US-guided Thin Core-Needle Biopsy: What is its role?

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Most persistently nondiagnostic solid nodules should be surgically excised
“Indeterminate” nodules: repeat FNA not recommended

• CNB: not recommended

• Molecular markers: not recommended for routine

7.6.3. Follicular Lesions (Class 3)

7.6.3.1. Management

• Repeated FNA biopsy of follicular lesions is not recommended because it does not provide additional information (Grade C; BEL 3)

• CNB is not recommended in the management of follicular lesions because it does not add additional information to FNA biopsy (Grade D; BEL 4)

• Molecular and histochemical markers are currently not recommended for routine use; their use may be considered in selected cases (Grade D; BEL 3)
Why microhistology may be of use for ‘indeterminate’ nodules?

- Only a minority of “indeterminate” thyroid nodules are a follicular adenoma or a carcinoma (likely < 10%).

- Most of them are ‘hyperplastic adenomatous’ (and benign) nodules, devoid of capsule, or a follicular variant of papillary thyroid carcinoma.
What is Micro-histology?

The histologic examination of a core of thyroid nodule tissue obtained from the target lesion by a thin-needle biopsy (CNB)
Non diagnostic cytology

The combination of repeat FNA with CNB classified as diagnostic 87% of previously nondiagnostic lesions.
## Indeterminate cytology

<table>
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<tr>
<th>104 “indeterminate” nodules</th>
<th>39 benign</th>
<th>65 malignant</th>
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<tbody>
<tr>
<td>CNB</td>
<td>26</td>
<td>44 (67%)</td>
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<tr>
<td>Repeat FNA</td>
<td>27</td>
<td>22 (34%)</td>
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Core needle biopsy Procedure (1)

- tissue sampling for microhistology (or cytology, after crushing) with a 21 – 20 G cutting needle (usually a spring-activated device)
- performed under (experienced) US-guidance
- local anesthesia (xylocaine) down to the prethyroid muscles and thyroid capsule.
Technique of tissue sampling: FNA vs CNB

FNA by 23-G spinal needle

CNB by 18-G cutting needle

Park et al. Head and Neck 2011
Core needle biopsy Procedure (2)

- after the procedure: local pressure for 20 minutes
- clinical and US control after one hour
- no analgesics nor antibiotics.
Follicular Cancer: Immunohistochemical staining on CNB samples

CK19

HBME1
Results of CNB on 54 consecutive “indeterminate” cases at FNA – Regina Apostolorum
What is the role of CNB?

• a mounting evidence demonstrates that CNB is a complementary test in nodules with non conclusive outcome by FNA

• the procedure is safe and well tolerated (in centers with experience); only a short-term US control is needed after the procedure; minor complications are rare

• CNB and NOTdiagnostic surgery” should be performed on solid nodules after repeat “inadequate” FNA.
What is the role of CNB?

• The current evidence does not provide a conclusive estimate of CNB diagnostic accuracy (PPV & NPV) for cytologically “indeterminate” nodules.

• However, the combined use of CNB with a histochemical panel (Gal-3, CK-19, HBME-1) decreases unnecessary surgery and reliably suggests a less extensive surgical treatment for these thyroid lesions.