Palpable breast lump in patient 40 years of age or above

MMG +/- spot compression or digital breast tomosynthesis over palpable findings

- Suspicious or malignant findings (BIRADS 4 or 5)
- Mass with probably benign features (BIRADS 3)
- Negative (BIRADS 1)
- Specific benign finding e.g. lymph node (BIRADS 2)
- Only fatty tissue in palpable area

**Suspicious or malignant findings (BIRADS 4 or 5)**

- US for biopsy planning & to evaluate extent of disease

**Mass with probably benign features (BIRADS 3)**

- Initial short term follow up vs further investigation: cytological &/or histological

**Negative (BIRADS 1)**

- Clinical review

**Specific benign finding e.g. lymph node (BIRADS 2)**

- Symptomatic e.g. simple cyst
  - +/- Aspiration

**Only fatty tissue in palpable area**

- Otherwise asymptomatic e.g. lymph node
  - Stop

- BIRADS 3 (based on MMG)
  - Initial short term follow up vs further investigation: cytological &/or histological

- BIRADS 1 (based on MMG)
  - Clinical review

- US Negative

**Further investigation: cytological &/or histological**

**US**

- Stop
Palpable breast lump in patient under 40 years of age

US

Specific benign findings (BIRADS 2)
- Symptomatic e.g. simple cyst
  - Aspiration

- Otherwise asymptomatic e.g. lymph node
  - Stop

Solid mass with probably benign features

- Negative
  - Base on clinical suspicion
    - +/- MMG

- Suspicious or malignant finding (BIRADS 4 or 5)
  - Further investigation: MMG/MRI, cytological &/or histological

Mass with probably benign features (BIRADS 3)

- Negative
  - Clinical review

- Specific benign finding (e.g. degenerating fibroadenoma)
  - Stop

Suspicious or malignant findings (BIRADS 4 or 5)

- Initial short term follow-up vs further investigation:
  - cytological &/or histological

- Further investigation: cytological &/or histological
**REMARKS**

1. **General**
   
   1.1 Less than 7% of breast cancers occur in women under 40 years of age.\(^3\)
   
   1.2 Risk factors for breast cancer are\(^4,5,8\): 
   
   - **Major risk factors:** BRCA1 or BRCA2 mutation
   - first degree relative with a BRCA1 or BRCA2 mutation
   - history of radiation to the chest between the age of 10 and 30
   - certain clinical syndromes e.g. Li-Fraumeni syndrome
   
   - **Minor risk factors:**
   - history of lobular carcinoma in-situ or atypical lobular hyperplasia
   - history of atypical ductal hyperplasia
   - history of breast cancer including ductal carcinoma in-situ
   - very dense breasts
   - hormonal replacement therapy
   - more menstrual cycles
   - nulliparity or late age at first live birth
   - obesity
   - never breastfed
   - alcohol consumption

2. **Mammography (MMG)**
   
   2.1 Diagnostic MMG is the initial exam for evaluating a palpable mass for women aged 40 or older. Because of increased radiation risk, lower sensitivity of MMG, and lower incidence of breast cancer in younger women, US is therefore the initial imaging modality in younger women.\(^9\)
   
   2.2 A negative MMG does not exclude breast cancer.\(^6\)
   
   2.3 Low-dose radiation increases breast cancer risk among high-risk women especially at a younger age.\(^8\)
   
   2.4 The risk of developing breast cancer from radiation exposure secondary to MMG in women under the age of 35 is estimated to be 7 excess cancers per million women per year per rad.\(^7\)

3. **US**
   
   3.1 US is useful in avoiding unnecessary biopsy of cysts.\(^7\)
   
   3.2 US is helpful in differentiating benign from malignant solid masses but tumours like medullary and colloid carcinoma may look benign sonographically.\(^3\)
   
   3.3 For evaluation of a palpable mass, US is the modality of choice for women under age of 30 and can also be used as the first line investigation for women aged 30 to 39 years.\(^9\)

4. **MRI**
   
   4.1 MRI may be useful for evaluating the extent of biopsy proven breast malignancy in glandular tissue. Otherwise it is less cost-effective than MMG and US as the initial imaging examinations for evaluating palpable mass.\(^9\)
5. **Pathological diagnosis**

5.1 If a palpable mass is not visible by either MMG or US, the lesion should be assumed to be solid, and biopsy should be considered if the clinical findings are suspicious of malignancy.³
Mammography for self-referral asymptomatic woman

Under 40 years
- Not indicated
  - Ref 11

40 years and over
- Indicated
  - Ref 1-10, 16

Groups with higher-than-average risk
- Indicated
  - Ref 12, 14

Augmentation mammoplasty
- Indicated as per age group and as per risk of woman
  - Ref 13, 15
## REMARKS

<table>
<thead>
<tr>
<th>Woman categories</th>
<th>Mammography</th>
<th>Comment</th>
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<tbody>
<tr>
<td>Aged 40 years and over</td>
<td>Indicated</td>
<td>Randomized controlled trials, population studies and meta-analyses have shown that screening by mammography (MMG) can reduce mortality in breast cancer in women aged 40 years or above. The American Cancer Society recommends starting annual MMG screening at the age of 40 and continuing it though the women are in good health. The American College of Radiology and the Society of Breast Imaging also recommend women with average risk for breast cancer to start annual screening from age 40. In Sweden, the breast cancer screening programme covers women between 40 and 74 years of age with MMG every two years. Whilst there is evidence of a mortality reduction from MMG screening in women between the ages of 40-50 years, it should be acknowledged that there is no good quality evidence of a mortality reduction from screening women over the age of 70 and the risk of over diagnosis is substantially greater. Advice from clinicians and shared decision making with the women are important. Benefits and risks of screening should be discussed between the women and the clinician. The decision whether “to screen or not” should be taken together according to the woman's values and the clinician’s advice, after the consideration of the presence or absence of known risk factors.</td>
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<tr>
<td>Aged under 40 years</td>
<td>Not indicated, except in groups with high-risk or intermediate-risk</td>
<td>There is no evidence of a mortality benefit from MMG screening of women under the age of 35 years. There is also a greater risk of radiation-induced breast cancer from the use of diagnostic X-ray MMG in young women. For these reasons, routine screening of women in this age group in the absence of significant breast cancer risk factors is not recommended unless as part of a formal trial.</td>
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## BR 2 Mammography for self-referral asymptomatic woman

| Groups with high-risk or intermediate-risk | Indicated                                                                                                                                                                                                 | Women who are at higher-than-average risk of breast cancer should seek medical advice about whether they should receive screening, age to start and the frequency of screening because the risk of developing breast cancer may be sufficiently high to justify MMG screening.\(^2\)

Groups with high-risk or intermediate-risk include:

a. women with a BRCA gene mutation and their untested first-degree relatives\(^1\);  
b. women with a history of chest irradiation between the ages of 10-30\(^1\);  
c. women with personal history of breast cancer, lobular neoplasia, atypical ductal hyperplasia\(^1\);  
d. women with 15% or greater lifetime risk of breast cancer.\(^1\)

| Augmentation mammoplasty | Indication as per age group and as per risk of woman.                                                                                                                                                            | There is no evidence that breast augmentation is associated with an increased incidence of carcinoma. The risk of prosthesis rupture as a result of compression during MMG is extremely small and in practical terms can be discounted.\(^3\)

However, sensitivity for cancer detection is lower than in the non-augmented breast. Digital MMG may help.\(^4\)
REFERENCES


16. Hong Kong College of Radiologists. HKCR Mammography Statement, Revised Version. Hong Kong: Hong Kong College of Radiologists; 2015.