

POSTER OF DISTINCTION

SCIENTIFIC SESSION 1: NEONATAL SURGERY

July 2, 2021

P3

PREDICTORS OF ANTI-REFLUX PROCEDURE FAILURE IN ESOPHAGEAL ATRESIA PATIENTS

Kyle Thompson¹, Thomas E. Hamilton, MD², Benjamin Zendejas-Mummert¹, Ali Kamran, MD², Wendy Jo Svetanoff, MD, MPH³, Peter Ngo¹, Michael Manfredi¹, Jessica Yasuda¹, Russell W. Jennings, MD², Charles J. Smithers⁴

¹Boston Children's Hospital, ²Boston Children's Hospital, Boston, MA, USA, ³Children's Mercy Kansas City, Kansas City, MO, USA, ⁴Johns Hopkins All Children's Hospital, St. Petersburg, FL, USA

Purpose

Anti-reflux procedures (ARP) in esophageal atresia (EA) patients can be challenging due to prior operations, hiatal hernia (HH), anastomotic stricture, microgastria, and/or dysmotility. Hence, ARP failures (ARPF) are not uncommon in this population. We sought to determine predictors of ARPF in EA patients.

Methods

Single-institution retrospective review of EA patients who underwent an ARP from 2002-2019 was performed. ARPF was defined as HH recurrence, wrap migration/loosening, or reoperation. Predictors of ARPF were evaluated using univariate and multivariate time-to-event analysis.

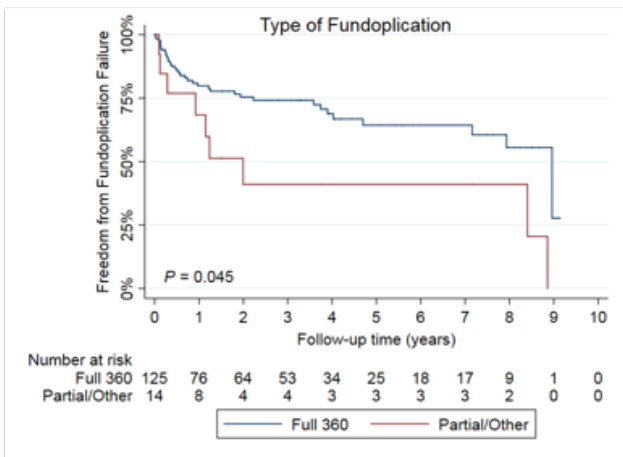
Results

21 patients (52% female; EA type C [52%], A or B [47%]; 52% with history of Foker procedure; 14% with prior ARP and 54% with a HH) underwent 140 ARP at a median age of 13.5 months (IQR 7, 26.5). Nissen fundoplication (89%) was the most common ARP, often performed via laparotomy (75%). Mesh reinforcement was used in 41% of patients. With a median follow-up of 3.2 years (IQR 0.9, 5.8), 44(31%) instances of ARPF occurred, though only 20(14%) required reoperation. Median time to ARPF was 8.7 months (IQR 3.2, 25). Univariate predictors of ARPF included partial fundoplication (60% vs 28% for Nissen fundoplication, $p=0.01$), lack of mesh reinforcement (39% vs 21% with mesh, $p=0.02$), and lack of endoscopic guidance to mark the gastroesophageal junction (GEJ, 48% vs 22% with, $p=0.0002$). Multivariable time-to-event analysis demonstrated partial fundoplication (HR 2.22 [95% CI 1.01-4.78]) and minimally invasive repair (HR 2.57 [95% CI 1.12-6.01]) to be significant predictors of ARPF (Figure 1a-b). Mesh-related complications (all asymptomatic intra-gastric mesh erosions) occurred in 5/58 (9%) cases.

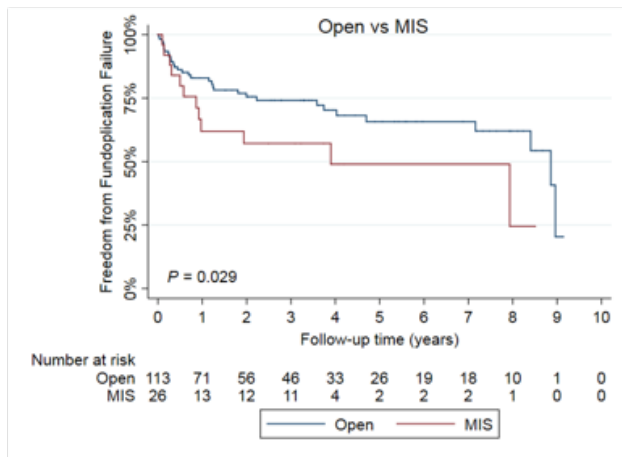
Conclusion

About 1/3 of anti-reflux procedures in EA patients can fail. In our practice, a Nissen fundoplication performed via laparotomy provided the least risk of ARPF. Endoscopic guidance for GEJ identification and mesh reinforcement appear to decrease the risk of ARPF but warrant further study.

1a:



1b:



1a: Kaplan-Meier Curve comparing full 360-degree wrap vs partial wrap and time to wrap failure

1b: Kaplan-Meier Curve comparing open operative approach vs minimally invasive (MIS) for ARP and time to wrap failure. Includes only patients with full 360-degree wrap