

PWE-123

**SQUAMO-COLUMNAR JUNCTION LOCATOR PROBE:
AN IN VIVO VALIDATION STUDY**

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Introduction The gastro-oesophageal junction is very mobile and constantly changing position with breathing, swallowing and transient lower oesophageal sphincter relaxation (TLESR). The only method currently available for studying its location is fluoroscopic screening and this is limited by radiation exposure. We have developed a method allowing continuous real-time monitoring of the squamo-columnar (SC) junction without radiation exposure. It involves clipping a small magnet endoscopically to the SC junction and monitoring its location by a series of 26 Hall Effect sensors placed at 5 mm interval within a probe placed in oesophageal lumen. The aim of the study was to validate the new technique against fluoroscopy.

Methods In eight subjects, the magnet was attached and locator probe inserted. During simultaneous fluoroscopy, subjects were asked to perform normal breathing, deep breathing, water swallows and finally advancement and retraction of locator probe over 12 cm segment. The fluoroscopy recorded images at a rate of 5 frames per seconds and the locator at 8 Hz. The position recorded by fluoroscopy and locator at each second interval were compared as well as amplitude of each complete manoeuvre.

Results The correlation co-efficient for all 224 position readings was 0.96 (95% CI 0.89 to 0.96) and adjusted residual

Table 1 PWE-123 Comparison and correlation of data from locator probe and fluoroscopy screening

Manoeuvre (N; n)	Correlation co-efficient (95% CI)	Adjusted R ²	Median fluoroscopy amplitude (mm)	Median locator amplitude (mm)
Normal breathing (N=6, n=24)	0.94 (0.93 to 1.28)	0.88	5.50	5.17
Deep breathing (N=10, n=66)	0.95 (0.91 to 1.07)	0.90	12.25	12.01
Water Swallow (N=7, n=55)	0.92 (0.58 to 0.94)	0.84	25.00	26.23
Insertion and Withdrawal (N=6, n=80)	0.95 (0.82 to 0.96)	0.90	92.80	85.59

N; number of events, n; number of 1 s interval data points from events, R²; residual squared, mm; millimetres

squared (R²) of 0.91. The amplitude for the different manoeuvres was similar by the two techniques (see table 1).

Conclusion The locator allows continuous monitoring of the location of the SC junction with an accuracy equivalent to fluoroscopic screening and without any radiation exposure.

Competing interests None.

Keywords squamo-columnar junction, Hall Effect, validation, fluoroscopy.