Hiatal Hernia Reporting – Time to Remove Subjectivity?

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Introduction

- The size of a hiatal hernia (HH) is a key determinant of the approach for surgical repair.
- Guidelines recommend including a measurement when identifying HHs; however, endoscopists will often utilize subjective terms, such as “small,” “medium,” and “large”.
- Study aim: compare the axial length measurements and subjective sizing of HHs to manometry and barium swallow with the hypothesis that there will be significant variability of the subjective findings.

Methods

- Retrospective chart review conducted on patients diagnosed endoscopically with HHs and referred for surgical management between 2017 and 2021 at Newton Wellesley Hospital (N=93).
- All endoscopies were performed by either varying staff gastroenterologists or a single staff foregut surgeon (C.P.) at Newton Wellesley Hospital.
- Patient medical records were reviewed, and information collected regarding their HH subjective size assessment, axial length measurement (cm), manometry results, and barium swallow readings.
- Subjective size allocations were coded to reflect ordinal discrete numbers, with larger sizes corresponding to a larger number.
- Linear regression models were used to analyze the correlation between the objective endoscopic axial length measurements and manometry measurements with the endoscopic and barium swallow subjective size allocations.
- The HH subjective size labels and their corresponding manometry measurements were compared using ANOVA.

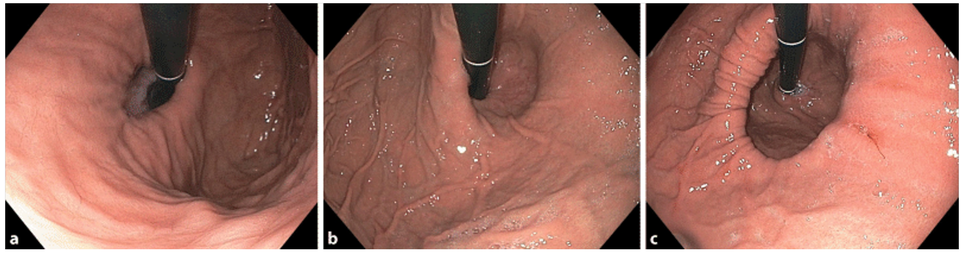


Figure 1. The HHs shown above would be subjectively classified as “small” (a), “medium” (b), and ”large” (c); while their corresponding objective axial length measurements would be 1cm (a), 3cm (b), and 5 cm (c).

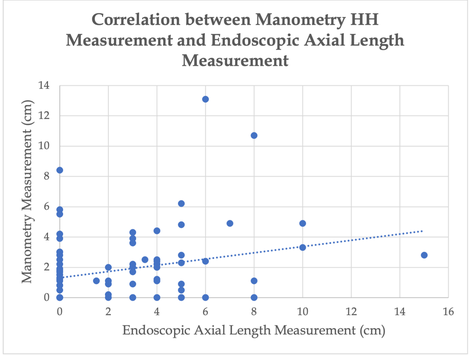


Figure 2. Axial length measurements were significantly correlated with the manometry measurements (R^2= 0.697, p= 0.011)

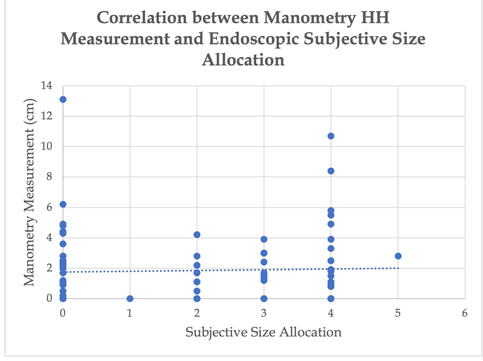


Figure 3. Endoscopic subjective size was not significantly correlated to the manometry measurements (R^2=0.0014, p=.7255)

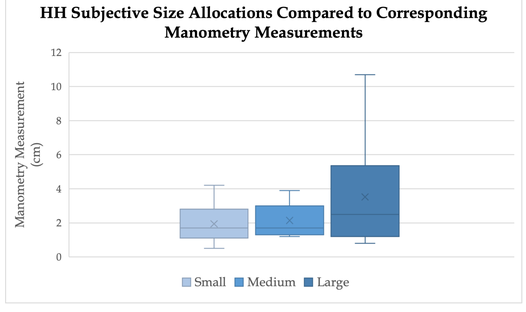


Figure 4. The subjectivity behind the “small”, “medium,” and “large” allocations is further emphasized by this figure showing no significant difference in the manometry measurements between “small” and “medium” (p= 0.748), “medium” and “large” (p= 0.239), or “small” and “large” (p= 0.185). Overall, these results highlight how without any standardization of the terms, the subjective size descriptors are provider dependent and therefore highly variable.

Results

- Of the 93 endoscopies reporting HHs, 42 of the reports gave a subjective size estimate, 38 gave an axial length measurement, and 12 gave both.
- Of the 34 barium swallow reads, only one gave an objective HH size measurement; the remainder gave subjective size estimates.
- Axial length measurements were significantly correlated with the manometry measurements (R^2= 0.697, p= 0.011); however, the endoscopic subjective size estimates were not closely related to the manometry measurements (R^2=0.0014, p=.7255).
- The subjective size estimates from barium swallow reads were not significantly correlated with the endoscopic axial length measurements (R^2= 0.0003, p= 0.86), endoscopic subjective size estimates (R^2= 0.0097, p= 0.3446), or the manometry measurements (R^2= 0.0160, p= 0.2268).
- When the endoscopic subjective sizes were compared to their corresponding manometry measurements, there was no significant difference between “small” and “medium” (p= 0.748), “medium” and “large” (p= 0.239), or “small” and “large” (p= 0.185).

Conclusions

- Subjective size measurements assigned to HHs via endoscopy and barium swallow lack a consistent definition, leading to considerable variability and poor correlation to objective manometry findings.
- These results suggest that size measurements should be documented when describing HHs endoscopically and radiographically to better guide clinical decision-making.