


Figure 2. — A mammography of the left breast at the time of the tumorectomy with the harpoon-shaped guide wire present.

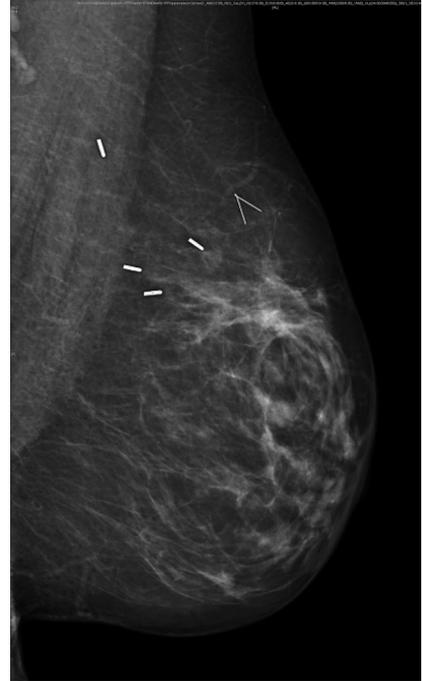


Figure 3. — Follow-up mammography of the left breast, six months after the tumorectomy. The tip of the guide wire is visibly present.

Ideally a tumorectomy for breast cancer should be performed with a knife. The tumor-free margin should be one cm. To avoid discussion about the margin, one should not use electrocoagulation. Furthermore electrocoagulation can have a false negative interpretation of hormone receptors in the specimen. After the skin incision is made, one should place a Kocher above and below the presumed lesion. Then in one movement the lesion should be excised with the knife according to the orientation of the guide wire in the breast. A careful preoperative preparation together with a dedicated radiologist who places the guide wire is essential for a successful operation. Taking time to prepare oneself as a surgeon together with the multidisciplinary team for an operation is essential to have success. Checking the specimen during surgery is must. This is not only to know if one has completely excised the lesion which one wants to remove, but also to know that one did not leave any thing behind.

In conclusion, during breast cancer surgery for a non-palpable lesion, one should not only check for the excised lesion, but also for completeness of the guide wire by a X-ray in order to avoid confusion.

References

- [1] Kolpattil S., Crotch-Harvey M.: "Improved accuracy of wire-guided breast surgery with supplementary ultrasound". *Eur. J. Radiol.*, 2006, 60, 414.

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