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Clinical Image

Postoperative Recovery of Esophageal Function Measured by High Resolution Impedance Manometry

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1. Keywords: High-resolution impedance manometry; Postoperative recovery; Oesophageal function; Pressure-flow analysis

2. Clinical Image

The high resolution impedance manometry (HRIM, 36 pressure sensors; 12 impedance, MMS, Netherlands) was used to examine the postoperative recovery of esophageal function by pressure flow analysis [1].

Complete recovery of postoperative esophageal function was divided into two parts: (1) The bolus fluid successful transmit through gastro esophageal (GE) junction and, [2] The bolus fluid successfully transmit through the transition zone of the esophagus.

The definition of bolus fluid successful through the GE junction should meet the criteria of both bolus presence and a flow-permissive pressure gradient [1].

- The onset of bolus presence is the impedance dropped to 90% of the nadir; the offset of bolus presence was the return to 50% of the impedance baseline.
- When the esophageal pressure was greater than both the lower esophageal sphincter pressure (LESP) and intra-gastric pressure signals (IGP).

The **figure 1** is the successful example. The **figure 2** is the failed one. The fluid is accumulated around the GE junction without passage into the stomach, even the esophageal sphincter pressure is higher than the LESP and IGP.

The definition of bolus successfully transmit through the region which the impedance located in the transition zone of esophagus is as following:

- Bolus entry is the 50% drop in impedance from baseline relative to nadir [2].
- Bolus exit is at the 50% recovery point from nadir to baseline [2].
- The bolus entry and bolus exit last for more than 5 seconds [3].

The **figure 3** showed the one of the impedance change at the transition zone of esophagus.

The pressure flow analysis in the HRIM could provide us the informative details about postoperative recovery of esophageal function. It may help clinician to differentiate the possible mechanisms of delayed oral intake after surgery.

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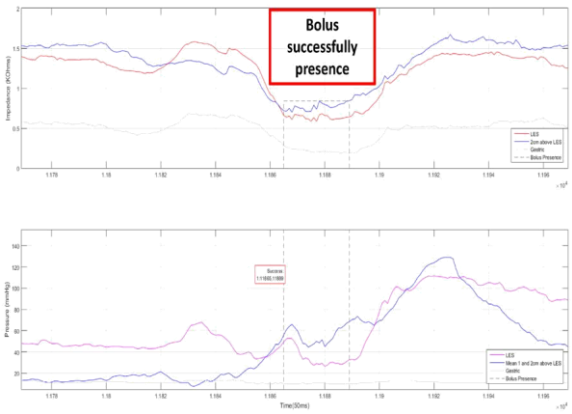

Figure 1: Bolus flow successful transmit through the gastro esophageal junction. The top panel presents the impedance signals which were used to determine the bolus presence. The lower panel presents the pressure signals which used to de-termine the flow permissive pressure gradient.

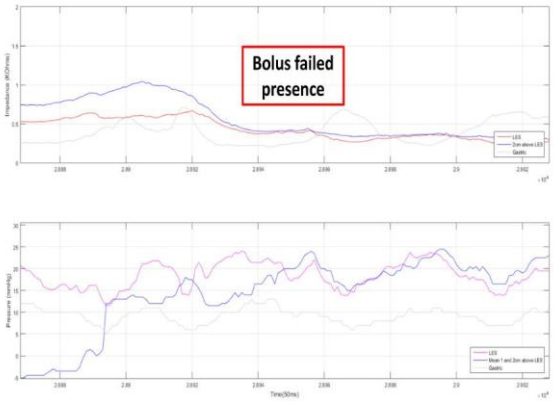

Figure 2: Bolus flow failed to transmit through the gastro esophageal junction. The top panel presents the impedance signals which were used to determine the bolus presence. The lower panel presents the pressure signals which used to de-termine the flow permissive pressure gradient.

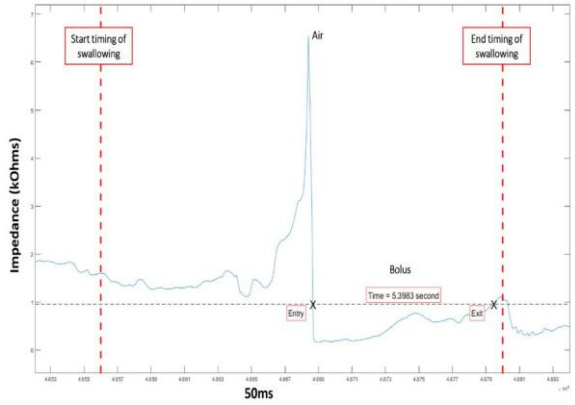

Figure 3: Impedance change measured during the bolus transmit over a single impedance channel. A rapid increase in the impedance channel is noted when the air through the impedance segment. The drop in the impedance channel is the higher conductive bolus material passes through the measuring site. The criteria is fulfilled the bolus successfully transmit through the region which the impedance located in the transition zone of esophagus.

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