Consensus Finding: Benign and Borderline Phyllodes Tumors

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Main Characteristics

- Rare fibroepithelial tumor
- Patient median age 40-51, mean age 39-43 years
  - 10-20 years older than patients with fibroadenoma
- Often larger in size at presentation than fibroadenoma and rather rapidly growing
- 3 sub-categories: benign, borderline and malignant phyllodes tumor
  - distinction based on histologic parameters (adapted by WHO)
    - stromal cellularity, nuclear atypia, degree of pleomorphism, mitotic activity, tumor margins, stromal overgrowth
- Overlapping histologic features and synchronous lesions make differentiation from fibroadenoma challenging
- Borderline phyllodes tumors can rarely metastasize

Pathologic Features

- Biphasic neoplasms characterized by proliferation of epithelial and stromal components
- Some overlapping morphology between fibroadenoma and various grades of phyllodes tumors
- Gross examination
  - well delineated and circumscribed
  - cut surface shows slitlike spaces with interspersed nodular stromal growth
- Histology (benign / borderline phyllodes tumors)
  - leaflike pattern, produced by the exaggerated intracanalicular stromal proliferation (low / intermediate Ki67) and variably dilated ducts
  - stromal overgrowth
  - increased stromal vascularity
  - mitotic activity (1-4/10 HPF)
  - margins (pushing / intermediate)
  - nuclear pleomorphism (little / moderate)

Frequency

- Literature:
  - Accounting for less than 1% (0.3-0.9%) of all breast tumors
  - and 2.5% of fibroepithelial tumors
  - Majority benign (63-78%), borderline 11-30%, malignant 6-11%
- MIBB Database:
  - 0.09% (20/22 072 VABs)
  - 17 with pure B3 lesions: 13 no surgery
  - 3 surgical excision (1 benign, 2 phyllodes)
  - 1 lost to follow up
- Breast Center Zurich Database:
  - CNB: 0.13% (n=19)
  - VAB: 0.16% (n=5)

Underestimation Rate

- Literature:
  - FNA: underestimation 25-70%
  - CNB: underestimation 8-39%, mean 20%
  - concordance rate between CNB and surgical excision:
    - 38.5-82% for benign phyllodes tumors
    - 74.7%-100% for borderline and malignant phyllodes tumors
  - US-VAB:
    - Youk et al 2014: (n=23) 8.7% upgraded from benign to malignant at surgical excision (depending on US-BIRADS classification 3, 4a, 4c)
    - concordance between subtype VAB and surgical excision 92.6%
- Risk factors for underestimation
  - Fibroadenoma > 3 cm
  - US ≥ BIRADS 4

Treatment recommendations

- Literature:
  - Majority of publications EL 2a/b) recommend wide surgical excision for all histological subtypes (margins ≥ 1cm?)
  - Retrospective studies (EL 2b) investigating US-VAB did not find a higher recurrence rate or underestimation rate compared to open surgery
    - US-VAB confirming benign phyllodes tumor may not require surgery
- NCCN guideline: diagnosis by excisional or core needle biopsy requires wide excision (margins ≥ 1cm) of all phyllodes tumors, including benign subtypes
Follow up / Surveillance Data

- Literature:
  - no follow up required for benign phyllodes tumors
  - recommended follow up for borderline phyllodes tumors:
    - US every 6 months, MG annually, for a minimum of 3 years
  - recurrence rate after surgical excision: 5-17% benign, 14-25% borderline
  - benign tumors are associated with lower recurrence rate
  - recurrence rate more for tumors with close or positive margins
  - higher recurrence rate especially for borderline tumors

- Recurrence rate after US-VAB:
  - YOUK et al 2014:     - benign phyllodes tumors (n=14)
    - no recurrence within ≥ 2 years of follow up
    - rates of incomplete removal after US-VAB: 14-46% (mean 27%)
  - Ouyang et al 2015:   - benign phyllodes tumors (n=108)
    - median follow up 35.5 months
    - RFS rate 81.6% after VAB vs 88.7% RFS rate after surgical excision (n=117)
  - Park et al 2012: - benign phyllodes tumors (n=31)
    - follow up > 2 years
    - 3.2% recurrence rate
  - Surgery excision may be performed when recurrence is confirmed
  - benign tumors can be sufficiently excised by US-VAB

Summary

- Higher recurrence rate for borderline phyllodes tumors after surgical excision (no data available on VAB)
- No significant difference in recurrence rate for benign phyllodes tumors after surgical excision vs VAB
  - prospective randomized studies needed
  - surgical excision may be performed when recurrence is confirmed
- High concordance rate for histological subtype between VABs and surgical excision in case of US-BIRADS 3 classification

Conclusion

- Observational approach can be justified for benign phyllodes tumors after VAB with US-BIRADS 3 classification and complete removal based on US imaging
- Surgical (wide) excision is mandatory for borderline phyllodes tumors