Frailty Index Scores are Stronger Predictors of Complications in Free Flap Breast Reconstruction than BMI, Age, and ASA Class
A Retrospective Analysis on the ACS National Surgical Quality Improvement Program from 2010 - 2018

Free flap-based breast reconstruction (FB) improves quality of life in cancer survivors with 5-47% higher complication rates in at-risk patients (elderly, those with obesity). Thus, detecting higher risk patients is vital. Age, BMI (Body Mass Index), and ASA score (American Society of Anesthesiologists) have shown inaccuracies. Since frailty (mFI) has strong associations with PCs in other procedures, we hypothesize mFI is predictive of PCs and is more predictive than other prognostic factors in FB.

Does ↑ **Frailty** = ↑ **Postop Complications**

For predicting postoperative outcomes, is **Frailty** > **BMI, Age, ASA Class**

Data
- Data collected from 2010-2018.
- Patients identified by FB procedures (CPT: 19364).

Variables
- Modified frailty index (mFI) calculated by tallying presence of diabetes, COPD, hypertension, congestive heart disease, and non-independent functional status.

Statistical Analysis
- Chi-square test performed to assess significance of complication.
- Significance determined at $p < 0.05$.

1. ACS NSQIP data obtained for 2010-2018
2. Data was sorted into the following risk factors
3. For each risk factor, complication rates were collected

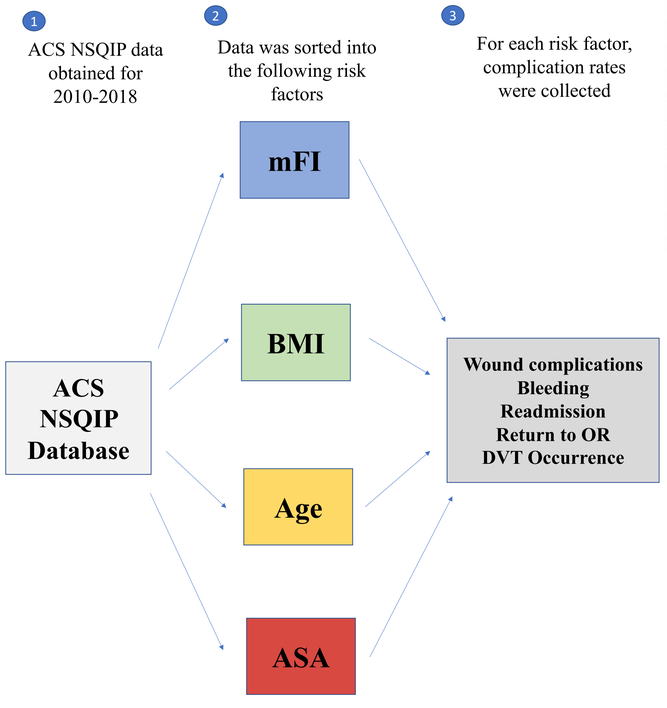
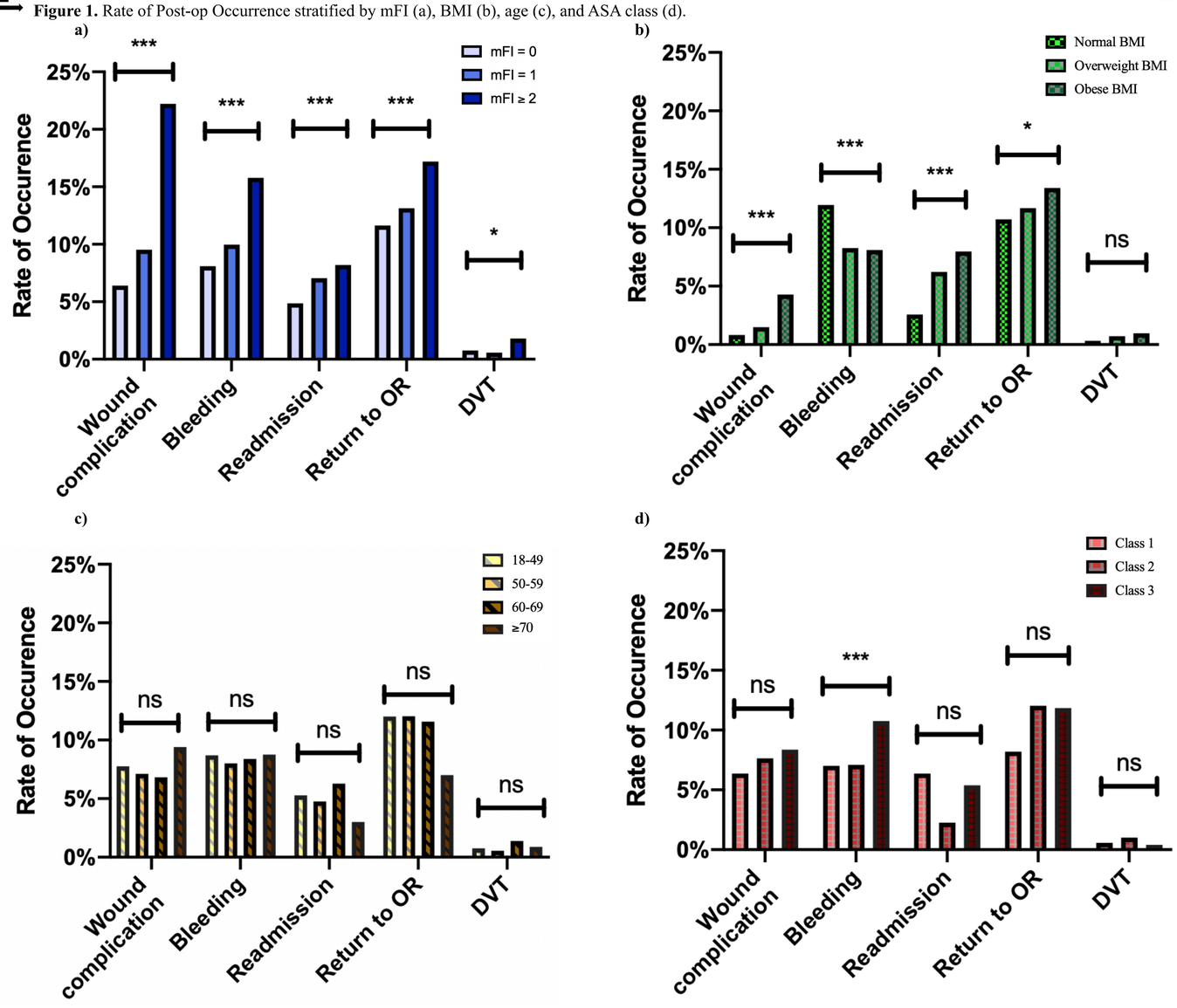


Figure 1. Rate of Post-op Occurrence stratified by mFI (a), BMI (b), age (c), and ASA class (d).



mFI-5: modified 5-factor frailty index.
BMI: Body mass index.
ASA Class: American Society of Anesthesiologists physical status classification system
Wound complication: Complication involving superficial, deep, organ/system infections or wound dehiscence.
Bleeding: Bleeding complication requiring transfusion.
DVT: Occurrence of a deep vein thrombosis.
Return to OR: Unplanned Readmission to operating room.
Readmission: Unplanned Hospital Readmission.

Table 1. Odds ratios in patients by mFI and BMI.

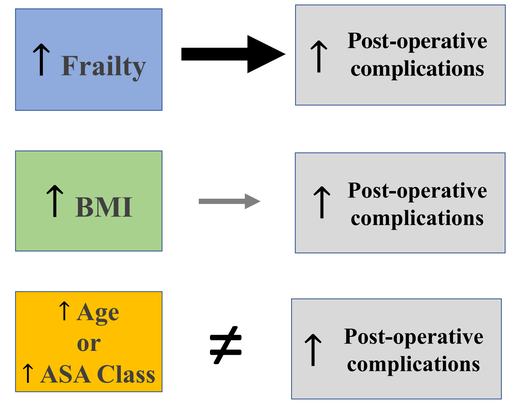
Modified Frailty Index

Odds Ratio (95% CI)	mFI ≥2	p-value
Wound complication	2.017 (1.50, 2.39)	***3.40E-10***
Bleeding complication	2.001 (1.44, 2.79)	***1.27E-05***
DVT occurrence	2.576 (1.01, 6.55)	***0.046***
Return to OR	1.521 (1.11, 2.09)	***9.87E-03***
Unplanned Readmission	1.563 (1.06, 2.31)	***7.64E-05***

Body Mass Index

Odds Ratio (95% CI)	Obese (30+)	p-value
Wound complication	1.421 (1.17, 1.73)	***1.36E-58***
Bleeding complication	0.837 (0.7, 1.0)	***1.49E-04***
DVT occurrence	1.659 (0.94, 2.93)	0.092
Return to OR	1.210 (1.04, 1.40)	***3.01E-02***
Unplanned Readmission	2.137 (1.76, 2.60)	***2.20E-18***

Only frailty (mFI) showed consistent increases and higher odds of complications, suggesting frailty is most predictive of postoperative complications.



Impact and Future Directions

mFI may be used as a preoperative tool to counsel surgeons to optimize surgical management.

We intend to study frailty in lower limb flap procedures and add functionality to UMass electronic medical records or develop an application for quick mFI calculation.

1. Collect mFI for given patient
2. Consult patients and assess risk
3. Prevent postop complications

To learn more about the study, *scan here*:

References and Acknowledgements
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University of Massachusetts Medical School

Alex Joo BA (alex.joo@umassmed.edu), **Giorgio Giatsidis** MD, PhD (giorgio.giatsidis@umassmed.edu)
Division of Plastic and Reconstructive Surgery: Restorative and Regenerative Surgery Innovation Center (https://www.umassmed.edu/resice/)