



# **A Case of Axillary Tail of Spence Carcinoma or Occult Breast Carcinoma?- A Diagnostic Dilemma**

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## **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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**Case Study**

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## **ABSTRACT**

**Introduction:** Carcinoma of the axillary tail of Spence (CATS) is rare with an incidence of 0.1-2%. It is a type of breast cancer that develops at a specific anatomical position in the breast and often under-diagnosed.

**Case Presentation:** A 37 year-old lady presented with an axillary swelling for 2 months. Clinically, an axillary lump was palpable and an ultrasound confirmed a 1cm axillary node. Excision of this node revealed metastatic carcinoma with breast as the primary, ER/PR positive, HER-2 negative. Mammogram and MRI performed showed no suspicious breast lesions. CT TAP confirms no distant metastasis. Excision of the previous scar tissue revealed non-sizeable invasive carcinoma, with deep margins involved. Axillary dissection showed 5/13 positive lymph nodes, pT0N2a. Re-excision of the deep margins revealed invasive carcinoma with 3mm foci of invasion. The final pathological staging was pT1a N2a M0 and adjuvant chemoradiotherapy was commenced.

**Discussion:** Careful evaluation is necessary to differentiate CATS from other diagnoses such as occult carcinoma, lymphoma or non-breast metastatic lymphadenopathy. In our case, the initial diagnosis of occult carcinoma was a possibility, and the pathology of CATS was proven much later

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despite an MRI performed. This diagnostic dilemma is faced by surgeons, radiologists, pathologists and oncologists, especially in a setting where resources are limited. Prompt diagnosis is important as prognosis is proven to be worse than cancers in other locations of the breast.

**Conclusion:** When dealing with patients with an axillary swelling, it is crucial to keep the diagnosis of CATS in mind.

*Keywords: Breast cancer; axillary tail; axillary swelling; axillary tail of Spence.*

## ABBREVIATIONS

*ATS: Axillary Tail of Spence*

*BIRADS: Breast Imaging-Reporting and Data System*

*CATS: Carcinoma of Axillary Tail of Spence*

*CT: Computed Tomography*

*ER: Estrogen Receptor*

*HER-2: Human Epidermal Growth Factor-2*

*HWLE: Hookwire Localisation Wide Local Excision*

*MMG: Mammography*

*MRI: Magnetic Resonance Imaging*

*OBC: Occult Breast Cancer*

*PET: Positron Emission Tomography*

*PR: Progesterone Receptor*

*STIR: Short Tau Inversion Recovery*

*UOQ: Upper Outer Quadrant*

*USG: Ultrasonography*

## 1. INTRODUCTION

Breast cancer is the most common cancer affecting the female population worldwide. However, breast carcinoma originating from the axillary tail of Spence (CATS) is rare with an incidence of 0.1-2% [1]. Due to its specific anatomical position in the breast, it is commonly confused with other diagnoses of cancerous tumours of the axillary fossa, such as occult breast cancer, accessory breast cancer, non-breast metastatic lymphadenopathy or lymphoma. Other possible benign conditions that add to this dilemma include tuberculosis, sebaceous cyst and hidradenitis [2]. The management of these lesions, whether benign or malignant, depends on its etiology hence preoperative evaluation is important so that diagnosis and treatment is not delayed. In this article, we report a case of an axillary tail of Spence carcinoma and the diagnostic dilemma we encountered in a non-subspecialized hospital in Bintulu District, Sarawak, Malaysia.

## 2. CASE PRESENTATION

A 37 year old indigenous lady from Sebauh, Bintulu, presented with a two months history of left axillary swelling. She has no other risk factors

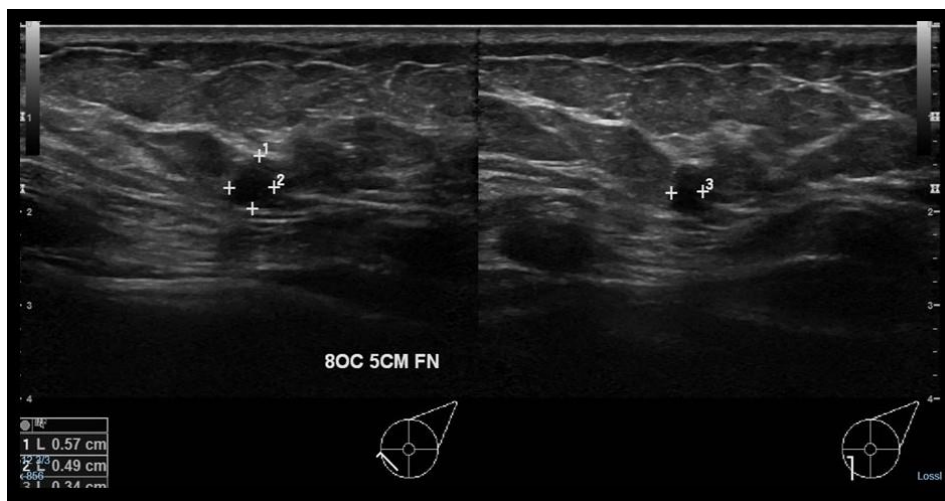
for breast cancer apart from her gender. Clinically, a left axillary lymph node was palpable and there were no breast lumps that were palpable bilaterally. An ultrasonography (USG) scan confirmed a 1cm axillary node and a mammogram (MMG) and USG breasts performed showed no suspicious breast lesions. An excision biopsy of this node was done which revealed metastatic carcinoma with breast as the primary, ER/PR positive, HER-2 negative. She was then referred to our centre for further management.

Computed tomography (CT) of the thorax, abdomen and pelvis showed no distant metastasis or other suspicious primaries. In view of this negative finding, we proceeded with an enhanced magnetic resonance imaging (MRI) breast at another hospital as MRI services are not available at our local setting. The MRI breast revealed a discrete nodule in the lower inner quadrant of the left breast measuring 0.4 x 0.8 x 0.7cm with Type 1 Kinetic Curve.

A repeated USG breast targeted at this lesion in the lower inner quadrant showed a small BIRADS 5 lesion and an USG guided biopsy was performed. The results, however turned out to be non-malignant.



**Fig. 1. Solitary well-circumscribed T1W (A) and T2W (B) hypointense lesion in the lower inner quadrant of the left breast showing hyperintensity on STIR (C) and contrast enhancement (D)**

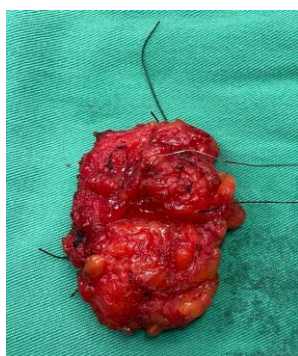


**Fig. 2. Ultrasound demonstrated solitary well-circumscribed, slightly taller-than-wider hypoechoic lesion with ill-defined irregular medial and lateral margins and mild posterior shadowing at left breast 8 o'clock 5cm from nipple, corresponding to lesion found on MRI**

After consulting the breast surgeons in a tertiary centre the patient was offered several options; localisation excision with axillary dissection, mastectomy with axillary dissection, mastectomy with breast reconstruction and axillary dissection or breast conserving therapy; axillary dissection with whole breast radiotherapy. She opted for a hookwire localisation wide local excision (HWLE) for this BIRADS 5 lesion and level 2 axillary dissection.

The axillary dissection was performed by excising the previous excision scar tissue, for

which histopathological examination revealed invasive breast carcinoma (not sizeable) with deep margins involved. The axillary dissection harvested 5 out of 13 positive lymph nodes with extranodal extension. The HWLE specimen was proven to be a benign fibroadenoma. The pathological staging at this point was pT0 N2a. Re-excision of the involved deep margins was performed and revealed residual invasive carcinoma with a 3mm foci of invasion. Hence, the final pathological staging was pT1a pN2a M0.

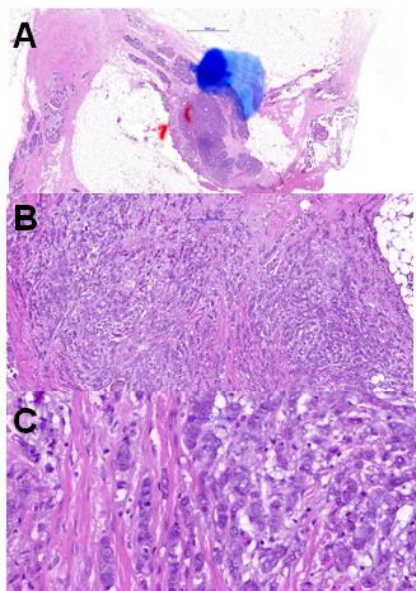


**Fig. 3. Hookwire localisation wide local excision specimen with wire *in situ***



**Fig. 4. Excised scar tissue with subcutaneous nodules**

After discussions with the oncologists, adjuvant chemoradiotherapy was commenced, following which she will be started on a CDK 4/6 inhibitor (Abemaciclib). She is otherwise well post-operatively and has no signs of recurrence.



**Fig. 5. Histopathological slide showing 3mm foci of invasion**

**A:** Low power view (x20 magnification)

**B:** Malignant cells arranged in large nests with surrounding desmoplastic stromal reaction displaying moderate increased in size and nuclear pleomorphism (x100 magnification)

**C:** Vesicular nuclei, prominent nucleoli, scanty amount of cytoplasm, mitotic figure present and up to 18 per 10hpf. (x400magnification)

### 3. DISCUSSION

Carcinoma in the axillary tail of Spence (CATS) is a rare entity, with its reported frequency estimated between 0.1% to 2% [3, 4]. The diagnosis of CATS can be challenging as there is a range of benign and malignant etiologies that needs to be considered by the clinician. The axillary tail of Spence (ATS) is a normal anatomical structure extending along the inferior lateral edge of the pectorals major muscle which subsequently enters the foramen of Langer to enter the axilla [5]. However, the ATS is commonly confused with an accessory or ectopic breast. The latter can be found at any location along the milk line extending from the axilla to the groin. They arise mainly from ectodermal thickening or remnant of embryonic mammary ridges which fail to involute [4]. Unlike the accessory breast which has no continuity with the main breast parenchyma, the ATS demonstrates continuity with the upper outer quadrant (UOQ) of the breast [5].

Whilst previous research revealed that majority of CATS involve the older age group of more than 45 years of age [6, 7], our patient was younger than 40 years old. Our case also reflects the challenges encountered at initial clinical assessment due to the tumour's particular location and the difficulties faced in a non-specialized hospital in differentiating CATS from occult breast carcinoma (OBC), a similar entity. To aid in the diagnosis of this axillary mass with no apparent breast lumps on USG and MMG, an excision biopsy was performed which then revealed a metastatic node with ER/PR positive and HER2 negative. In light of this, the clinical scenario could be one of an occult breast cancer or an axillary tail breast cancer.

Having an axillary node metastases coupled with an unknown primary source, the possible diagnosis of OBC needs to be considered. OBC, described as "cancerous axillary glands with non-demonstrable cancer of the mamma", is

a rare entity as well, with an incidence of 0.3-1% of all breast cancers [8]. Similarly to CATS, the diagnostic work up for OBC is rather demanding but imperative. The use of an MRI is recommended for OBC patients who do not have evidence of a breast primary on clinical examination, USG and MMG [9]. It is sensitive in detecting primary breast lesions in 72% of cases that were deemed occult [10]. In terms of treatment, mastectomies in most OBC are acceptable [11] and there is no difference in survival outcome between mastectomy and breast-conserving treatment for patients with OBC [12]. However, as we encounter younger patients with breast cancers in this day and age, naturally, a breast-conserving method would be preferable to the patient such as in our case. It is not only more acceptable cosmetically, but also reduces the patient's psychological burden when counselled on treatment options.

Unfortunately, the MRI that was performed could not detect a primary lesion apart from a small benign lower inner quadrant lesion displaying Type 1 kinetic curve. We were convinced we were dealing with a case of OBC when the histopathological findings of the axillary dissection through the previous excision biopsy scar showed pT0 pN2a. However, the final diagnosis came to light from the histopathological findings of the re-excision specimen from the involved deep margins which subsequently revealed a small foci of invasive carcinoma, pT1a pN2a. Retrospectively, taking into account the location of the tumour and the histopathological results, the diagnosis of CATS was made.

From a retrospective point of view, a positron emission tomography (PET) scan could have provided further diagnostic opportunity preoperatively although the reported rate of malignancy detection is highly variable, ranging from 29.7% to 71.5% [13] and its utility for diagnosing breast cancer has not been established due to its costs and radiation exposure [6]. Being a non-subspecialized hospital in a developing country, MRI and PET scans are not easily available to the patient in terms of costs and logistics. These pertinent issues adds to the challenges faced in diagnosing CATS in clinical settings similar to ours.

The treatment for CATS should be the same as with anatomic breast carcinoma of the

similar disease stage and surgery remains the mainstay of treatment [6]. The type of surgery depends on the surgeon's judgement, tailoring treatment to fit the clinical, cosmetic and psychological needs of the patient. However, the concerning aspect of surgery is obtaining adequate margins due to its anatomical position where the edge of the axillary tail is difficult to determine [14].

Based on a population-based study, CATS fair worse in terms of grade, negative hormone receptor rate and those with positive nodal metastasis had a lower breast cancer specific survival rate. Due to its anatomical location, CATS is easily under-staged leading to late diagnosis and under-treatment. A multivariate logistics regression analysis showed that CATS is an independent indicator for lymph node metastases, therefore explaining the worse outcome of CATS [6].

Despite its challenges, the timely diagnosis of CATS is crucial as it has distinct clinicopathological features and a poorer prognosis compared to anatomical breast cancer of the same stage. This case highlights the many challenges encountered at various levels in the diagnosis of CATS, from a clinician's perspective and a patient's perspective. The lack of studies on CATS due to its clinical presentation and lack of awareness, proves that further studies need to be performed for better understanding of its biological nature [15].

#### **4. CONCLUSION**

The diagnosis of CATS is exceedingly rare. However, when dealing with a patient who presents with an axillary mass, a high clinical suspicion of CATS should be considered as it has potential implications in terms of clinical practice and outcome.

#### **CONSENT**

All authors declare that 'written informed consent was obtained from the patient for publication of this case report and accompanying images.

#### **ETHICAL APPROVAL**

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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