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Clinical Insight

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Diagnosis of papillary lesions of the breast

Publications presented in this issue:

Chang JM, Han W, Moon WK et al. Papillary lesions initially diagnosed at ultrasound-guided vacuum-assisted breast biopsy: rate of malignancy based on subsequent surgical excision. Annals of Surgical Oncology 2011 [Epub ahead of print]

Carder PJ, Khan T, Burrows P, Sharma N. Large volume "Mammotome" biopsy may reduce the need for diagnostic surgery in papillary lesions of the breast. J Clin Pathol 2008; 61: 928–33

Kim MJ, Kim SI, Youk JH et al. The diagnosis of non-malignant papillary lesions of the breast: comparison of ultrasound-guided automated gun biopsy and vacuum-assisted removal. Clin Radiol 2011 [Epub ahead of print]

Background

Papillary breast lesions are encountered in up to 4% of percutaneous breast needle core biopsies.[1] They comprise a heterogeneous group of benign, atypical and malignant conditions, including papilloma (single or multiple), papilloma with atypical ductal hyperplasia (ADH), papillary ductal carcinoma in situ (DCIS) and invasive papillary carcinoma. The UK National Health Service Breast Screening Programme (NHSBSP) Pathology Reporting Guidelines suggest that the majority of papillary lesions diagnosed on needle core biopsy should be categorized B3 (of uncertain malignant potential) or B4 (suspicious of malignancy).[2] What should be the proper follow-up if a papillary lesion is found after vacuum-assisted biopsy? Should these patients undergo surgery? This is still very much under debate in various countries.

[1]Mulligan AM, O'Malley FP. Papillary lesions of the breast: a review. Adv Anat Pathol 2007; 14: 108–19

[2]Guidelines for non-operative diagnostic procedures and reporting in breast cancer screening. NHSBSP Publication No. 50. June 2001. Sheffield

Papillary lesions initially diagnosed at ultrasound-guided vacuum-assisted breast biopsy: rate of malignancy based on subsequent surgical excision

Chang JM, Han W, Moon WK et al. Annals of Surgical Oncology 2011 [Epub ahead of print]

Conclusion of the study

Benign papillomas diagnosed by ultrasound (US)-guided 11-gauge vacuum-assisted biopsy (VAB) may not require surgical excision. However, the diagnosis of an atypical papilloma should lead to surgical excision.

Goal of the study

To assess the rate of malignancy in papillary lesions initially diagnosed by US-guided 11-gauge VAB and subsequently excised.

Methods

- Prospective single-centre study
- Inclusion of all 60 benign (n = 49) and atypical (n = 11) papillomas diagnosed by US-VAB using the Mammotome® biopsy system and with surgical excision results available between May 2007 and December 2009

Results

- 15 cases with no residual lesions
- 34 benign papillomas
- 9 atypical papillomas
- 2 ductal carcinoma in situ (DCIS)
- Malignancy upgrade rate for benign papillomas 0 of 49 (0%)
- Malignancy upgrade rate for atypical papillomas 2 of 11 (18.2%)
- Rate of upgrade of benign to atypical papillomas 3 of 49 (6.1%)

Comparison of US-guided vacuum-assisted biopsy results with surgical excision (table adapted from Chang JM et al. Ann Surg Oncol 2011 [Epub ahead of print])

Histologic findings at vacuum-assisted biopsy	Histologic findings at surgical excision			
	Benign papilloma (n = 34)	No residual lesion (n = 15)	Atypical papilloma* (n = 9)	DCIS (n = 2)
Benign papilloma (n = 49)	34	12	3	0
Atypical papilloma* (n = 11)	0	3	6	2

*Atypical papilloma was defined as papillomas with atypical features or papillomas with coexistent atypical ductal hyperplasia

Key findings of the study

- This was the first prospective study on the rate of malignancy after US-VAB and subsequent surgical excision of papillary lesions (according to the authors).
- No upgrade to malignancy in US-VAB biopsies diagnosed as benign papillomas.
- Only 15 cases were reported to have no residual lesion at the biopsy site histologically, although 49 lesions were considered as completely excised at US.

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Large volume "Mammotome" biopsy may reduce the need for diagnostic surgery in papillary lesions of the breast

Carder PJ, Khan T, Burrows P, Sharma N. J Clin Pathol 2008; 61: 928–33

Conclusion of the study

In selected cases, use of the Mammotome® biopsy system may exclude malignancy of papillary lesions, thus avoiding further surgery. The authors believe that use of the Mammotome® biopsy system in excision biopsy should be the management option of choice in small, solitary, screen-detected benign papillary lesions of the breast.

Goal of the study

To assess the usefulness of Mammotome® biopsy in papillary lesions (B3 or B4) found on breast needle core biopsy as an alternative to diagnostic excision and, if the lesion has been entirely removed, as a therapeutic procedure.

Methods

- Search of the pathology department computer records from the Bradford Teaching Hospitals
- Identification of all core biopsies (14G needles) containing a B3 or B4 papillary lesion within a defined period of approximately two years
- Collection of follow-up histology and radiology details

Results

- 34 papillary lesions (core biopsy) were included, 31 classified B3, three B4.
- 14 underwent open surgical biopsy, 15 had excision performed with the Mammotome® biopsy system, and five had no subsequent procedure.
- All 15 cases performed with the Mammotome® biopsy system had shown no atypia on core biopsy, 13 proved benign on biopsy with the Mammotome® biopsy system.
- Surgical excision: Eleven cases with no atypia on the core proved benign; all three with atypia on the core proved malignant.

Key findings of the study

- Large volume sampling with the Mammotome® biopsy system following a conventional core biopsy can reduce the need for surgery in papillary lesions.
- In non-atypical papillary lesions diagnosed on conventional core biopsy, malignancy may be excluded by use of the Mammotome® biopsy system.
- The presence of an atypical papillary proliferation in a Mammotome® biopsy is a strong predictor of malignancy.
- In small, solitary benign papillary lesions, use of the Mammotome® biopsy system can be therapeutic.

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The diagnosis of non-malignant papillary lesions of the breast: comparison of ultrasound-guided automated gun biopsy and vacuum-assisted removal

Kim MJ, Kim SI, Youk JH et al. Clin Radiol 2011 [Epub ahead of print]

Conclusion of the study

False-negative rates in papillary lesions were higher and histological upgrades more frequent in ultrasound (US)-guided automated core needle biopsies (ACNB) than in US-guided vacuum-assisted removal (VAR). In fact, in this study there were no false-negative findings and no histological upgrades of papillary lesions treated with VAR within a follow-up time of at least two years.

Goal of the study

To evaluate and compare the performance of US-VAR with the Mammotome® system and US-ACNB in the diagnosis of papillary breast lesions.

Methods

- Search of the pathology database of the authors' institution in Seoul, South Korea
- Identification of all papillary lesions within a defined period of nearly six years
- Selection of the cases with subsequent surgical excision or follow-up for at least two years
- VAR: samples were taken until the mass was completely removed, as determined by US

Results

- 271 papillary lesions in 230 patients were included, 206 diagnosed by ACNB and 65 by VAR.
- 195 lesions were finally diagnosed as benign, 21 as atypical (7.7%), and 55 as malignant (20.3%; see table below).
- Among the 157 papillary lesions in the ACNB group primarily considered as benign, carcinoma was found in 12 producing a false-negative rate of 7.6%.
- In contrast, in the VAR group (54 benign lesions) no carcinoma emerged during follow-up.
- Of the 172 benign or atypical papillary lesions in the ACNB group, 17 were upgraded to carcinoma, and four were upgraded from benign to atypical papillomas at the pathological diagnosis after surgical excision, whereas there were no upgrades of papillary lesions treated with VAR.
- Notably, in the cases where papillomas had primarily been considered benign, patient and lesion characteristics differed between groups in terms of palpability, mammographic abnormality, and maximal lesion size (worse in the ACNB group).

Follow-up histopathological diagnosis and histopathological results of ACNB and VAR in 271 papillary lesions (table adapted from Kim MJ et al. J Clin Pathol 2008; 61: 928–33)

Histological results at ACNB and VAR		Follow-up histopathological diagnosis considering surgical pathology and follow-up study		
		Carcinoma	Atypical papilloma	Benign papilloma
ACNB	Papillary carcinoma	34	0	0
	Atypical papilloma	5	10	0
	Benign papilloma	12	4	141
VAR	Papillary carcinoma	4	0	0
	Atypical papilloma	0	7	0
	Benign papilloma	0	0	54

ACNB = automated core-needle biopsy; VAR = vacuum-assisted removal

Key findings of the study

- ACNB was associated with significantly higher false-negative and histological upgrade rates of diagnosis in papillary breast lesions than VAR.
- VAR was performed for removal in 65 lesions, only 14 underwent subsequent surgical treatment (including four papillary carcinomas).