ISW26-3103-01 (0572)

INTEGRATING PERSONAL, HEREDITARY, AND POLYGENIC PROFILES VIA DEEP LEARNING-BASED RISK ESTIMATION FOR PRECLINICAL BREAST CANCER DIAGNOSIS

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Introduction:
Breast cancer is the most prevalent malignancy in women worldwide, accounting for approximately 2.3 million new diagnoses and causing 670,000 deaths in 2022 alone. Advanced-stage disease (stages III–IV) not only dramatically worsens patient prognosis, with five-year survival plummeting to 32% for metastatic cases, but also imposes a substantial economic burden. Our study introduces a deep learning–based agent that integrates personal, familial, and polygenic risk profiles to improve preclinical detection of breast cancer, aiming to shift diagnosis to earlier, more treatable stages and reduce both mortality and cost.

Material and Method:
This retrospective study analyzed 2021–2023 electronic health records from Panama's Social Security system. An AI-based breast cancer risk detection agent was developed to leverage patient demographic, clinical, and imaging data and flag individuals at high risk of undiagnosed malignancy. Performance was evaluated against standard care for early cancer detection by calculating the model's sensitivity, specificity, and increase in detection rate.

Results:
The AI agent increased early-stage (stage I–II) breast cancer detection by 47% relative to historical data. It achieved 96% sensitivity and 98% specificity. This level of accuracy is comparable to state-of-the-art AI diagnostic models. The 47% improvement substantially exceeds previously reported gains from AI-assisted screening (~17–30%)

Conclusion:
The AI risk detection agent markedly improved early breast cancer detection in this Panamanian cohort. Its high sensitivity and specificity indicate strong potential as an adjunct to screening programs. Wider adoption of such technology could enable earlier diagnoses and reduce breast cancer mortality.

ISW26-3103-02 (0855)

“THE TRIPLE TROUBLE” -VIRAL MARKER POSITIVITY, TUMOR AGGRESSIVENESS, AND OPPORTUNISTIC INFECTIONS IN BREAST CANCER

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Introduction:
In low- and middle-income countries (LMICs), the convergence of breast cancer (BC) with chronic viral infections such as HIV, hepatitis B (Hep B), and hepatitis C (Hep C) may influence tumor progression, immune status, and treatment outcomes. This study investigates the relationship of viral seropositivity(SP) with tumor stage, infection burden, and survival outcomes.

Material and Method:
A retrospective observational analysis was conducted on 76 seropositive female BC patients treated between January 2018 and July 2025 at tertiary care hospital. Patients were tested for viral markers by standard ELISA test. Their clinical profiles—including tumor staging, metastasis, treatment complications, opportunistic infections and follow-up were reviewed and compared with 76 matched seronegative(SN) patients.

Results:
Out of 1191 breast cancer patients, Early BC- 44.7% ,Locally advanced BC- 43.85%, Metastatic BC-11.45% , 76 (6.4%) were SP—primarily Hepatitis C (57.8%), Hepatitis B (39.5%), and HIV (2.6%). The mean age was 45.6 (22.5-87.1) years, and all tumors were invasive ductal carcinoma. Viral positivity was more common in advanced-stage cancers. Seven patients became SP during chemotherapy. Metastasis (18.4% vs 5.3%) and opportunistic infections were significantly higher (30.3% vs 2.6%) in SP, and PCR response was lower in the SP ($p<0.03$). Mean duration of follow up was 33.7 months and no mortality was observed.

Conclusion:
Viral seropositivity is associated with higher-stage BC and increased susceptibility to infection but does not affect survival when managed with a multidisciplinary approach. This study highlights the need for universal viral screening, timely multimodal care, and close infection monitoring in LMIC breast oncology practice.

	SERO-POSITIVE			SERO-NEGATIVE
	HIV	Hep B	Hep C	
Total patients	02	44	30	76
Mean Age in years	44.5	46.3	45.8	48.2
Age <40 years	01	08	15	23
Early breast cancer	0	06	05	11
Locally Advanced breast cancer	02	20	26	48
Metastatic breast cancer	0	01	13	02
Opportunistic infections	01	15	07	02
Initially negative	0	02	05	-
PCR rates	01	04	03	39
Deranged LFT	02	28	16	21

Table-1 Depicting key differences between seropositive and seronegative patients

Oppurtunistic infections- fungal infection of nails & herpes-classical vesicular eruptions seen in patients receiving chemotherapy

ISW26-3103-03 (0830)

THE ASSOCIATION OF BODY MASS INDEX (BMI) AND HEIGHT WITH ONCOTYPE DX SCORES IN WOMEN WITH HORMONE RECEPTOR POSITIVE HER 2 NEGATIVE BREAST CANCER IN THE NYC METROPOLITAN AREA

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[6]*New York Presbyterian Queens, Queens, United States*

Introduction:
The purpose of this study was to examine the association of BMI and height with the clinicopathological characteristics and outcomes of females with breast cancer and Oncotype Dx score in the New York State population.

Material and Method:
We conducted a retrospective study of female patients with hormone receptor positive, HER 2 negative breast cancer who underwent breast surgery identified from the Tumor Registry of Weill Cornell Medicine between 2010 and 2023.Patients without Oncotype Dx score and stage IV patients were excluded.

Results:
1,435 breast cancer patients were identified with a mean follow-up of 3.83+/-3.3 years. The median BMI was 24.65 (21.92, 28.41) and the median height in meters was 1.63 (1.57, 1.68). BMI was found to have a statistically significant positive association with tumor size ($p<0.001$) and age ($p<0.001$) and negative correlation with Oncotype Dx score ($p=0.009$). Height was not associated with Oncotype Dx score ($p = 0.98$). Tumor size was larger in taller female patients ($p = 0.066$). Height had a statistically significant negative correlation with age at diagnosis ($P<0.001$). No association was noted between height and nodal stage ($p=0.81$). Patients with increased BMI had a higher probability of having poorly differentiated tumors ($p=0.008$). On multivariable analysis, after adjusting for stage and Oncotype Dx score, no difference was seen between time to locoregional or metastatic recurrence and BMI or height.

Conclusion:
Breast cancer patients with higher BMIs are associated with larger T-stage and more poorly differentiated tumors. Increased BMI is associated with clinically poorer breast tumor features which suggests worse clinical outcomes.

ISW26-3103-04 (0567)

THE IMPACT OF METABOLIC SYNDROME ON THE DIAGNOSIS OF SECOND PRIMARY TUMORS IN WOMEN TREATED FOR BREAST CANCER: A RETROSPECTIVE COHORT ANALYSIS

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Introduction:
Metabolic syndrome (MetS) is characterized by central adiposity, hypertension, hyperglycemia, dyslipidemia, and insulin resistance. It has been associated with both the incidence of breast cancer (BC) and long-term oncologic outcomes. We hypothesize that MetS elevates the risk of multiple primary tumors.

Material and Method:
This retrospective cohort study involved 7,696 women treated for BC from 2002 to 2024. MetS was identified through documented components (body mass index as a proxy for waist circumference, hypertension, diabetes or impaired glucose tolerance) and categorized based on the number of elements present (0, 1, ≥2).

Results:
850 (11.1%) were found with at least one second primary tumor, either breast or non-breast. In the BC-only group, 48.11% exhibited at least one component of MetS, which was significantly lower than the rates observed in those with a second primary (53.06%) and those with >2 primaries (59.29%) ($p<0.05$). In multivariate analysis, the presence of one MetS component was linked to a 62% increase in the odds of a second tumor (OR 1.62; 95% CI 1.42-1.85; $p < 0.05$), while the presence of two or more components resulted in a 44% higher odds (OR 1.44; 95% CI 1.12-1.87; $p<0.05$).

Conclusion:
MetS is an independent risk factor for the development of multiple primary tumors. The findings underscore the significance of enhancing metabolic health in BC survivors to potentially mitigate the risk of further primary cancers during follow-up.

ISW26-3103-05 (0576)

INFLUENCE OF GERIATRIC ASSESSMENT ON TREATMENT DECISIONS IN ELDERLY BREAST CANCER PATIENTS

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Introduction:
In older women diagnosed with breast cancer (BC), treatment decisions should consider tumor characteristics alongside patients' functional reserve, frailty, risk of falls, and psychological distress, in order to prevent under- or overtreatment. This study aims to assess the impact of G8 Geriatric Screening Tool on surgical and adjuvant treatment decisions for women ≥70.

Material and Method:
Our retrospective cohort study involved 129 patients ≥70 treated for BC in 2024. Each patient was assessed using Katz Activities of Daily Living (ADL) scale, Norton Scale, G8 screening tool, distress thermometer, and Conley fall-risk assessment.

Results:
Median age was 76 years (IQR 73–82). 93% of patients underwent breast surgery (36.4% mastectomy and 56.6% breast-conserving surgery). 14.7% were treated with neoadjuvant therapy. Adjuvant radiotherapy was provided to 55.0% of patients, chemotherapy to 20.2%, and hormonal treatment to 72.1%. 65 patients (50.4%) were classified as frail, and exhibited a significantly higher median age (81 vs 74 years, $p<0.05$) a lower median BMI (23 kg/m² vs 27 kg/m², $p<0.05$), a higher likelihood of forgoing breast surgery entirely (12.3% vs 1.6%, $p<0.05$), a lower probability of undergoing axillary clearance ($p=0.108$) and adjuvant hormonal therapy (56.9% vs. 87.3%, $p<0.05$). The lack of a family caregiver correlated with an increased propensity to forgo surgery.

Conclusion:
Frailty, as assessed by G8, is significantly associated with the omission of surgical interventions and hormonal therapy in elderly BC patients, irrespective of tumor stage. Systematic geriatric assessments can identify high-risk patients who may benefit from tailored, multidisciplinary management strategies to optimize outcomes.

ISW26-3103-06 (0976)

THE DIAGNOSTIC ACCURACY OF TUMOR BED BIOPSY IN PREDICTING PATHOLOGICAL COMPLETE RESPONSE IN BREAST CANCER AFTER NEO ADJUVANT CHEMOTHERAPY: A META-ANALYSIS RUNNING TITLE: TUMOR BED BIOPSY FOR PCR ASSESSMENT

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Introduction:
Neoadjuvant chemotherapy (NACT) often achieves complete clinical response (cCR) in breast cancer, prompting interest in surgical de-escalation. Pathological complete response (pCR) is the gold standard for prognosis, but currently requires surgery. Tumor bed biopsy (TBB) has been proposed as a minimally invasive alternative. This meta-analysis evaluated the diagnostic accuracy of TBB in predicting pCR among cCR patients post-NACT.

Material and Method:
Twelve studies met inclusion criteria; six were included in quantitative synthesis. Pooled sensitivity was 0.58 (95% CI: 0.51–0.65) and specificity was 1.00 (95% CI: 0.99–1.00). The DOR was 141.65 (95% CI: 41.97–478.01), and SROC analysis demonstrated excellent accuracy (AUC = 0.9792). However, the FNR was 41.97%, indicating that TBB missed residual disease in more than four out of ten patients. Heterogeneity stemmed primarily from biopsy technique, imaging guidance, and clip retrieval protocols.

Results:
Twelve studies met inclusion criteria; six were included in quantitative synthesis. Pooled sensitivity was 0.58 (95% CI: 0.51–0.65) and specificity was 1.00 (95% CI: 0.99–1.00). The DOR was 141.65 (95% CI: 41.97–478.01), and SROC analysis demonstrated excellent accuracy (AUC = 0.9792). However, the FNR was 41.97%, indicating that TBB missed residual disease in more than four out of ten patients. Heterogeneity stemmed primarily from biopsy technique, imaging guidance, and clip retrieval protocols.

Conclusion:
TBB offers perfect specificity but only moderate sensitivity in predicting pCR after NACT. Its high false-negative rate precludes its use as a standalone tool for surgical omission. TBB should currently be considered an adjunct within a multimodal assessment strategy rather than a substitute for surgery.

ISW26-3103-07 (0940)

EXTERNAL VALIDATION OF THE MSKCC NOMOGRAM FOR PREDICTING SENTINEL NODE STATUS IN EARLY BREAST CANCER: A SYSTEMATIC REVIEW AND META-ANALYSIS

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[2]*Deakin University, Melbourne, Australia*
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[4]*Australia*

Introduction:
Axillary management in early breast cancer (EBC) is shifting toward de-escalation, with sentinel node biopsy (SNB) increasingly questioned in low-risk patients. The Memorial Sloan Kettering Cancer Centre (MSKCC) nomogram is the most widely used mathematical model for predicting sentinel node status. This systematic review and meta-analysis aimed to evaluate its external validation, methodological quality, and predictive performance.

Material and Method:
A comprehensive search of MEDLINE, Embase, and Cochrane Central was conducted through July 2025 to identify external validation studies of the MSKCC nomogram in clinically node-negative EBC patients. Eligible studies reported discrimination metrics such as the area under the ROC curve (AUC). Risk of bias was assessed using PROBAST. Where confidence intervals (CIs) were not provided, they were estimated using the Hanley & McNeil method. A random-effects meta-analysis was performed.

Results:
Eight studies were identified, of which seven provided sufficient data for pooled analysis. Six were rated as low risk of bias, and two as moderate risk. The pooled AUC across included studies was 0.73 (95% CI: 0.476–0.984), supporting moderate discriminatory ability. No studies were judged to have high overall risk of bias.

Conclusion:
The MSKCC nomogram demonstrates consistent, though moderate, discriminatory performance across external cohorts. In the current era of axillary de-escalation, nomogram-based strategies may support selective omission of SNB in EBC patients, offering a potential pathway toward safe, individualized axillary management.

ISW26-3103-08 (0364)

MINIMALLY INVASIVE RADIOFREQUENCY ABLATION (RFA) THERAPY IN PATIENTS WITH EARLY-STAGE BREAST CANCER

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[1]*Kurume University School of Medicine, Surgery, Kurume, Japan*
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Introduction:
In December 2023, Japan became the first country to include radiofrequency ablation (RFA) therapy for breast cancer under national insurance. Our hospital was officially recognized as a certified medical institution capable of providing RFA therapy for breast cancer from June 2024.

Material and Method:
RFA is available for patients with localized breast cancer (tumor ≤1.5 cm, no nodal or distant metastasis). Using the Cool-tip™ RF system (Medtronic, USA), tumors are heated to 70–90°C by radiofrequency waves for approximately 10 minutes. Post-RFA treatment includes standard adjuvant therapies (radiotherapy, chemo-endocrine therapy). Three months after radiotherapy, biopsy using 11-gauge vacuum-assisted mammotomy is performed to confirm complete tumor ablation. Additional treatments, including surgery, are considered based on biopsy results.

Results:
Between June 2024 and July 2025, 25 women (19 IDC, 6 DCIS; ages 45–81) underwent RFA with sentinel node biopsy. Median tumor size was 11 mm (range 4.2–14.4 mm), median procedure time was 61 minutes (50–86), and median hospital stay was four days. Minor complications included subcutaneous bleeding and breast induration in two patients. Among eleven patients who underwent scheduled post-RFA biopsy, no residual disease was detected around and within ablated tumor lesion.

Conclusion:
Early outcomes suggest that RFA is a safe, minimally invasive alternative to traditional breast-conserving surgery, offering comparable oncologic results with better cosmetic outcomes, reduced pain, and quicker recovery. Long-term studies are warranted based on the demonstrated oncologic safety and cosmetic outcomes.

ISW26-3103-09 (0251)

CLINICAL CHARACTERISTICS OF HER2-LOW BREAST CANCER COMPARED TO HER2-NEGATIVE BREAST CANCER

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Introduction:
HER2-low is a newly defined subgroup of breast cancer, defined as tumours with an IHC score of 1+ or 2+ and a negative FISH result. The characteristics of this subgroup are poorly defined, especially in the Asian population, hence the objective of our study is to investigate the relationship between HER2-low breast cancer and its clinical characteristics.

Material and Method:
A retrospective cohort study was conducted with Malaysian breast cancer patients. Participants were recruited from a private hospital from 2024 to 2025. Variables collected were HER2 status, age, ethnicity, tumor size, nodal involvement, grade, and hormone receptor status. Differences between continuous variables were examined using the t-test, while differences between the categorical variables were examined using the chi-squared test.

Results:
A total of 380 patients were included in this study. Out of the whole study population, 100 (26.3%) were classified as HER2 positive, 197 (51.8%) were classified as HER2 low, while 83 (21.8%) were classified as HER2 negative. A higher proportion of HER2 negative tumors were Grade 3 than HER2 low tumors, at 41.8% vs. 23.8% respectively (p=0.002). A higher proportion of HER2 negative tumors were ER negative compared to HER2 low tumors, at 27.7% vs. 11.7% respectively (p=0.002). This trend also existed for PR status, with 36.1% of HER2 negative tumors negative for PR vs. 20.9% of HER2 low tumors (p=0.012).

Conclusion:
HER2-low breast cancers have lower grade and are more likely to be hormone receptor positive than HER2-negative breast cancers, which may indicate a more favorable prognosis.

ISW26-3103-10 (0538)

MICROWAVE ABLATION FOR INOPERABLE EARLY BREAST CANCER: A MINIMALLY INVASIVE OPTION FOR HIGH-RISK PATIENTS

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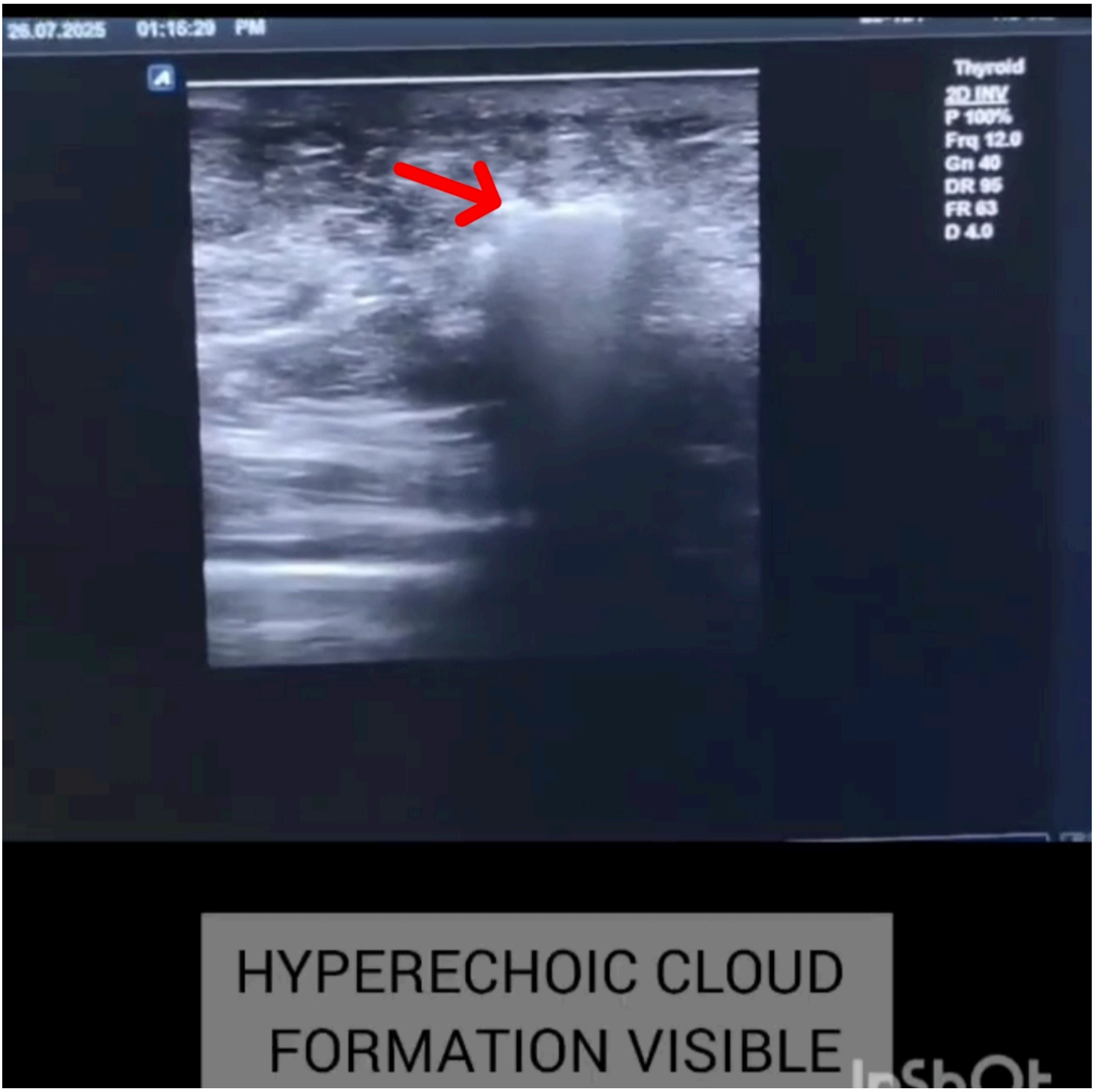
Introduction:
Surgical resection remains the gold standard for early breast cancer, but a subset of patients—particularly the elderly or those with significant comorbidities—are unfit for surgery. Microwave Ablation (MWA) offers a safe, scarless, and outpatient alternative in this challenging group.

Material and Method:
Showcasesing real-world use of MWA under local anesthesia in early-stage, hormone receptor-positive breast cancer patients. Ablation technique, intra-procedural imaging, and post-procedure follow-up protocols are illustrated.

Results:
MWA achieved complete ablation in the majority of patients with minimal discomfort, no need for general anesthesia, and excellent cosmetic outcomes. Adjuvant endocrine therapy was initiated post-ablation. No serious complications were observed.

Conclusion:
MWA is a promising, minimally invasive treatment option for selected breast cancer patients who are inoperable. It offers good local control, rapid recovery, and improved access to care in high-risk populations.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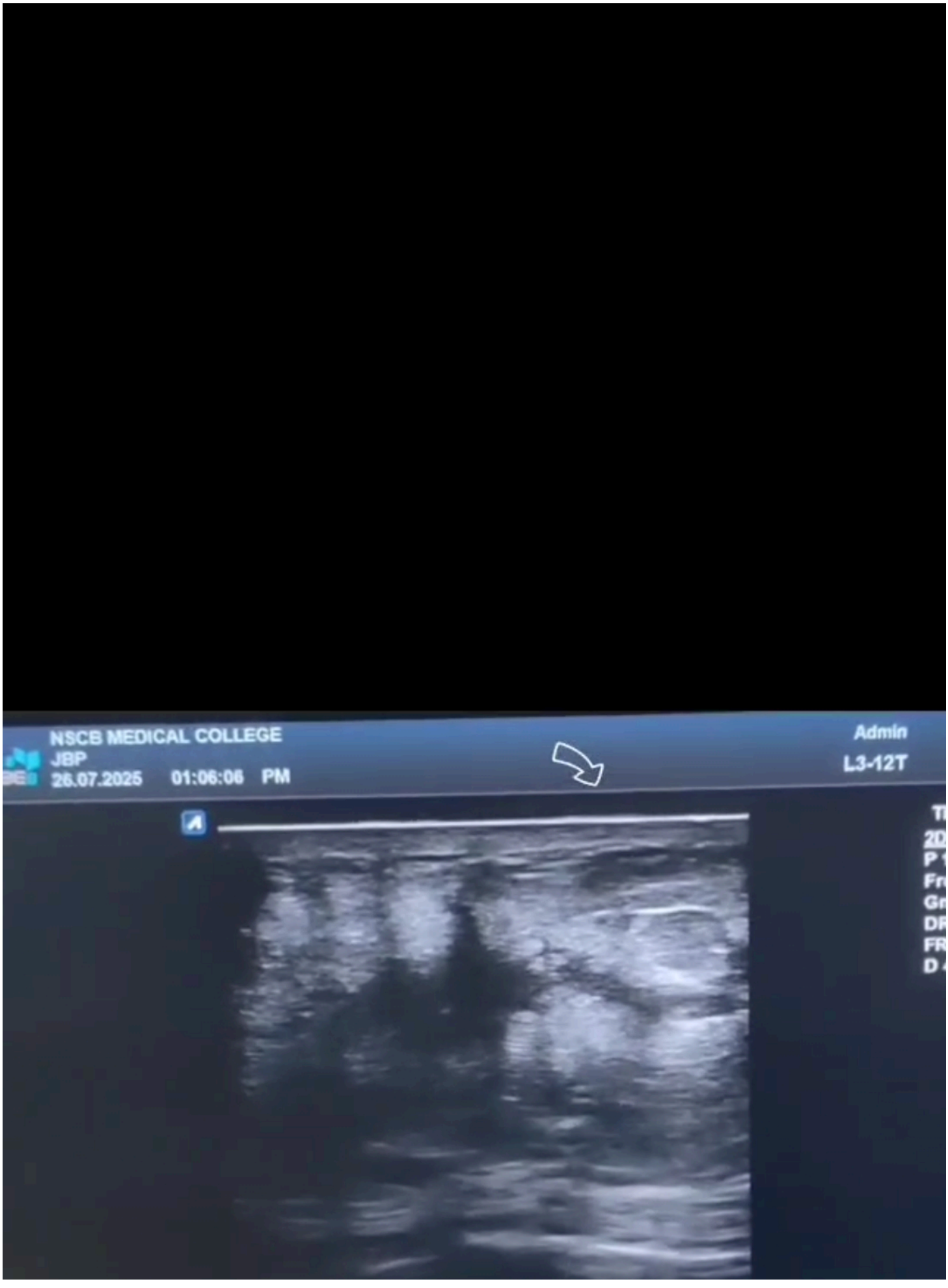
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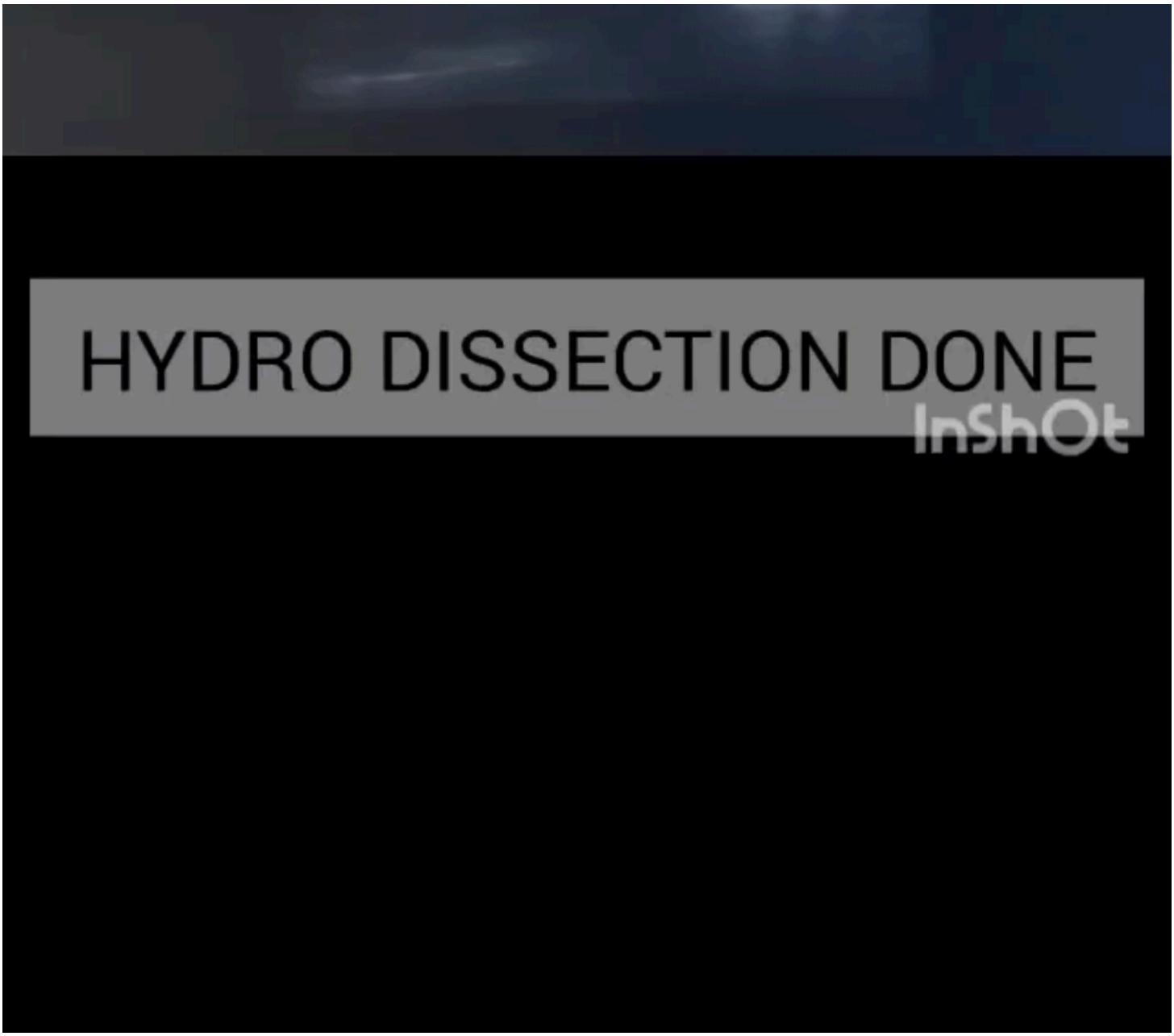
HYDRO DISSECTION DONE
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ISW26-3103-11 (0398)

ENDOSCOPIC BREAST SURGERY FOR PERSONALIZATION OF BREAST CANCER TREATMENT

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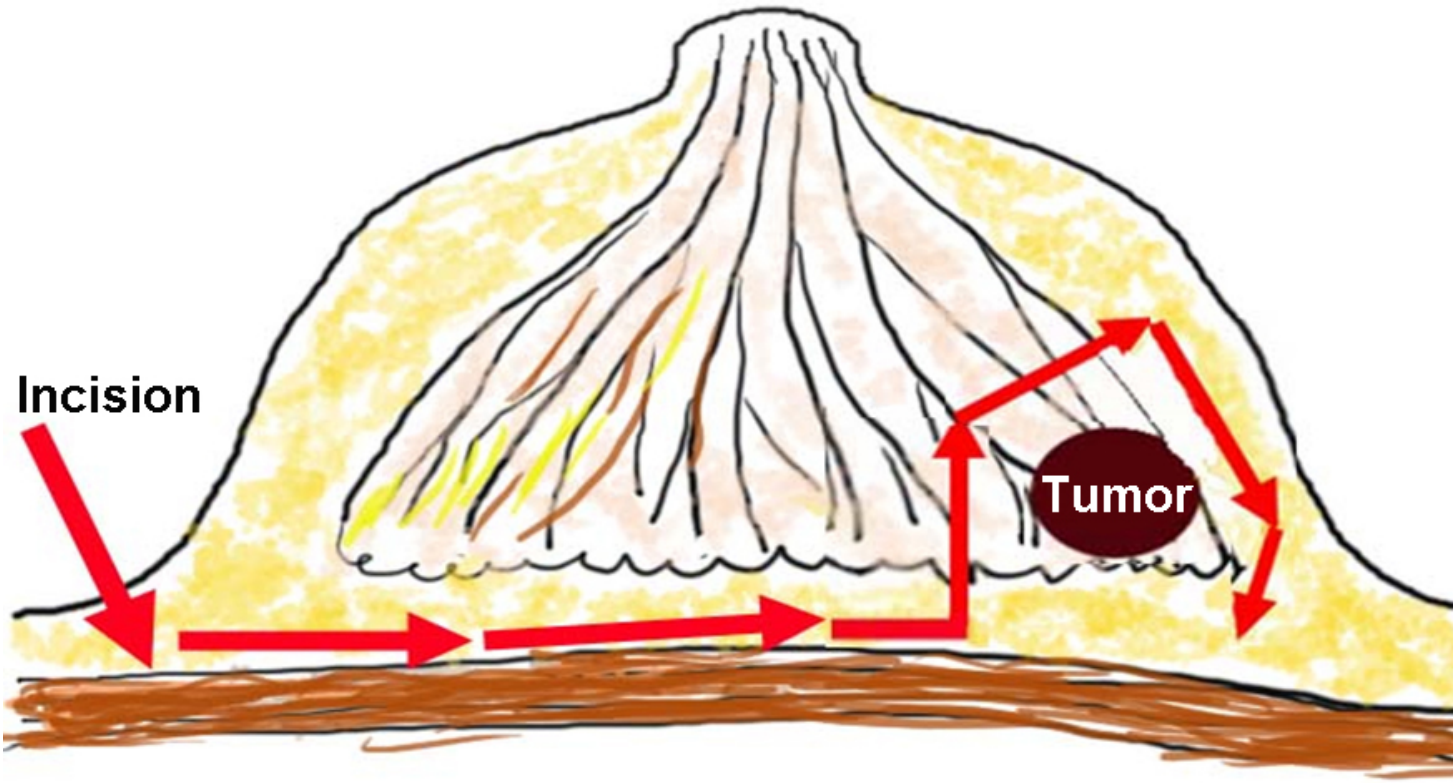
Introduction:
Breast conserving surgery for early breast cancer is reported to be a good indication of endoscopic breast surgery (EBS), which has been performed on more than 700 patients since 2000. EBS performs all surgical manipulation only through a small axillary skin incision and leaves no wound scar on the breast skin with better aesthetic results. We selected the best suitable treatment to improve the results and postoperative QOL.

Material and Method:
Trans-axillary retromammary approach (TARM) is a single port surgery with a small axillary skin incision, 2 to 3 cm long. Detachment behind the mammary gland on the major pectoral muscle fascia under endoscopic view through axillary port. We cut the mammary gland with clear surgical margin. The defect space is sutured by barbed threads, filled with resorbable fiber, or transplant of surrounding tissues, to keep the breast shape. Total mastectomy can be performed with same methods, as extending for whole breast with nipple-sparing. The simultaneous reconstruction can be performed with sillicone expandor or implant.

Results:
EBS was performed on 700 patients, breast conserving surgery on 620 patients, and total mastectomy on 80 patients. The operative cost is as low as the conventional one. There was no serious complication after surgery. The original shapes of the breast were preserved well. The operative methods are selected by tumor location and size, patient age and complications, for personalization.

Conclusion:
Plastic procedure by endoscopic surgery is necessary to improve the aesthetic results for EBS. The personalized treatment selection bring us good results.


1 year after right lumpectomy (25%)
+ SN biopsy
1 year after left lumpectomy (25%)
+ SN biopsy


Incision
Tumor

ISW26-3103-12 (0365)

RE-SENTINEL NODE BIOPSY IN PATIENTS WITH IPSILATERAL BREAST CANCER RECURRENCE AFTER BREAST CONSERVING SURGERY

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[2]Kurume University School of Medicine, Department of Radiology, Kurume, Japan

Introduction:
We reviewed the clinical outcomes of salvage surgery and adjuvant therapies for management of patients with ipsilateral recurrent breast cancer (irBC).

Material and Method:
Among 289 patients with early-stage breast cancer who underwent partial mastectomy (Bp) between 2015 and 2024, six (2.1%) developed postoperative irBC. Patient characteristics at initial diagnosis and recurrence were analyzed. Salvage surgical procedures and associated outcomes were evaluated.

Results:
Among the six patients, five had luminal B and one had triple-negative breast cancer (TNBC). The median time from initial surgery to recurrence was 68.5 months. Initial treatments included combinations of Bp, sentinel node biopsy (SNB), and axillary lymph node dissection (Ax). One TNBC patient with severe interstitial pneumonia underwent only lumpectomy without adjuvant therapies. For salvage surgery, five patients underwent mastectomy-three with repeat sentinel node biopsy (re-SNB), one with Ax level III dissection, and one with mastectomy alone. One patient had repeat lumpectomy. Re-SNB was performed using a triple tracer method (blue dye, ICG, and 99mTc colloid), identifying sentinel nodes ipsilaterally or contralaterally. No reirradiation was performed after salvage mastectomy. Over a median follow-up of 40.5 months, second recurrence occurred in three patients. Median disease-free survival was 27 months; overall survival was not reached.

Conclusion:
Despite the small cohort and short follow-up, salvage surgery with re-SNB was feasible and effective for local control. However, the high rate of second recurrence highlights the need for comprehensive post-surgical management, including novel systemic therapies and selective reirradiation in high-risk patients.