PD9-09: Clinical utility of ^{18}F-fluoroestradiol positron emission tomography (FES PET) in patients (pts) with lobular breast cancer

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Background

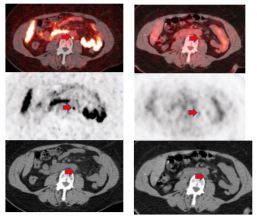
- Assessing invasive lobular carcinoma (ILC) with standard-of-care (SOC) imaging, such as ^{18}F-fluorodeoxyglucose (FDG) PET-computed tomography (CT), is challenging. ILC often is associated with:
  - Low FDG avidity;
  - Atypical metastatic patterns: gastrointestinal tract, peritoneum, retroperitoneum; and
  - Disease underestimation on SOC imaging.
- ILC of the breast is the seventh most common incident cancer in women, responsible for more cases than ovarian cancer [1].
- In May 2025, National Comprehensive Cancer Network guidelines added FES PET for recurrent/metastatic ILC staging. However, perceptions of the value added by FES PET to SOC imaging may vary, as only small ILC cohorts have been published.
- **We evaluated FES PET's clinical utility in the largest-studied cohort, to our knowledge, of ILC pts who have undergone FES PET.**

Reference: [1] Giaquinto AN, Freedman RA, Newman LA, Jemal A, Siegel RL. Lobular breast cancer statistics, 2025. Cancer. 2025;131(20):e70061. doi:10.1002/cncr.70061

Methods

- We identified all ILC pts who had an FES PET [PET-magnetic resonance (MR) or PET-CT)] between April 1, 2021, and May 1, 2025, at Mayo Clinic. Clinical and radiological data, including **indications and management (mgmt) changes related to pts' first FES PET**, were obtained from clinical records.
- **FES and SOC FDG PET were compared.**
- Data were summarized with descriptive statistics.

Figure 1. Imaging Example



FES PET was able to identify retroperitoneal lymph nodes that were not identified on FDG PET.

Results - Baseline Characteristics

- 102 female pts were included: 88.2% White, 4.9% Black, and 6.9% other/not reported.
- Median age at initial breast cancer (BC) diagnosis was 57 (range, 36-79).
- At initial ILC diagnosis, most tumors were strongly estrogen receptor (ER) positive: 79.4% with ER expression 76-100%, 3.9% with ER 51-75%, and 16.7% not reported.
- Highest tumor grade was 1 in 25% of pts and 2 in 57%, with grade not documented in 19%; **none had documented grade 3 ILC.**
- Initial clinical stage was as follows: 26% stage 1, 21% stage 2, 10% stage 3, and 16% stage 4. **At the time of FES PET, 37% had biopsy-confirmed metastatic ILC.**

Table 1. Additional baseline characteristics

Characteristic	Patients (n = 102) - no., %
Premenopausal Missing/Not reported	31 (30%) 13 (13%)
History of non-breast malignancy	14 (14%)
HER2 IHC 2+/ISH positive or IHC 3+ (HER2+) Missing/Not reported	1 (1%) 3 (3%)
Receipt of neoadjuvant therapy Chemotherapy Endocrine therapy	 11 (11%) 16 (16%)

Note: all data were derived from the time of initial ILC diagnosis unless otherwise specified. Pts with mixed tumor histologies were excluded. HER2, human epidermal growth factor receptor 2. IHC, immunohistochemistry. ISH, in situ hybridization.

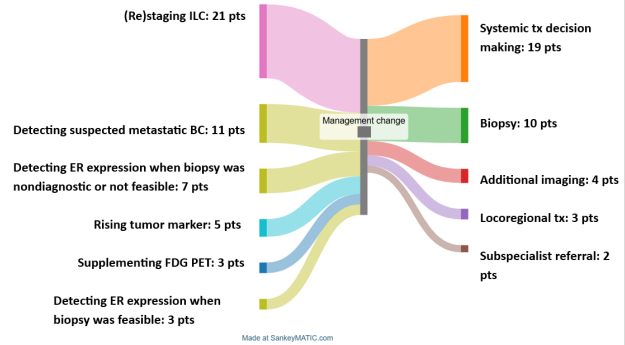
Table 2. Most common indications for pts' first FES PET order

Indication	Patients (n = 102) - no., %
(Re)staging ILC	**51 (50%)**
Detecting suspected recurrent/metastatic BC	**30 (29%)**
Rising tumor marker	**15 (15%)**
Detecting ER expression when biopsy was: Not feasible or nondiagnostic Feasible	 7 (7%) 4 (4%)
Supplementing FDG PET	8 (8%)
Monitoring response to endocrine therapy	5 (5%)
Differentiating between 2 cancers	3 (3%)

Results - FES PET-Directed Management

- **FES PET led to a mgmt change in 38 pts (37%),** for whom the most common FES PET indications were **(re)staging ILC (21 pts), detecting suspected recurrent/metastatic BC (11 pts), and detecting ER expression when biopsy was not feasible/nondiagnostic (7 pts).**
- 19/38 scans (50%) led to a systemic therapy (tx) decision, 10/38 (26%) to a biopsy, 4/38 (11%) to additional imaging like MRI, 3/38 (8%) to locoregional tx, and 2/38 (5%) to a non-oncologic specialty referral to evaluate a suspected new metastasis.
- For the pts with stage 4 BC prior to FES PET, FES PET was ordered primarily for restaging (5 pts) or detecting ER expression (5 pts).
- Notably, of the 19 pts with a systemic tx-related change, at least **4 began a triple-negative BC regimen due to low FES uptake** on the scan.
- Of the 15 pts who had FES PET to evaluate a rising tumor marker, a direct change in systemic tx occurred in 2 pts.

Figure 2. FES PET indications that led to a management change

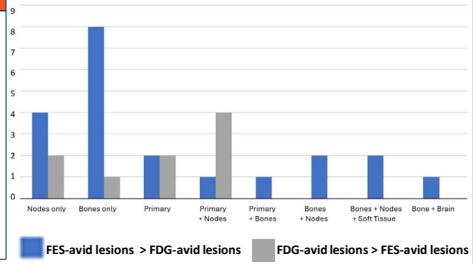


Note: 30/102 pts had >1 documented FES PET indication. This figure does not include the 64/102 pts whose FES PET did not lead to a management change.

Results - FDG vs. FES PET

- 63/102 pts had FDG PET prior to FES PET. Of these 63, 36 pts (57%) had discordant FDG and FES PET results.
- Discordant cases were notable for:
  - 21 pts with a higher number of FES-avid than FDG-avid lesions, particularly osseous metastases (38%) and nodal metastases (19%).
  - 9 pts with FDG-avid lesions (soft tissue, osseous, and/or nodal) that were not FES avid.
- 13 pts had FES PET-MR; 9 of these had a prior FDG PET-CT. **2 PET-MRI pts had FES-avid metastatic lesions in unusual sites (brain, peritoneum) that were not FDG avid.**
- Among the 38/102 pts who had a mgmt change due to their FES PET:
  - **32% had FES-avid lesions that were not FDG avid.**
  - 8% had FDG-avid lesions that were not FES avid.

Figure 3. Discordance between FDG and FES PET



Conclusions / Main Points

- FES PET was used to evaluate pts with early-stage and metastatic ILC.
- FES PET was most helpful for ILC (re)staging, detecting suspected recurrent/metastatic BC, and detecting ER expression when biopsy was not feasible or nondiagnostic. At Mayo Clinic, FES PET rarely was utilized to monitor response to endocrine therapy; the clinical utility of FES PET for this indication should be assessed in future studies.
- FES PET added clinically meaningful information beyond SOC imaging, with detection of FES-avid but not FDG-avid metastatic lesions in ⅓ of pts with an FES PET-driven mgmt change.
- FES PET-MRI demonstrated potential superiority over FDG PET in identifying atypical ILC metastases.

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Patient Information

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