



## Case report

## Surgical excision of a lactating adenoma with rapid enlargement: A case report

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## ARTICLE INFO

## Keywords:

Lactating adenoma  
Pregnancy  
Benign breast tumor  
Case report  
Malignant

## ABSTRACT

**Introduction and importance:** A lactating adenoma is a benign breast tumor occurring in young women during pregnancy or lactation. Its growth is usually slow but, occasionally, can become rapid, resulting in a giant mass. This case report outlines an example of the rapid growth of a lactating adenoma, which was surgically excised. In this case, malignancy could not be ruled out, and biopsy and surgical excision were considered.

**Case presentation:** We present the case of a 28-year-old woman referred to us owing to the presence of a left breast mass with progressive enlargement. She initially presented with a left breast mass of approximately 20-mm in size, which increased to an approximate size of 70 mm during pregnancy. The patient's mammogram showed an equal-density lobular mass in the left breast. Ultrasonography and magnetic resonance imaging revealed a circumscribed lobular mass with cystic regions in the upper lateral quadrant. The patient was diagnosed with adenosis using core needle biopsy. However, it did not shrink during follow-up, and resection was performed. Histologically, the proliferation of the cystic ducts containing eosinophilic secretions and dilated tubules consisting of cuboidal or hobnail-shaped cells were observed.

**Clinical discussion:** Lactating adenoma, phyllodes tumor, and breast cancer are essential differential diagnoses when the size of breast masses increases rapidly. Ultrasonography is the first choice to examine lactating adenomas. Echogenic bands and pseudocapsules are characteristics of lactating adenomas.

**Conclusion:** Surgical excision is a notable treatment option when a lactating adenoma exhibits rapid growth or increase in mass, as it could be malignant.

## 1. Introduction

A lactating adenoma is a benign breast tumor occurring in young women during pregnancy or lactation. The origin of lactating adenomas is unclear, but several hypotheses have been proposed. Some studies have reported that lactating adenomas arise from changes in fibroadenoma, tubular adenoma, or lobular hyperplasia, while others suggested that lactating adenomas arise de novo in hormonal environments such as pregnancy and lactation [1,2]. Lactating adenomas are usually circumscribed masses that grow slowly. However, in very rare cases with rapid growth, they can become a giant mass and need to be differentiated from breast cancer or phyllodes tumors. Our case report outlines a referral we received of a 28-year-old woman with a rapidly growing lactating

adenoma who was treated in our community institution. This report has been written in accordance with the SCARE criteria [3].

## 2. Presentation of case

We present the case of a 28-year-old woman referred to us with a left breast mass with progressive enlargement. The patient was 21 years old when she noticed a mass of approximately 20 mm in size in her left breast which was diagnosed as a benign breast tumor and followed up at another hospital for 6 years. The mass rapidly increased to approximately 70 mm in size during her pregnancy, at the age of 28. Upon physical examination, the circumscribed painless mass in the left upper lateral quadrant was palpated and measured to be approximately 70

**Abbreviations:** MMG, Mammography; MRI, Magnetic resonance imaging; US, Ultrasonography.

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<https://doi.org/10.1016/j.ijscr.2021.106544>

Received 4 October 2021; Received in revised form 22 October 2021; Accepted 27 October 2021

Available online 3 November 2021

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mm. There was no change in the skin, such as skin depression or dimpling. She was not under any medications and had no allergies or family history. She had no history of smoking and drank alcohol occasionally.

Mammography (MMG) showed an equal-density lobular mass in the upper-outer left breast measuring 62 × 42 mm (Fig. 1). Ultrasonography (US) showed a circumscribed hypoechoic lobular mass with cystic regions in the upper lateral quadrant measuring 61 × 57 × 34 mm (Fig. 2). A breast-enhanced magnetic resonance imaging (MRI) revealed an approximately 65 mm mass with components of the solid part and cystic regions in the upper lateral quadrant. The mass had enlarged compared with that in the previous phase (Fig. 3). A core needle biopsy was performed due to possible malignancy, and the mass was diagnosed as adenosis. The patient was administered cabergoline and observed while she stopped breastfeeding for two months, but the mass did not shrink. Additionally, the tissues from the core needle biopsy represented only a small portion of the giant mass, and the coexistence of malignancy could not be ruled out completely. Therefore, a resection was performed. The surgery was performed in the district general hospital by an experienced breast surgeon. The surgery was performed under general anesthesia with a lateral incision approach to create a skin flap and remove the tumor while preserving the tumor capsule.

Gross examination of the specimen revealed a circumscribed brown nodule measuring 65 × 60 × 45 mm. The cut section showed that the mass had many cystic areas containing lactational secretions (Fig. 4). Microscopic examination revealed proliferation of cystic dilated acini and mammary ducts with lumina-containing eosinophilic secretions. The ducts were surrounded by fibrotic stroma and histiocytes (Fig. 5).



Fig. 2. Ultrasonography showing a circumscribed hypoechoic lobular mass with cystic regions. This mass measured about 60 mm and was located in the upper lateral left breast.

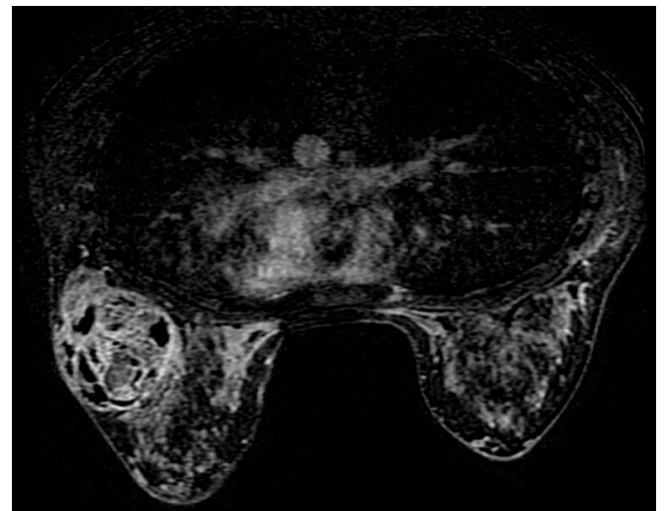


Fig. 3. MRI showing an approximately 65-mm mass in the upper lateral left breast. The solid mass contained cystic regions and contrast enhancement.

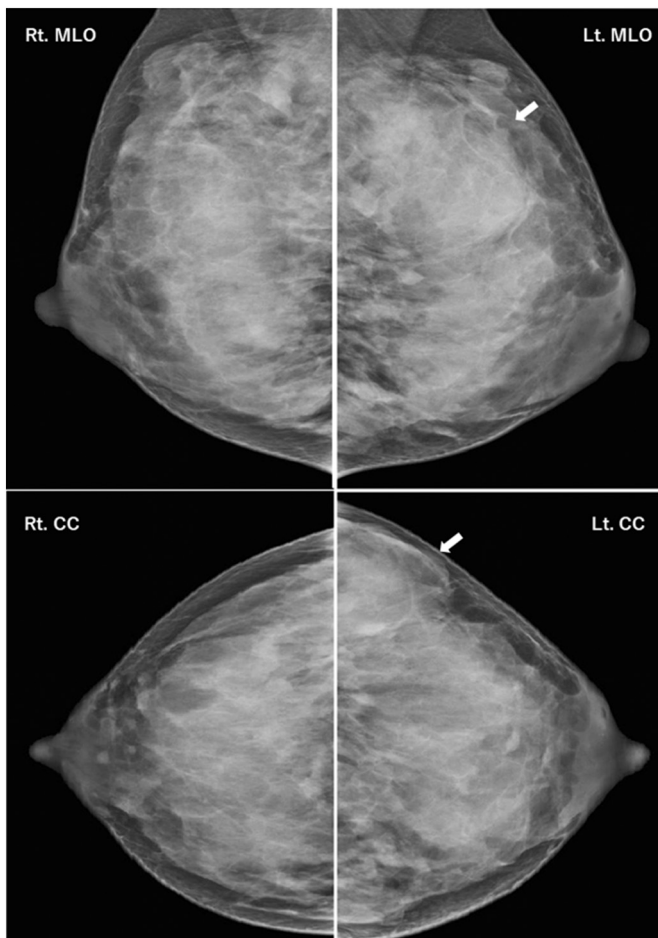
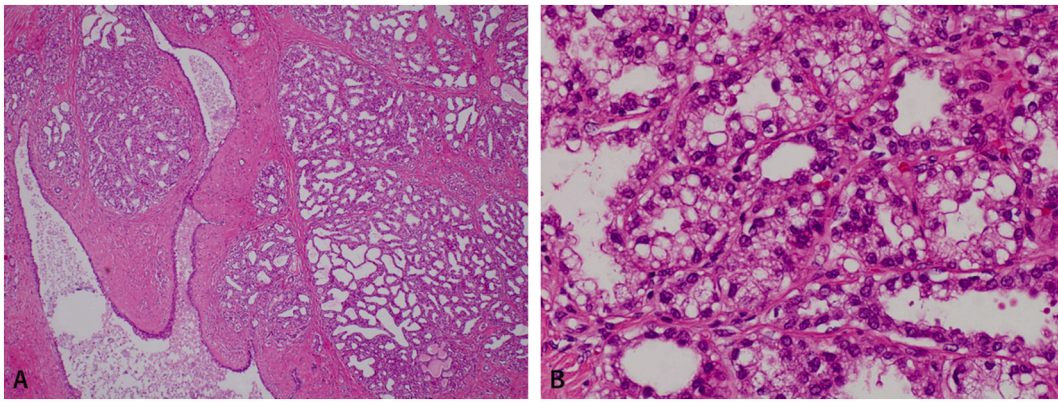


Fig. 1. Mammogram showing an equal-density lobular mass indicated by the arrows in the upper-outer left breast.



Fig. 4. Gross view of the surgical specimen showing a circumscribed brown mass measuring about 60 mm. The mass had many cystic areas exhibiting lactational secretion.



**Fig. 5.** Microscopic examination of surgical specimen. A and B: Proliferation of cystic ducts containing eosinophilic secretions and tubules consisting of cuboidal or hobnail-shaped cells contacting vacuolated clear cytoplasm.

The final diagnosis was a lactating adenoma. The patient showed no recurrence, complications, or adverse events during the one-month postoperative follow-up.

### 3. Discussion

Lactating adenoma, fibroadenoma, and lobular hyperplasia with hormonal stimulation are common differential diagnoses for a palpable and mobile breast mass during pregnancy and lactation [4,5]. Histologically, lactating adenomas are characterized by the proliferation of acini and mammary ducts, preservation of bilayers of epithelial and myoepithelial cells, and eosinophilic secretions in the lumen [6,7].

Although lactating adenomas typically grow slowly, in rare cases it can grow rapidly, forming a giant mass [8]. Differential diagnosis among lactating adenoma, phyllodes tumors, and breast cancer is essential when the breast mass increases rapidly. Approximately 3% of breast cancers are diagnosed during pregnancy [9]. Although this is a small percentage, breast cancers among pregnant women tend to be more advanced than in those among non-pregnant women because of the difficulty in differentiating malignant masses from natural pregnancy-associated breast changes [10,11]. Additionally, phyllodes tumors with lactation changes make the differential diagnosis of lactating adenomas difficult [7].

Regarding lactating adenoma imaging, US is the first choice to avoid radiation exposure from MMG and MRI during pregnancy or lactation. US generally shows a circumscribed, homogeneous, and hypoechoic mass with posterior acoustic enhancement [12,13]. In some cases, lactational secretions appear as a hyperechoic mass on US. The characteristic features of lactating adenoma are the presence of echogenic bands in the form of pathological fibrotic stromal proliferation and echogenic pseudocapsules associated with a compressed thin layer of stroma [6]. Additionally, MMG and MRI are sometimes performed on women with lactating adenoma. On MMG, a lactating adenoma is usually seen as a circumscribed lobulated mass without calcification, with a density equal to or less than that of the mammary gland [14,15]. It is difficult to detect lactating adenomas in women during pregnancy or lactation because of the normally increasing density of the mammary gland [6]. MRI often shows lactating adenoma as a homogeneous and circumscribed mass with contrast enhancement [16].

Small lactating adenomas are often observed. However, when lactating adenomas become a giant mass or increase in size rapidly, we consider surgical excision due to the possibility of malignancy. It has been reported that surgical excision during pregnancy or lactation does not interfere with breastfeeding [8,17]. Additionally, treatment using bromocriptine shrinks the lactating adenoma by suppressing prolactin secretion, which stimulates the mammary glands to produce milk [12].

This case suggests that surgical excision is a feasible alternative in

situations where it is difficult to reach a definitive diagnosis through imaging or core needle biopsy, and drug therapy is ineffective. The limitations of this case report are that only a single case was reported and the follow-up period was short.

### 4. Conclusion

A lactating adenoma is a benign breast tumor. Preoperative examination via imaging and physical examination is important, and follow-up might be considered if the mass has no malignant findings. If malignancy cannot be ruled out, such as in this case, removing the mass should be considered. In this case, the mass was diagnosed as adenosis, but malignancy could not be ruled out. When a lactating adenoma becomes a giant mass or displays rapid growth, there is a possibility of malignancy and surgical excision becomes a feasible alternative.

### Ethical approval

Ethical approval is not required because this report is outlining a single case.

### Sources of funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

### CRediT authorship contribution statement

Y.H. and H.Y. managed this patient. The first draft of the manuscript was written by Y.H. All authors read and approved the final manuscript.

### Guarantor

Dr. Yuki Hara.

### Research registration

Not applicable.

### Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

## Provenance and peer review

Not commissioned, externally peer reviewed.

## Declaration of competing interest

The authors have no conflict of interest in the publishing of this report.

## Acknowledgments

We would like to thank Editage ([www.editage.com](http://www.editage.com)) for their English language editing support.

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