

**Supplementary Table 1. Endoscopic sedation, chronic opioid use, and distension-induced contractility pattern among achalasia patients.** No differences in endoscopic sedation parameters were detected (i.e.  $P > 0.05$ ) among comparisons performed between presence versus absence of i) contractility, ii) repetitive retrograde contractions (RRC) pattern, occluding contraction presence, or iv) sustained occluding contraction. Chronic opioid use was more frequently observed among patients with contractility presence vs absence ( $P=0.018$ ) and RRC pattern presence vs absence ( $P=0.017$ ) on FLIP panometry, but there were not differences based on occluding contractions or SOC presence.

FLIP panometry	n	Midazolam, mg; mean (SD)	Fentanyl, mcg; mean (SD)	Propofol; n (%)	Ketamine; n (%)	Chronic opioid use; n (%)
Contractility present	110	6.5 (3.2)	143 (58)	18 (16)	11 (10)	15 (14)
Contractility absent	70	6.0 (3.4)	132 (62)	17 (24)	8 (11)	2 (3)
RRC pattern present	47	6.0 (2.7)	131 (53)	9 (19)	7 (15)	9 (19)
RRC pattern absent	133	6.4 (3.5)	142 (62)	26 (20)	12 (9)	8 (6)
Occluding contractions present	124	6.4 (3.2)	137 (61)	9 (16)	8 (14)	8 (14)
Occluding contractions absent	56	6.3 (3.4)	139 (59)	26 (21)	11 (9)	9 (7)
SOC present	22	6.3 (3.3)	132 (65)	3 (14)	1 (5)	3 (14)
SOC absent	158	6.3 (3.3)	140 (59)	32 (20)	18(11)	14 (9)

**Supplemental Figure 1. Correlation and importance ranking among training cohort.** Correlation coefficients demonstrated redundancy of 40-ml pressure, 50-ml pressure, and 60-ml pressure. Feature ranking based on correlation (lower left) and random forest model (lower right) demonstrating importance of features.