一般科 General Ultrasound

October 19, 2025 (Sun)
Room 102

主　　題：乳房超音波於診斷乳篩疑異個案的運用
Breast Ultrasound in the Evaluation of Suspicious Findings in Breast Cancer Screening

內容簡述：乳房超音波是乳房篩檢中常用的影像學檢查方法之一。本講座之目的為使學員了解不同乳房影像檢查，與乳房超音波的關聯性，進而更準確的診斷及治療。

Moderator: 賴亦貞 Yi-Chen Lai 臺北榮民總醫院

時間 Time	題目 Topic	演講者 Speaker
08:30-09:10 GEN-S01	BI-RADS 6th Edition Updates in Breast Ultrasound	賴亦貞 Yi-Chen Lai 臺北榮民總醫院
09:10-09:50 GEN-S02	Sonographic Findings in Nonmass Lesions	姚敏思 Meliassa Min-Szu Yao 和信醫院
09:50-10:20 GEN-S03	Imaging Correlation between Mammography and Breast Ultrasound (Calcifications and Masses)	吳文沛 Wen-Pei Wu 臺中市立老人復健醫院
10:20-10:40	Coffee Break	
10:40-11:20 GEN-S04	Imaging Correlation between Mammography and Breast Ultrasound (Focal Asymmetry and Architectural Distortion)	周春平 Chen-Pin Chou 高雄榮民總醫院
11:20-12:00 GEN-S05	Imaging Correlation between Breast MRI and Ultrasound	陳勁宇 Chin-Yu Chen 奇美醫院

ePoster

GEN -P01	Enhancing Breast Cancer Diagnosis: Deep Learning-based Semantic Segmentation of Malignant Features in Breast Ultrasound Images	林敬翰 Joseph Lin 彰化基督教醫院
GEN-P02	Long Term Following Up of Sonography Finding in Using HealiAid after BCS	林硯耘 Yen-Yun Lin 亞東紀念醫院

GEN-S01

BI-RADS 6th Edition Updates in Breast Ultrasound

Yi-Chen Lai
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The BI-RADS 6th edition introduces significant updates to breast ultrasound, notably the inclusion of non-mass lesions as a new category and updated structure for lesion description, assessment, and reporting. These changes are designed to improve early detection of subtle signs of malignancy (such as ductal carcinoma in situ and invasive lobular carcinoma), refine risk stratification, and enhance standardized communication between practitioners.

Other key updates includes reinstatement of the "lobular" mass shape descriptor, structured clinical indications across modalities and updated lymph node assessment

Overall, these changes aim to improve diagnostic accuracy, foster consistency, and provide radiologists with clearer and evidence-based tools for breast lesion evaluation across imaging modalities. The 6th edition is pending publication and is anticipated to set a new standard for the interpretation and management of breast ultrasound findings.

GEN-S02

Sonographic Findings in Nonmass Lesions

Meliassa Min-Szu YAO
Koo Foundation Sun Yat-Sen Cancer Center Hospital

Nonmass lesions in breast ultrasound (US) defined as areas of altered echogenicity, either hypoechoic (darker), hyperechoic (brighter) or mixed; that don't have the distinct, rounded shape and margins of a typical breast mass. These nonmass lesions can be seen without the clear borders and three-dimensional characteristics of a mass. They can be focal (localized), linear/segmental (along a duct), or regional (larger area). While not masses, they can still be associated with findings like calcifications, ductal or architectural changes, and posterior shadowing, which can be suggestive of malignancy.

The importance of recognizing nonmass lesions are the malignancy risk. While some are benign nonmass lesions, others can represent malignancy, particularly ductal carcinoma (DCIS), a type of non-invasive breast cancer. They can be subtle and challenging to characterize, and there's no standardized approach risk assessment. Ultrasound-guided biopsy or localization may be needed for further evaluation and management.

GEN-S03

Imaging Correlation between Mammography and Breast Ultrasound (Calcifications and Masses)

Wen-Pei Wu
Taichung Municipal Geriatric and Rehabilitation Hospital

Correlating findings between mammography and breast ultrasound is essential for comprehensive breast imaging assessment and accurate BI-RADS categorization. Mammography excels in the detection of calcifications and architectural distortions. However, its sensitivity decreases in dense breast tissue. Breast ultrasound, in contrast, offers superior characterization of soft tissue structures and is particularly useful for evaluating palpable abnormalities and distinguishing cystic from solid masses. This presentation will focus on the complementary roles of these two modalities, highlighting patterns of concordance and discordance in the evaluation of calcifications and masses. The importance of recognizing ultrasound correlates for mammographically detected lesions, particularly suspicious masses and calcifications requiring further work-up, will be emphasized. Practical approaches for targeted ultrasound following mammography findings, strategies for managing non-correlating lesions, and the impact

on biopsy planning and patient management will also be discussed. Through case-based examples, this lecture aims to enhance understanding of how integration of mammography and ultrasound improves diagnostic confidence, facilitates early cancer detection, and reduces unnecessary interventions.

GEN-S04

Imaging Correlation between Mammography and Breast Ultrasound (Focal Asymmetry and Architectural Distortion)

Chen-Pin Chou
Department of Radiology, Kaohsiung Veterans General Hospital.

Focal Asymmetry

- ACR BI-RADS Mammography Descriptor: Asymmetry: a finding seen on only one projection; Focal asymmetry: seen on ≥2 projections, occupies <1 quadrant, lacks borders and conspicuity of a mass
- Typical Ultrasound Appearance: Hypoechoic area ± posterior shadowing; may show irregular or oval shape; orientation usually parallel; margins circumscribed/indistinct; echotexture heterogeneous or hypoechoic
- Key Points & Clinical Implication: If US lesion present → recommend biopsy (PPV 20–30%); if absent and stable → short-interval follow-up (6 months)
- Positive Predictive Value (PPV) for Malignancy: 20–30% (US+); <5% (US–)

Developing/Progressive Asymmetry

- ACR BI-RADS Mammography Descriptor: Asymmetry that is new, larger, or more conspicuous compared to prior exams
- Typical Ultrasound Appearance: Hypoechoic or heterogeneous mass; irregular or oval shape; nonparallel orientation more suspicious; margins angular/indistinct/spiculated; posterior shadowing common
- Key Points & Clinical Implication: Higher malignancy risk than focal asymmetry; US-positive → biopsy (PPV 40–50%); US-negative but MG change → MRI or biopsy
- Positive Predictive Value (PPV) for Malignancy: 40–50% (US+); ~10% (US– with MG change)

Architectural Distortion

- ACR BI-RADS Mammography Descriptor: Distortion of the normal breast parenchyma without a definite mass; spiculations, focal retraction, straightening of Cooper's ligaments
- Typical Ultrasound Appearance: Hypoechoic area with architectural distortion: spiculated margins, angular margins, shadowing; disruption of normal tissue planes
- Key Points & Clinical Implication: High malignancy rate if US-visible distortion (PPV 50–60%); no US correlate but MG suspicious → MRI or stereotactic biopsy
- Positive Predictive Value (PPV) for Malignancy: 50–60% (US+); ~30% (US– but MG suspicious)

GEN-S05

Imaging Correlation between Breast MRI and Ultrasound

Chin-Yu Chen
Department of Radiology, Chi-Mei Medical Center, Tainan, Taiwan

In addition to mammography, breast ultrasound and MRI are two important imaging modalities in diagnosing breast disease. Ultrasound provides handy accessibility to investigate the patient in bedside. MRI provides the highest sensitivity in detecting breast cancer among all the different breast imaging modalities. Since the physics in signal acquisition is quite different between ultrasound and MRI, the same breast lesion may present differ in imaging pattern. In this lecture, we will focus on different anatomical structure, lesion component or content, neo-vascularity and enhancing kinetics, to illustrate how the same breast lesion present differ in breast ultrasound and MRI.

GEN-P01

Enhancing Breast Cancer Diagnosis: Deep Learning-based Semantic Segmentation of Malignant Features in Breast Ultrasound Images

Joseph Lin, Dar-Ren Chen
Comprehensive Breast Cancer Center, Changhua Christian Hospital, Changhua 500, Taiwan

Background:

In this study, an advanced semantic segmentation method and deep convolutional neural network was applied to identify the Breast Imaging Reporting and Data System (BI-RADS) lexicon for breast ultrasound images, thereby facilitating image interpretation and diagnosis by providing radiologists an objective second opinion.

Materials and methods:

A total of 684 images (380 benign and 308 malignant tumours) from 343 patients (190 benign and 153 malignant breast tumour patients) were analyzed in this study.

Results:

Six malignancy-related standardized BI-RADS features were selected after analysis. The DeepLab v3+ architecture and four decode networks were used, and their semantic segmentation performance was evaluated and compared. Subsequently, DeepLab v3+ with the ResNet-50 decoder showed the best performance in semantic segmentation, with a mean accuracy and mean intersection over union (IU) of 44.04% and 34.92%, respectively. The weighted IU was 84.36%. For the diagnostic performance, the area under the curve was 83.32%.

Conclusion:

This study aimed to automate identification of the malignant BI-RADS lexicon on breast ultrasound images to facilitate diagnosis and improve its quality. The evaluation showed that DeepLab v3+ with the ResNet-50 decoder was suitable for solving this problem, offering a better balance of performance and computational resource usage than a fully connected network and other decoders

GEN-P02

Long Term Following Up of Sonography Finding in Using HealiAid after BCS

Yen Yun Lin, U Chon Chio
Far Eastern Memorial Hospital

Background:

Collagen plays a critical role in all phases of wound healing, including inflammation, proliferation, and remodeling. Healiaid, a collagen wound dressing, is widely used in surgical settings to facilitate tissue repair. In addition to its hemostatic function, Healiaid also provides cosmetic benefits by maintaining tissue contour. According to the manufacturer, the material is fully absorbed within six months. However, its postoperative imaging characteristics in breast surgery remain underreported.

Materials and Methods:

We present a case of a 58-year-old woman who underwent breast-conserving therapy (BCT) with Healiaid application. Clinical records and ultrasound studies from January 2022 to July 2025 were retrospectively reviewed.

Results:

The patient was diagnosed with ductal carcinoma in situ via mammography-guided biopsy following detection of suspicious microcalcifications (BIRADS 4A). She underwent right partial mastectomy and sentinel lymph node excision, with Healiaid placed in the surgical cavity. Postoperative ultrasound was performed quarterly in the first year and biannually thereafter. No evidence of tumor recurrence, mass, cyst, hypoechoic lesion, architectural distortion, or new microcalcification was observed up to June 2025. Notably, residual traces of Healiaid were still visible on sonography within the first two years post-surgery.

Conclusion:

The use of Healiaid in BCT does not interfere with long-term ultrasound interpretation and may be a safe adjunct for promoting wound healing and preserving cosmetic outcomes in breast surgery.