

# AMSER Case of the Month

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13-year-old female with a nontender breast mass

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# Patient Presentation

- HPI: 13-year-old girl presents to an outside hospital pediatrician for a well child visit with a palpable, nontender left breast lump at the 12 o'clock position. The patient noticed the mass 2 weeks before the appointment.
- PMH: Ketotic Hypoglycemia and Mild Intermittent Asthma
- PSH: None
- Med: Glucagon tablets, Albuterol PRN
- ALL: NKDA
- FH: none
- SH: Never smoker
- Hormone History: none

# Patient Presentation

- Patient presents to University of Michigan after a few weeks

## Ultrasound at University of Michigan

Examination of the left breast demonstrates a round, mobile 1.5 cm lump at approximately 12:00, corresponding to the patient's palpable area of concern. Physical examination of the right breast was normal.

What Imaging Should We Order?

# Select the applicable ACR Appropriateness Criteria

**Variant 6:**

**Adult female, younger than 30 years of age. Palpable breast mass. Initial imaging.**

Procedure	Appropriateness Category	Relative Radiation Level
US breast	Usually Appropriate	○
Digital breast tomosynthesis diagnostic	Usually Not Appropriate	☢☢
Digital breast tomosynthesis screening	Usually Not Appropriate	☢☢
Mammography diagnostic	Usually Not Appropriate	☢☢
Mammography screening	Usually Not Appropriate	☢☢
Image-guided core biopsy breast	Usually Not Appropriate	Varies
Image-guided fine needle aspiration breast	Usually Not Appropriate	Varies
MRI breast without and with IV contrast	Usually Not Appropriate	○
MRI breast without IV contrast	Usually Not Appropriate	○
Sestamibi MBI	Usually Not Appropriate	☢☢☢
FDG-PET breast dedicated	Usually Not Appropriate	☢☢☢

This imaging modality was ordered by the Breast Imager



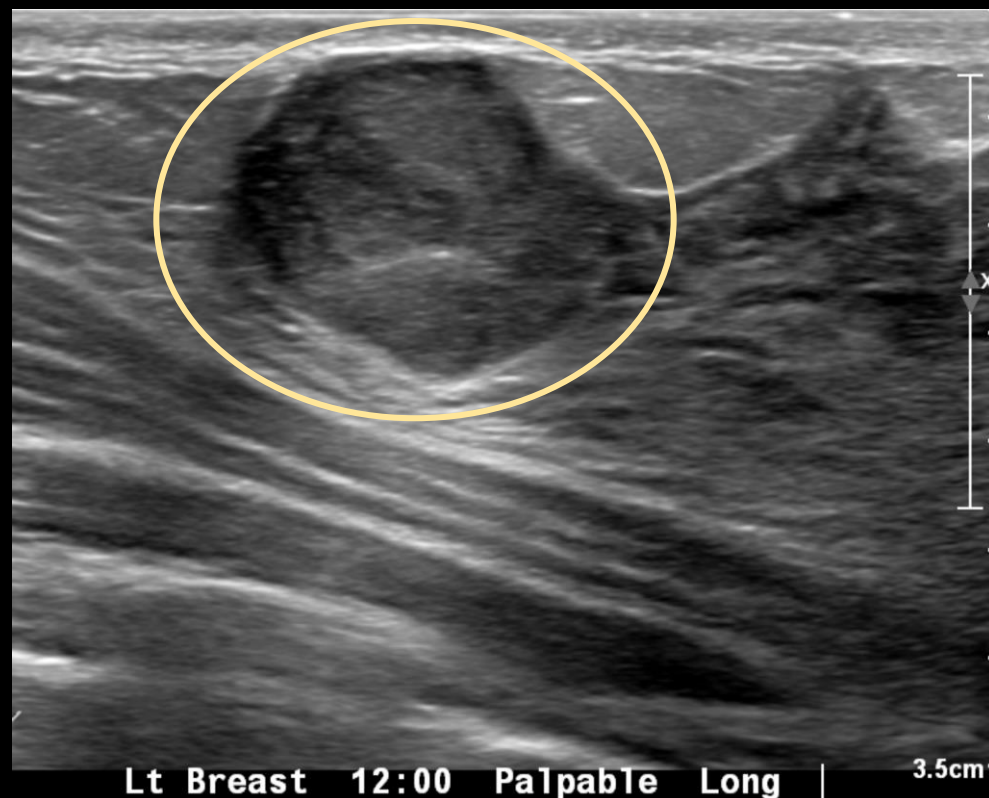
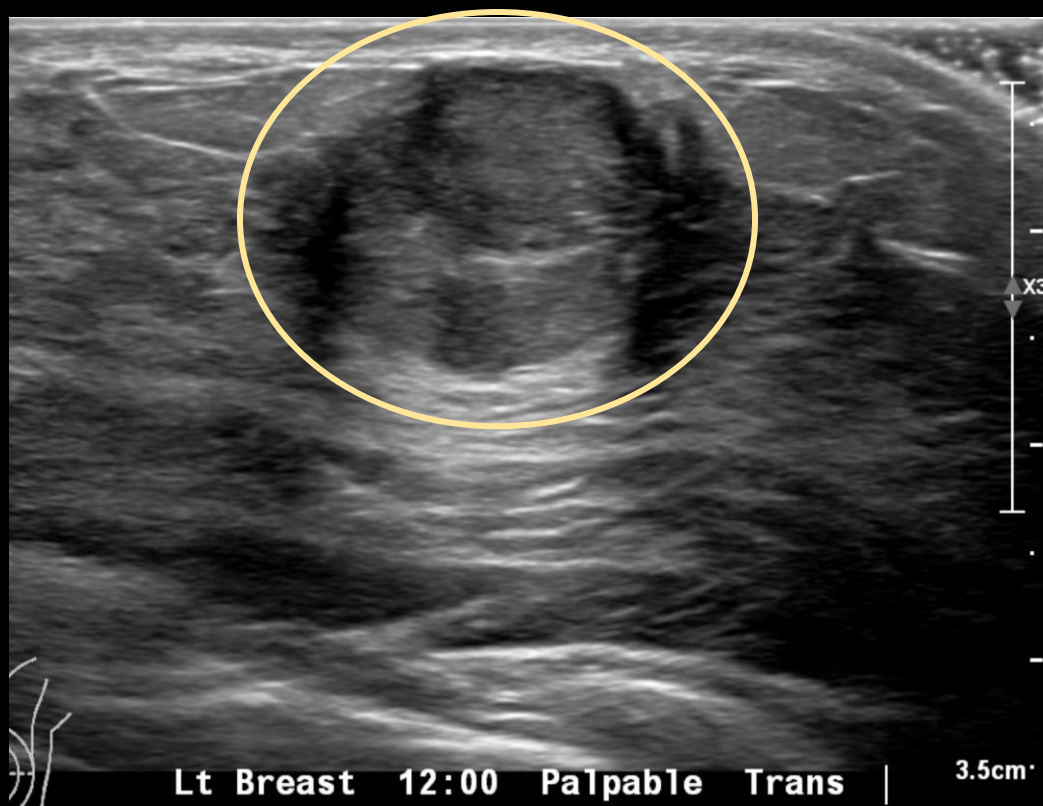
# Findings (unlabeled)

Diagnostic Ultrasound



# Findings: (labeled)

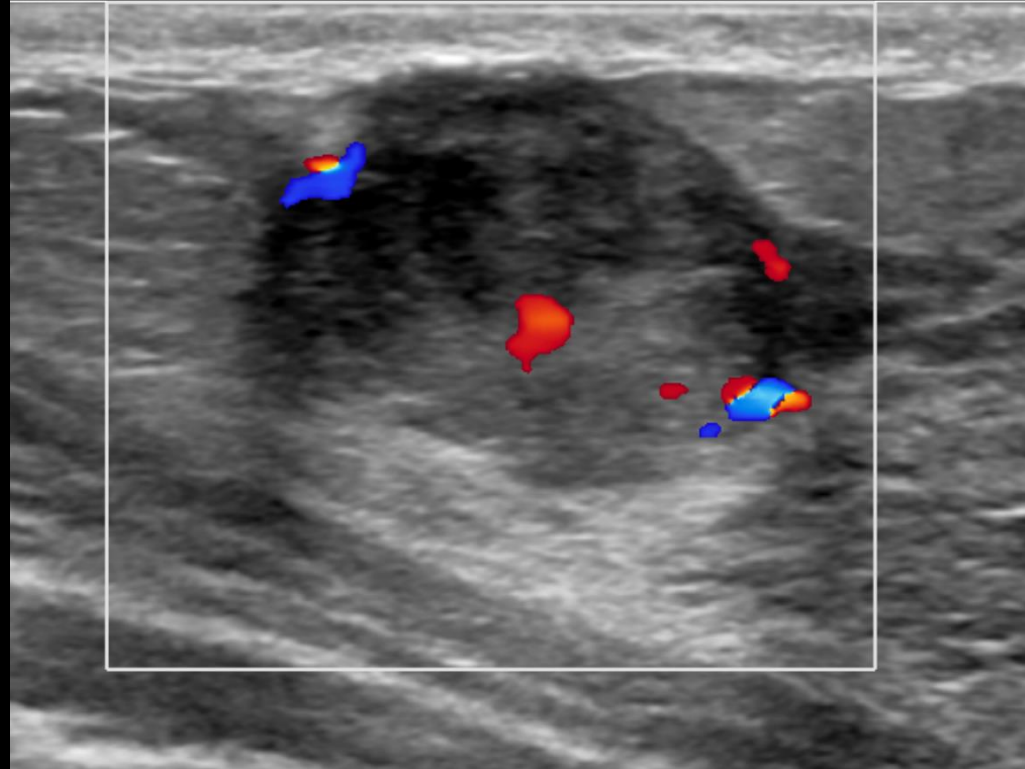
## Diagnostic Ultrasound



**FINDINGS:** Focused ultrasound evaluation was performed of the left breast over the area palpable concern at the 12:00 position 5 cm from the nipple. In this location, there is a hypoechoic circumscribed oval mass measuring 1.5 x 1.9 x 1.3 cm. BI-RADS 4.

# Findings (unlabeled)

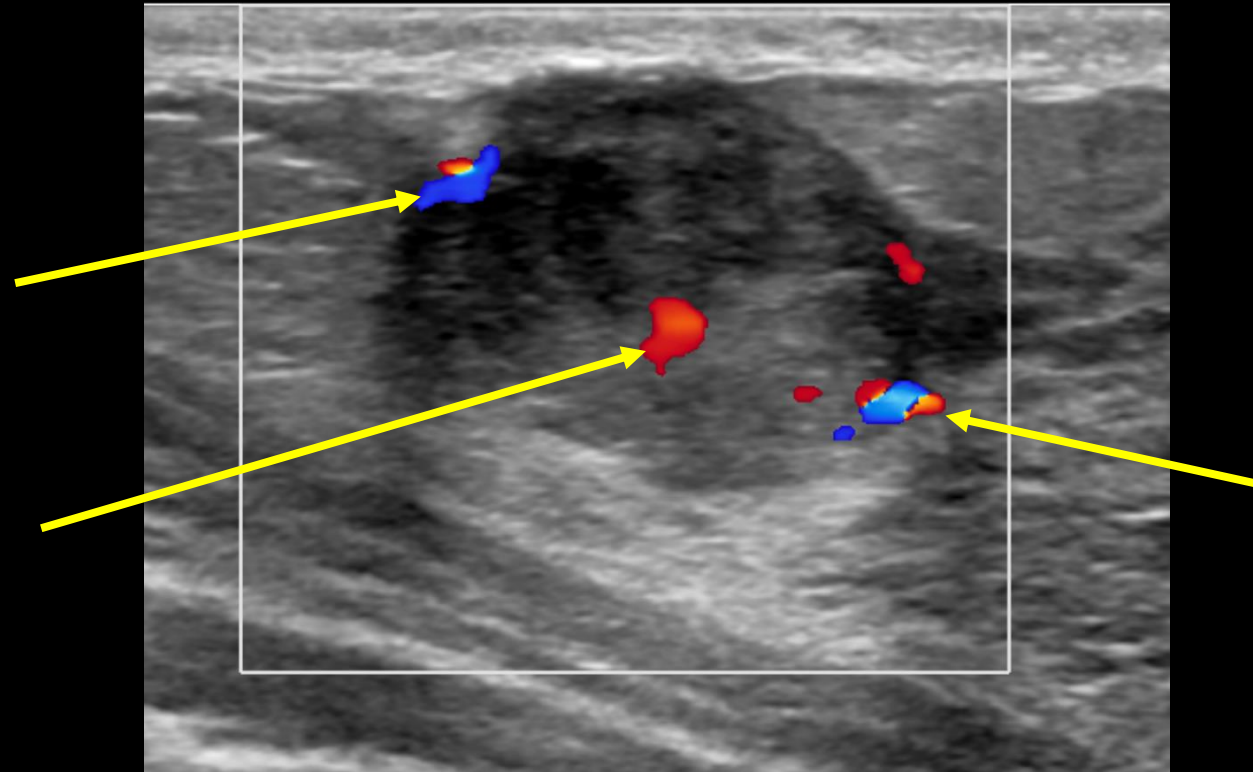
Diagnostic Ultrasound, Vascular





# Findings: (labeled)

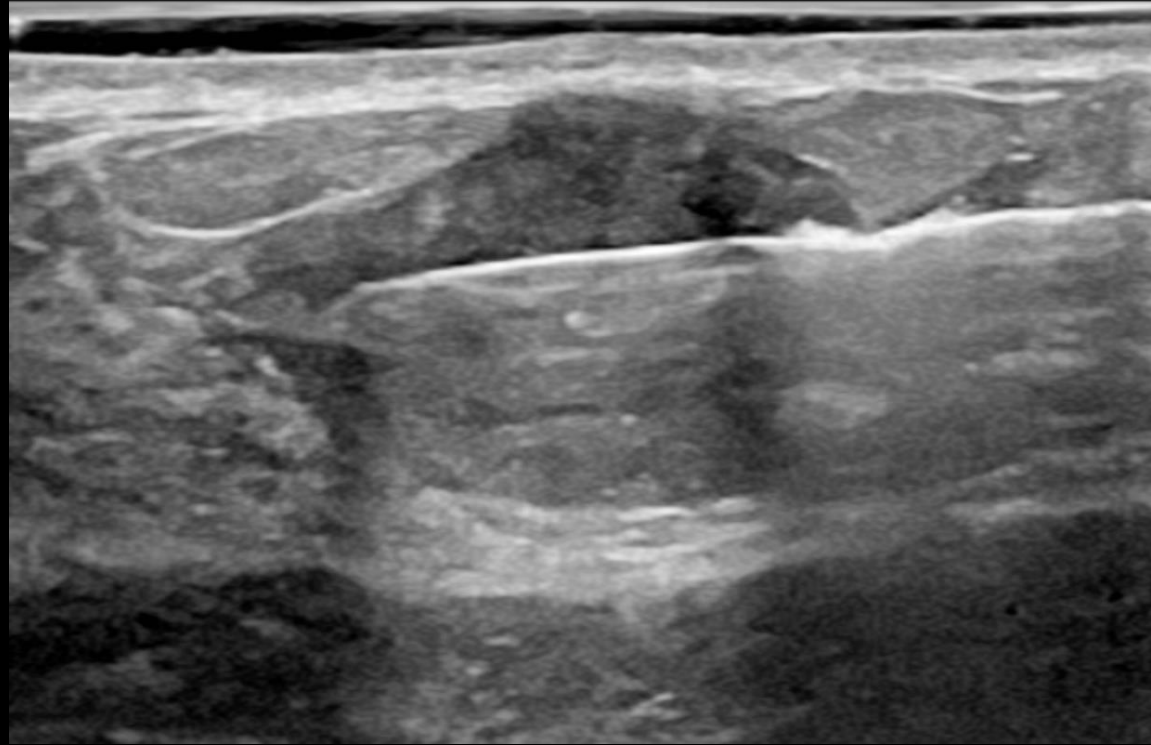
Diagnostic Ultrasound, Vascular



**FINDINGS:** Internal vascularity within the mass.

# Findings

## Ultrasound Biopsy



A total of five 16-gauge core biopsies were obtained using US guided coaxial technique from a lateral approach.

# Differential Diagnoses for adolescent breast masses in female:

## Benign:

Fibroadenoma

Juvenile Fibroadenoma

Cysts

Abscess

## Malignant:

Phyllodes Tumor

Metastasis from Non-breast  
Primary Cancer.

Primary Breast Carcinoma

Final Dx:

Juvenile Fibroadenoma  
Confirmed via Core Biopsy Histology

# Case Discussion

## **Fibroadenomas vs. Juvenile Fibroadenomas:**

- Usually, unilateral benign breast tumors most common in young women aged 14-35<sup>1</sup> with increased susceptibility in black women aged 10-18<sup>2</sup>
- Solid, smooth, round or ovoid, mobile lumps made of fibrous and glandular tissue varying in size depending on hormone fluctuations<sup>2-3</sup>
- Three subtypes: simple, juvenile, and multicentric<sup>2-3</sup>
- Sonographically, juvenile fibroadenomas appear similarly to classic fibroadenomas, but have progressive growth and large size<sup>4</sup>
  - Giant juvenile fibroadenomas > 5cm in diameter
  - Lack of consensus on age and histologic differentiators<sup>4</sup>
- Motivating factor for pursuing diagnosis/biopsy is the concern for fibroadenoma vs. benign or malignant phyllodes tumor which can mimic fibroadenomas<sup>3</sup>

# Case Discussion

## Observation vs. Excision of Fibroadenoma:

### Observation:

Short term follow-up every 3-6 months of solid masses with probably benign sonographic features is a safe alternative to biopsy in the absence of atypical features or rapid enlargement due to less than 1% chance of being malignant<sup>5</sup>

### Surgical excision:

- Phyllodes tumor cannot be excluded in rapidly enlarging or symptomatic breast masses in pediatric patients regardless of benign sonographic features or initially benign pathology at biopsy<sup>4</sup>
  - Core biopsy may not provide definitive diagnosis of phyllodes tumors, necessitating surgical excision
- Aesthetic measures may also be taken if there is breast distortion

# Case Discussion

## Conclusions:

- Juvenile fibroadenomas are the most common breast masses in adolescent girls and are usually unilateral
- New or rapidly growing masses warrant biopsy and/or surgical excision due to risk of phyllodes tumor
- Excision can be pursued if there is breast distortion, the mass is large, and in the case of histological juvenile fibroadenoma due to difficulty differentiating from phyllodes tumors which can be aggressive if malignant

## Outcome:

The patient was lost to follow-up after benign results.

# References:

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3. Jennifer L. Hubbard, Kathleen Cagle, James W. Davis, Krista L. Kaups, Miya Kodama, Criteria for excision of suspected fibroadenomas of the breast, *The American Journal of Surgery*, Volume 209, Issue 2, (2015): Pages 297-301, ISSN 0002-9610, <https://doi.org/10.1016/j.amjsurg.2013.12.037>.
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5. Giess, C.S., Smeglin, L.Z., Meyer, J.E., Ritner, J.A. and Birdwell, R.L. (2012), Risk of Malignancy in Palpable Solid Breast Masses Considered Probably Benign or Low Suspicion. *Journal of Ultrasound in Medicine*, 31: 1943-1949. <https://doi.org/10.7863/jum.2012.31.12.1943>