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## Case Report

# An unusual site for breast clip migration: A case report <sup>☆</sup>

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## ABSTRACT

Clip migration following breast biopsy is a known complication. However, the migrated clip is usually found within the breast. We describe a rare case of delayed clip migration to the skin, following a magnetic resonance guided biopsy of the breast, highlighting its natural history of presentation and its treatment.

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## Introduction

Breast magnetic resonance imaging (MRI) is highly sensitive and can detect mammographically and sonographically occult lesions [1,2]. Following MRI guided vacuum assisted biopsy (VAB), a marker clip is commonly placed. Accurate placement of the clips at the biopsy site is important as it allows for future localization and excision of the lesion if its histology demonstrates uncertain or malignant findings. Otherwise, it serves as a marker for subsequent imaging follow-ups [3]. Clip migration is a known complication, and the migrated clip is often found within the breast. It can occur either immediately post-procedure or after a certain period [4]. We describe a case of delayed clip migration to the skin,

which is an unusual site, following an MRI guided breast VAB.

## Case presentation

A woman in her 40's with pathogenic BRCA2 mutation presented with a left breast 7:00 ductal enhancement, 2 cm from the nipple, which was detected on MRI, as part of her high-risk imaging surveillance (Fig. 1). This enhancement measures 2 cm and had no mammographic or sonographic correlate. It was classified as BIRADs 4.

In view of the patient's BRCA mutation status, a decision was made to proceed with an MRI guided VAB using a 10-gauge needle. During the procedure, there was a satisfactory

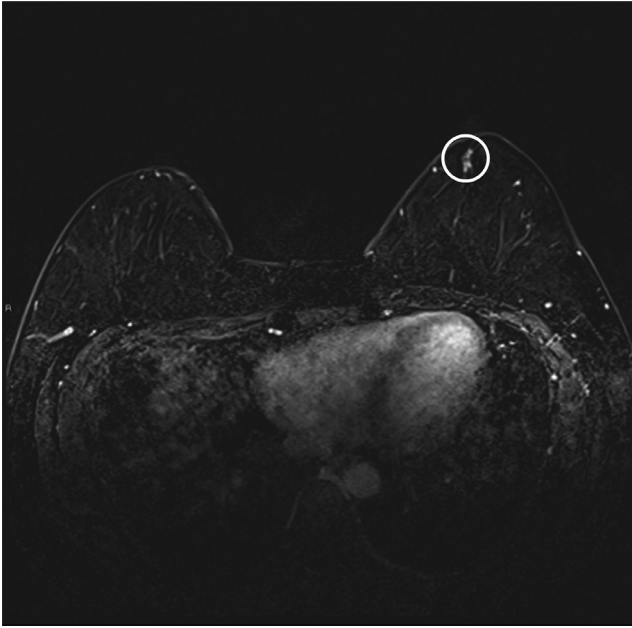
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**Fig. 1 – Magnetic resonance imaging showing superficial ductal enhancement in the medial left breast (circle).**

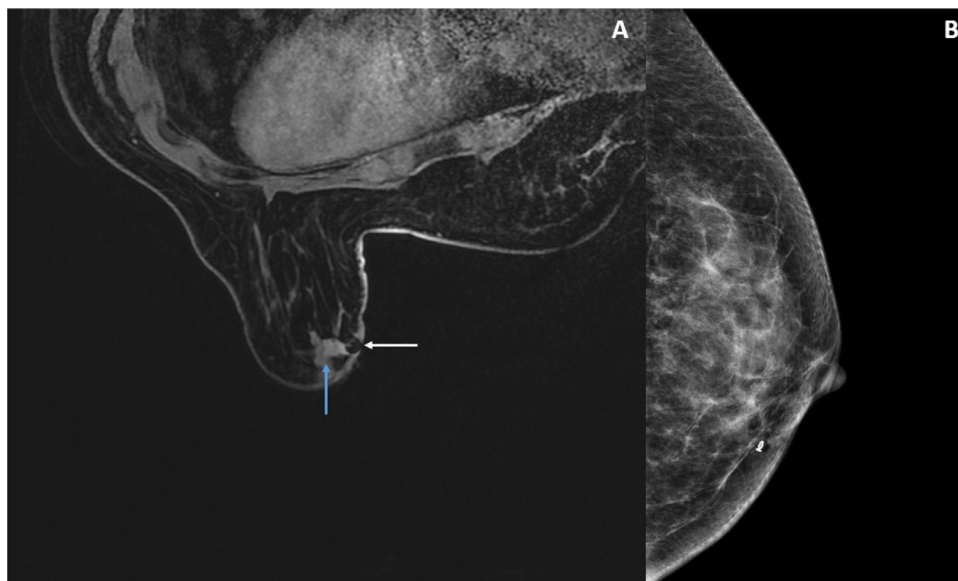
decrease in size of the lesion and an UltraCor® Twirl® Breast Tissue Marker was placed at the biopsy site. Except for mild oozing from the region, the procedure was otherwise uneventful. An immediate post-biopsy MRI (Fig. 2A) demonstrated the presence of a susceptibility artefact which made the clip look larger and more superficial than it is. Heterogeneously dense breast was seen on mammogram (Fig. 2B) and the clip was confirmed to be in a satisfactory position, away from the skin.



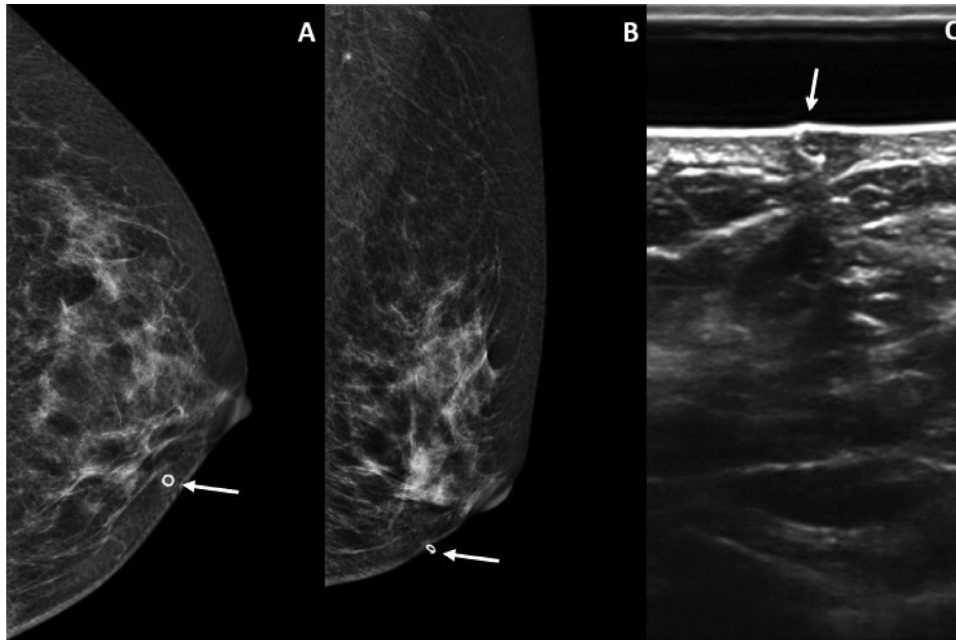
**Fig. 3 – Migrated clip at skin, with a thread from the patient's clothing caught at the clip.**

Histology revealed benign findings of fibro-adenosis and mild cystic changes, which was concordant. The biopsy wound healed well with no hematoma and the patient was given a follow-up appointment in 6 months. However, the patient noticed a lump at the biopsy skin site about 2 months after the procedure. Thinking that it might be scar tissue, the patient decided for surveillance of the lump as there were no signs of infection or discomfort.

Four months later, it became more evident that the lump was a result of clip migration to the skin (Fig. 3), which was also confirmed on imaging (Fig. 4A–C). As the migrated clip would occasionally get caught in the patient's clothing, resulting in painful tugging of the breast during dressing, an excision of



**Fig. 2 – (A) Immediate post biopsy magnetic resonance imaging showing the clip's susceptibility artefact (white arrow) in a superficial location and the presence of blood at the biopsy site (blue arrow). (B) Craniocaudal mammogram demonstrating the clip's position away from the skin.**



**Fig. 4 – Craniocaudal (A) and mediolateral oblique (B) mammogram and ultrasound of the left breast (C) 6 months after MRI biopsy confirming the delayed migration of clip to skin (arrow).**

the clip was performed. At 1-year post-excision, the patient remained well.

## Discussion

This case demonstrated a rare, delayed migration of breast clip to the skin, following an MRI guided VAB. Recognition of this condition was not easy, and it can result in discomfort and dressing difficulties for the patient. This is the first known reported case of clip migration to the skin, following MRI guided VAB, though clip migration to skin was also previously described in another case following mammographic guided biopsy [4].

The rate of delayed clip migration following MRI guided biopsy is unknown in the literature. However, based on a single institutional study, the frequency of immediate clip migration following MRI guided breast VAB was reported as 14% [5]. This rate is similar to the reported clip migration rates following mammographic breast biopsy [6]. This is unsurprising as both procedures employ similar techniques, such as requiring the use of breast compression during the procedure [5], though there is less breast compression during MRI biopsy, to avoid impediment of blood flow during biopsy. Reduced blood flow may reduce enhancement of the breast and lower visibility of the target lesion.

One of the risk factors for clip migration includes an almost entirely fatty breast. Fatty tissue is more compressible which offers lesser resistance to migration as opposed to the denser fibro-glandular tissue [5,7]. During biopsy, the breasts are compressed and then released after a clip is placed. This may result in an “accordion effect,” leading to clip migration [8]. To mitigate this effect, the proceduralist routinely applies pres-

sure to the biopsy site when the breast is released from compression [7,8]. Compared to mammographic guided biopsy, it is more difficult to apply pressure on the biopsy site for MRI guided biopsy because of the compression grid used, which is made of small squares, and it can only accommodate 1 or 2 fingers. This might also account for the higher hemorrhagic rate after MRI guided VAB [9].

Though our patient did not have fatty breast tissue, the migration of clip to skin possibly resulted because of the superficial location of the breast biopsy site, coupled with bleeding during and shortly after the biopsy [1], which could have led to poor adherence of the clip to surrounding breast tissue when it was being deployed. This could have resulted in a “floating” clip within the biopsy cavity. The clip was then carried by the blood to the skin, along the biopsy tract as it is the path of least resistance [7]. As the UltraCor® Twirl® Breast Tissue Marker curled into a distinctive ring shape when it is deployed [10], and is hence larger than most other clips, it was lodged at the skin, unable to be expelled due to the small biopsy incision. With time, granulation tissue and fibrosis formed around the clip due to remodeling of the breast tissue [11]. This foreign body reaction results in the clip being adherent to skin. Hence, securing hemostasis during biopsy and careful choice of tissue clips are crucial. The UltraCor® Twirl® Breast Tissue Marker is frequently used in our practice as it is an ultrasound visible clip and can be identified with a high degree of confidence with infrequent associated migration. This facilitates future localizations, if needed, under ultrasound guidance [10].

Being able to recognize clip migration early is crucial. Unlike its immediate counterpart, which are detected on routine post-procedural mammogram, delayed clip migrations are commonly undiagnosed until the patient became symptomatic from it or when a repeat mammogram is performed during routine follow-up or pre-procedure [6]. In this case, the

patient was symptomatic and required removal of the clip for relief of symptoms. However, the recognition of this condition was not easy since it was rare. With the increasing availability of larger size clips [12], there may be a perceived higher incidence of clips being dislodged in the skin, should clip migration occur. As a result, this case informs physicians to be cognizant of this complication and allow its early recognition and treatment.

In conclusion, clip migration to skin is rare. However, it can be symptomatic and causes discomfort, necessitating clip removal. This case highlights the natural history of this rare condition, so that the unwary physician could recognize and treat it early.

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### Patient consent

A written informed consent has been obtained from the patient for publication of this case report.

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