Introduction Recent studies have shown that high resolution manometry (HRM) detects more transient lower oesophageal relaxation (TLOSR) than the established sleeve sensor. Previous studies using the sleeve sensor have suggested that when a hiatus hernia (HH) is present and in patients with more severe oesophagitis, gastro-oesophageal reflux (GOR) more commonly occurs due to mechanisms other than TLOSR. We have developed a unique ambulatory HRM system to study mechanisms of GORD under more physiological conditions in patients with reflux oesophagitis or Barrett’s oesophagus, with and without hiatus hernia.

Methods 10 patients with HH and six patients without HH (all with an endoscopic diagnosis of reflux oesophagitis) were studied after a fast for at least 4 h. A 36 channel solid state HRM/impedance catheter was placed spanning the stomach to pharynx. A pH electrode was placed 5 cm above the GOJ. Patients were studied at rest and during 15 min of standardised exercise on an exercise bike, before and after a meal (sausage or bacon with egg sandwich with 500 ml of milkshake—736 calories). In addition subjects walked for 30 min in the post-prandial period.

Results 12 patients were male; median age 60 (range 35–76) years; six patients had LA A/B oesophagitis and 10 patients had LA C/D (5) or Barrett’s oesophagus (5). Acid reflux episodes in patients with HH were due to tLOR in 90%, low LOS pressure in 6% and swallowing in 4%, whereas in patients without HH they were due to tLOR in 88%, low LOS pressure in 4% and swallowing in 8%. tLOR appeared to be more frequent in patients with HH (15.5 (IQR 11.1–18.7) per hour vs 10 (IQR 7.6–15.6) per hour) but this difference fell short of statistical significance (p=0.06). There was no difference in the proportion of TLOSR associated with acid reflux in patients with HH (59%) and without HH (47%) but patients with HH were more likely to have impedance evidence of gas or liquid reflux during TLOSR than patients without HH (96% vs 85%, p<0.001).

Conclusion Prolonged ambulant studies of the mechanisms associated with acid gastro-oesophageal reflux reveal that TLOSRs are the predominant mechanism associated with acid reflux in patients with oesophagitis or Barrett’s oesophagus both with and without HH. tLOR appeared to be more common in patients with HH but this difference fell short of statistical significance. Patients with HH were more likely to have evidence of reflux during TLOSR.

Competing interests None declared.