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Title

Are Multichannel Intraluminal Impedance Measurements Useful in  
Esophageal Atresia

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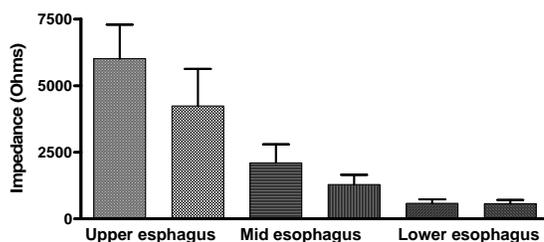
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**Objective:** Patients with esophageal atresia (EA) frequently have esophageal dysmotility and gastroesophageal reflux which is often hard to characterize as these patients are often asymptomatic. Combined multichannel intraluminal impedance (MII) and pH measurement is a novel method detecting intraesophageal bolus movement. Our aim was to determine if MII is able to effectively detect the retrograde bolus movement (i.e. reflux) in patients with EA.

**Methods:** We retrospectively reviewed MII-pH tracings and medical records of 20 patients at our institution. Patients were categorized into 3 groups: patients with repaired EA (6), patients with documented gastroesophageal reflux disease (GERD) without EA (7) and patients with normal studies and without EA (7). Sensitivity and diagnostic accuracy of MII-pH monitoring and symptom association were measured in the three groups. The baseline amplitudes of all 6 channels of the catheter were compared between the three groups at rest and in the recumbent position. In the subgroup of patients with EA, analysis of the impedance measurements in the 6 individual channels was performed, when the patient was upright.

**Results:** Symptoms of reflux captured by MII-pH measurements were higher in patients with GERD (50%) vs. pts with repaired EA (10%) which was statistically significant ( $p < 0.001$ ). The baseline amplitude of the esophageal at rest in the recumbent position was significantly lower in patients with repaired EA when compared with patients with GERD and the control group ( $p < 0.001$ ).



The amplitude of the individual 6 impedance channels were compared in the EA patients with significant difference between the upper channels and the lower channels as demonstrated in this Figure ( $p < 0.001$ ).

**Conclusion:** The low baseline amplitude observed in esophageal

atresia appears to impair the capacity of MII-pH to capture the changes associated with reflux in esophageal atresia patients. The subtle changes in the esophagus in EA patients not acquired by MII-pH is postulated to be secondary to the poor esophageal function and/or stasis of liquid observed in these patients as suggested by the significant difference in impedance values in the upper esophagus vs. the lower esophagus in these patients .