

**CASE REPORT**

## **Breast Cancer with Isolated Metastatic Temporomandibular Joint: A Surgeon's Challenge**

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### **ABSTRACT**

Breast cancer is the number one malignancy in women worldwide. It tends to metastasize distantly via lymphatic and haematogenous route. Skeletal metastases are frequent with more than three quarter of cases in all malignant bone tumours. Breast cancer can infiltrate the axial bone especially spine, but rarely affect the temporomandibular joint. In view of its rarity and the significance of early detection, the diagnosis is always challenging and shall be considered in the differential diagnosis. We endeavour to highlight this unfortunate 37-year-old lady who had just undergone left mastectomy and axillary dissection but was complicated with left temporomandibular joint metastasis.

### **INTRODUCTION**

Secondary metastasis of the jaw and mouth is uncommon. This is attributed by the fact that of all oral malignancies, only 1% of them are secondary metastases<sup>1</sup>. The most commonly involved primary malignancies include lung, kidney, liver, prostate, female genital organ, and colorectum. Predilected as the number one aetiologies of malignancy among women, the breast also has the inclination to metastasize to the jaw and mouth. In view of this rare occurrence, the diagnosis is always dubious.

Most patients with temporomandibular metastasis complain of swelling, pain, and paraesthesia. Occasionally, they can present with trismus, temporomandibular joint dysfunction and malocclusion, and even

present with pathological fracture. Clinical examination mostly is unremarkable in occult metastasis. Simple radiograph is helpful to diagnose fracture but little for obvious metastasis. Herein we describe a 37-year-old premenopausal lady who was diagnosed as left temporomandibular joint metastasis with previous left mastectomy and axillary dissection for locally advanced breast cancer and discuss its literature review.

### CASE PRESENTATION

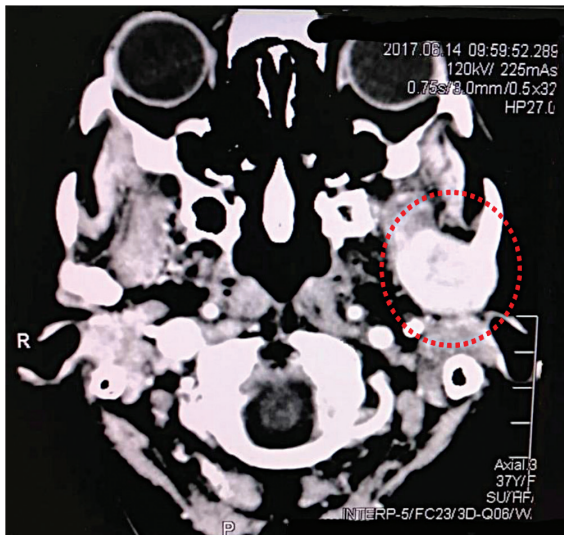
A 37-year-old lady presented with 2-month history of left breast lump which rapidly increased in size. It was associated with intermittent dull aching pain. Otherwise, there were no other swellings, no skin changes and no nipple discharge. She is a mother of 4 with no unremarkable gynaecological history. She denied consuming any hormonal or oral contraceptive pills. There is no family history of breast or ovarian carcinoma. She is a non-smoker and non-alcohol consumer.

Ultrasonography was consistent with suspicious lesion suspecting of malignancy. Core biopsy of the lump yielded an invasive carcinoma with malignant cells arranging in nests and islands. The cells had mild to moderate nuclei pleomorphism with abundant cytoplasm. Immunohistochemistry study revealed positive oestrogen receptor (ER), positive progesterone receptor (PR), and equivocal HER2. D-DISH for HER2 however was not amplified. Computed tomography (CT) scan of the thorax, abdomen and pelvis upon diagnosis showed calcified solitary subpleural nodule seen at the anterior segment of right upper lobe, measuring 0.3 cm in diameter with multiple hypodense liver lesions in segment VIII suggestive of simple cyst.

She then underwent left mastectomy and level II of axillary dissection. Final histopathologic result was consistent with invasive carcinoma of no special type. The modified Bloom and Richardson score revealed grade 3 with no lympho-vascular invasion. There was no positive lymph node out of 21 harvested nodes. The resection margins were free of malignancy. Unfortunately, she did not receive any chemoradiation, hormonal or targeted therapy due to financial constraints as she is a non-local residence.

Two months after the surgery, she started to experience left preauricular and jaw tingling sensation with pain of the left mandibular region, especially during chewing. She felt difficulty opening her mouth due to locking sensation. She otherwise denied any hearing loss or halitosis. Clinical examination was unremarkable except for some mild tenderness over the left preauricular region. The surrounding skin had similar temperature compared to the surrounding tissue. She was admitted for pain management and physiotherapy.

A CT of brain and neck was performed after showing normal skull radiograph. There was destructive bony lesion of left mandibular condyle. There was also widening of the left temporo-mandibular space, filled with enhancing soft tissue component which extends to postero-lateral left lateral pterygoid muscle (Figure 1). However, there was no enhancing brain intraparenchymal lesion. She was subsequently referred to the oncology team. Unfortunately, in view of her non-local resident status, she was not able to receive proper adjuvant treatment. She was under palliative treatment with oral analgaesia. She lost to follow up after discharge.



**Figure 1** CT scan shows destructive bony lesion of left mandibular condyle with widening of the left temporomandibular space, filled with enhancing soft tissue component which extends to postero-lateral left lateral pterygoid muscle (inside red dotted circle)

## DISCUSSION

The mandible is more frequently involved compared to the maxilla<sup>1</sup>. Despite the fact, Hashimoto et al. has proven the incidences of jaw metastases are probably higher when the autopsies showed 16% of positive micrometastatic foci were identified in the jaws even in the absence of imaging detection<sup>2</sup>. Many literatures have expressed that breast carcinoma as the commonest primary site, followed by thyroid; however, it is notable that the incidences vary with geographical distribution, genetic mutations, age and gender<sup>3, 4, 5</sup>. The Japanese literature has proclaimed that in females, metastases to the jawbones are most commonly from choriocarcinoma instead of the breast or thyroid cancers<sup>6, 7</sup>. The Korean literature meanwhile stated that lung is the commonest primary site for jawbone metastases, followed by the liver<sup>7</sup>. A study on 114 patients with metastatic jaw lesions, they were most commonly found in women aged between 31 – 40 and men aged between 71 – 80 years old,

attributing to breast and thyroid malignancies in females and prostate malignancies in males at later age<sup>3</sup>.

The most frequently involved sites in the mandible, from the commonest, are the molar, premolar and the ramus. Factors that favour metastatic deposits in these areas are blood stasis, presence of haematopoietic bone marrow well connected with sinusoidal spaces, predisposing to haematogenous route of metastasis, and tortuous course of inferior alveolar nerve<sup>8, 9</sup>. Therefore, metastasis to the mandibular condyle is extremely rare, with only about 5% of all secondary oral malignancies, due to relatively lack of marrow as compared to the body and ramus<sup>10, 11</sup>. In this patient, osteolytic lesion was seen at the left mandibular condyle, sparing the mandibular body and ramus.

The common symptoms involving the TMJ are localised pain, swelling, trismus, TMJ dysfunction and malocclusion. Patient rarely presents with pathological fracture<sup>12</sup>. In this patient, given the history of breast malignancy diagnosed just 4 months ago prior to the jawbone symptoms, high suspicion of metastatic jawbone disease was considered. However, it is not a routine workup to detect jaw metastasis in patients with breast malignancies unless symptomatic.

The conventional radiograph such as orthopantomogram is useful but it may not be able to visualize obvious metastatic lesions in the jaws<sup>13</sup>. Further imaging modalities can be ordered in symptomatic patients namely CT scan of the temporomandibular region, skeletal scintigraphy and fluoro-deoxy-glucose positron emission tomography (FDG-PET) scan. FDG-PET/CT has higher specificity than skeletal scintigraphy and is a better modality in identifying bone metastases, however, it is important to note that these imaging modalities cannot detect micrometastasis<sup>14</sup>. Metastasis of breast adenocarcinoma can progress without any signs or symptoms and radiological evidence. Therefore, it is

very important to obtain the past history of malignancy and to perform a biopsy for definitive diagnosis.

Patients with jaw metastases have poor prognosis with 70% of them succumbed within one year of diagnosis. A 4-year survival rate is estimated to be 10%<sup>15</sup>. Most of the patients, at the time of diagnosis, are either with widespread metastases or terminally ill<sup>8</sup>. Thus, they are managed conservatively with chemoradiation and pain control, with the goal of preserving oral functions and quality of life. However, in patients who are treated of the primary tumour previously and are medically fit, the metastatic lesion should be aggressively treated with surgical resection. Treatment with segmental mandibulectomy with subsequent adjuvant chemoradiation, enucleation of metastatic lesion or osteotomy can be offered based on individual's condition<sup>15</sup>.

## CONCLUSION

Temporomandibular joint metastasis from breast warrants the usual adjuvant treatments after local surgical treatment of the primary and secondary pathologies. The delivery of adjuvant chemoradiation, hormonal and targeted therapy help to improve the prognosis of the patient. Even bearing a poorer prognosis, temporomandibular joint metastases need pain control with the goal of preserving oral functions, nutrition, cosmesis as well as quality of life.

## CONFLICT OF INTEREST

The authors declare that they have no competing interests in publishing this case.

## CONSENTS

Written informed consent was obtained from the patient to publish the case. A copy of written consent is available for review by the Chief Editor.

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