Does frailty predict worse outcomes in elderly paraesophageal hernia repair patients?

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Disclosures

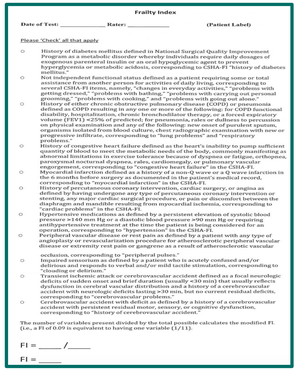
- Jon Gould: Medtronic (Speaker), Ethicon (Consultant)

Background

- Frailty is a reflection of a patient's physiologic reserve and has been associated with worse surgical outcomes in the elderly.
- We hypothesized that frail, elderly, patients undergoing laparoscopic paraesophageal hernia surgery would have worse 30-day outcomes, as measured by complication rate and index hospital length of stay (LOS).

Methods

- A single-center observational cohort study was conducted of elderly patients (age ≥65) undergoing laparoscopic paraesophageal hernia repair from 2015-2023, collected on a convenience sample basis.
- Frailty testing was performed preoperatively and included "Timed Get Up and Go" (TGUG) (stand, walk 3 meters, return, and sit), grip strength, and a modified Frailty Index (mFI).



Frailty Index

Date of Test: _____ Rater: _____ (Patient Label)

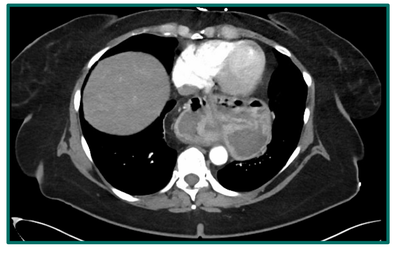
Please 'Check' all that apply

- History of diabetes mellitus defined in National Surgical Quality Improvement Program as a metabolic disorder whereby individuals require daily dosages of exogenous parenteral insulin or an oral hypoglycemic agent to prevent hyperglycemia or metabolic acidosis, corresponding to CSHA-FI "history of diabetes mellitus."
- Not independent functional status defined as a patient requiring some or total assistance with self-care and maintaining a home, corresponding to "problems with several CSHA-FI items, namely, "changes in everyday activities," "problems with getting dressed," "problems with bathing," "problems with carrying out personal grooming," "problems with cooking," and "problems with going out alone."
- History of either chronic obstructive pulmonary disease (COPD) or pneumonia defined as COPD with severe symptoms and/or severe exercise limitation, functional disability, hospitalization, chronic bronchodilator therapy, or a forced expiratory volume (FEV1) <25% of predicted; for pneumonia, rales or dullness to percussion of solidification on physical exam, fever, purulent sputum, or organisms isolated from blood culture, chest radiographic examination with new or progressive infiltrate, corresponding to "lung problems" and "respiratory problems."
- History of congestive heart failure defined as the heart's inability to pump sufficient blood to meet the body's metabolic demands, or the inability to compensate without abnormal limitations in exercise tolerance because of dyspnea or fatigue, orthopnea, paroxysmal nocturnal dyspnea, rales, cardiomegaly, or pulmonary vascular congestion on physical exam, corresponding to "heart problems" in the CSHA-FI.
- Myocardial infarction defined as a history of a non-Q wave or a Q wave infarction in the 6 months before surgery as documented in the patient's medical record, corresponding to "myocardial infarction" in the CSHA-FI.
- History of percutaneous coronary intervention, cardiac surgery, or angina as defined by a history of percutaneous coronary intervention, cardiac surgery or stenting, any major cardiac surgical procedure, or pain or discomfort between the diaphragm and mandible resulting from myocardial ischemia, corresponding to "angina pectoris" in the CSHA-FI.
- Hypertensive medications as defined by a persistent elevation of systolic blood pressure ≥140 mm Hg or a diastolic blood pressure ≥90 mm Hg or requiring antihypertensive treatment at the time the patient is being considered for an operation, corresponding to "hypertension" in the CSHA-FI.
- Peripheral vascular disease defined as a history in the patient with any type of angioplasty or revascularization procedure for atherosclerotic peripheral vascular disease or extremity rest pain or gangrene as a result of atherosclerotic vascular occlusion, corresponding to "peripheral pulses."
- Impaired sensorium as defined by a patient who is acutely confused and/or disoriented, corresponding to verbal and/or mild tactile stimulation, corresponding to "delusions or delirium."
- Transient ischemic attack or cerebrovascular accident defined as a focal neurologic deficits of sudden onset and brief duration (usually <30 min) that usually reflects dysfunction in cerebral vascular distribution and a history of a cerebrovascular accident with residual deficits defined as a CVA >30 min, but no current residual deficits, corresponding to "cerebrovascular problems."
- Cerebrovascular accident with deficit as defined by a history of a cerebrovascular accident with persistent verbal, motor, sensory, or cognitive dysfunction, corresponding to "history of cerebrovascular accident."

The number of variables present divided by the total possible calculates the modified FI. (i.e., a FI of 0.09 is equivalent to having one variable (1/11).

FI = _____/_____

FI = _____





- Frailty parameters were set as: TGUG time greater than the cohort average, grip strength less than the cohort average, and mFI score ≥3. If patients refused a test, they were placed within the frail cohort for that test.
- Outcomes were assessed utilizing univariate and multivariate analysis, adjusting for confounders. P<0.05 was considered significant.

Results

- A total of 61 patients were included. Cohort characteristics included average age of 75.3 (±7.6), average BMI of 30.0 (±5.9), 47(77%) female, and 60 (98%) Caucasian. All patients had medical comorbidities, the most common being HTN (44, 69%), GERD (40, 66%), and HLD (24, 39%).
- All surgeries were performed laparoscopically and all patients received a fundoplication (97% Toupet fundoplication).
- The average TGUG time was 8.4 seconds (±2.5) with 29 (47%) considered frail. The average grip strength pressure was 33.3 PSI (±16.5) with 9 (15%) considered frail. Nine patients (15%) were considered frail by mFI.
- The median index LOS was 1.8 days (IQR 1.1-2.1).
- Seventeen patients (28%) suffered a complication; 11 (18%) were considered minor, while 6 (10%) were considered major, including 1 reoperation.
- Assessing for the effect of frailty on minor, major, or overall complications, there were no differences found when utilizing the TGUG, grip strength, mFI, or a combination of all three.
- When assessing for the effect of frailty on LOS, we found that patients who were classified as frail by the TGUG test had a longer LOS: 1.97 days (IQR 1.17-2.96) vs. 1.19 days (IQR 1.02-2.14), p = 0.046.
- No difference in LOS was found utilizing the grip strength, MFI or a combination of all three tests.

Conclusion

- Frailty, as assessed by the TGUG test, was associated with longer index hospital LOS.
- None of the tests of frailty were associated with higher complication rates.
- Further research is needed on frailty assessment in elderly patients undergoing major surgery.

References

- Xu TQ, Maguire J, Gould J. The impact of frailty on outcomes following laparoscopic repair of "giant" paraesophageal hernias. Surg Endosc. 2023;37(8):6532-6537.
- Chimukangara M, Frelich MJ, Bosler ME, Rein LE, Szabo A, Gould JC. The impact of frailty on outcomes of paraesophageal hernia repair. J Surg Res. 2016;202(2):259-266.

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