

## INVESTIGATION OF THE UPPER GASTROINTESTINAL TRACT IN CHILDREN AND ADULTS

Endoscopy has rightly replaced the barium swallow and meal for the investigation of many upper GI complaints. However for some diagnoses fluoroscopy, and to a lesser extent ultrasound, remain the investigations of choice. This is particularly true when an **assessment of function** is required.

### Adult Applications

An adult with symptoms such as globus, chronic cough or atypical chest pain, could have **abnormalities of swallowing function or oesophageal dysmotility** and this is well assessed by video fluoroscopy (Figs. 1 & 2). Less commonly a patient may regurgitate food many hours after a meal due to a **pharyngeal pouch**. This pouch may have a very small opening that cannot be seen endoscopically.

Swallowing function is assessed in the erect position and the passage of several boluses of liquid barium is recorded for later analysis. In contrast, oesophageal motility is assessed in the prone position, as without the aid of gravity a more accurate assessment of motility is possible. Oesophageal motility is assessed with liquid barium and a barium coated marshmallow (to simulate solid food boluses).

Fig 1. Cricopharyngeus spasm – a prominent posterior impression on the barium column is due to spasm of cricopharyngeus (arrow).



Fig 1

Fig 2. Corkscrew oesophagus – the barium column in the oesophagus shows an abnormal contour typical of tertiary contractions associated with dysmotility.

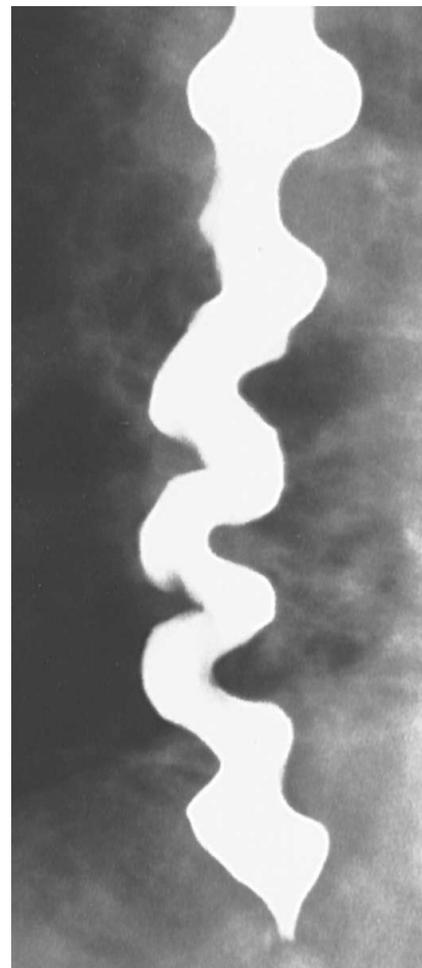


Fig 2

### Paediatric Applications

Bilious vomiting may be a sign of **midgut volvulus** due to malrotation, particularly in the newborn or the young infant. Exclusion of malrotation is best performed by barium meal (Fig 2). Demonstration of normal duodenal position effectively rules out malrotation. However abnormalities of duodenal position may be subtle and duodenal position needs to be carefully assessed. Small bowel volvulus can occur in the absence of malrotation but is extremely rare.

Non-bilious projectile vomiting may be due to **pyloric stenosis**. This occurs most commonly in first born male infants at around six weeks of age. This can be diagnosed by barium meal but nowadays the investigation of choice is ultrasound. Diagnosis of pyloric stenosis is made by demonstration of an abnormally thickened and elongated pylorus (Fig 3). The pylorus will not allow passage of gastric contents into the duodenum, despite active gastric peristalsis.

**Gastro-oesophageal reflux** is very common in infancy and is usually well controlled by medical means. If medical management is not effective, an underlying cause for reflux may be present. A barium meal is often requested in this setting for exclusion of a hiatus hernia or delayed gastric emptying.

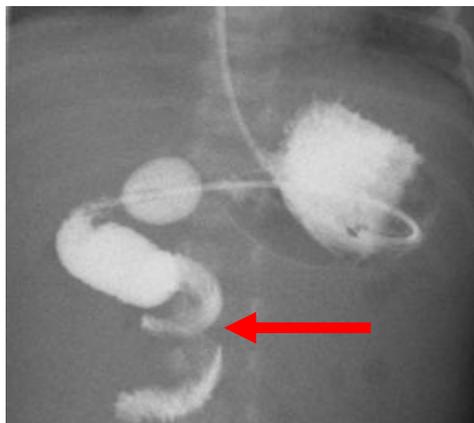


Fig 3. Midgut Volvulus – Barium meal shows a corkscrew appearance in the duodenum and proximal jejunum diagnostic for midgut volvulus (arrow).

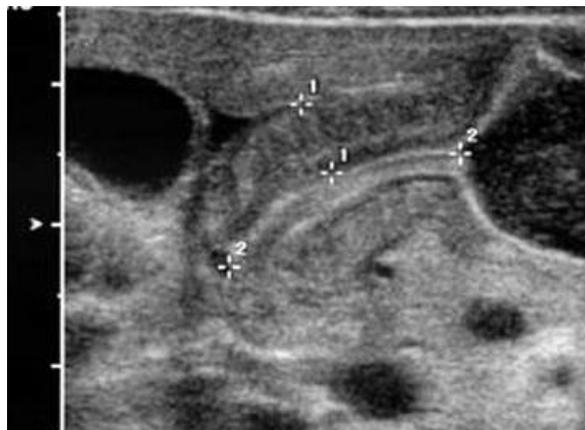


Fig 4. Pyloric Stenosis – Ultrasound demonstrates a thickened and elongated pylorus as marked by calipers.

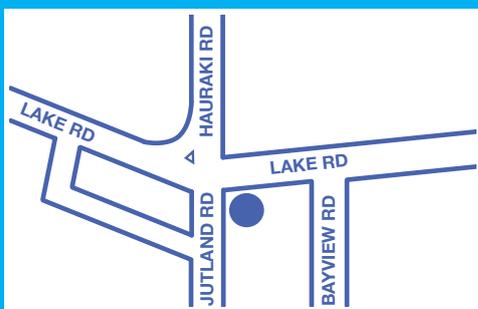
These studies require minimal preparation beyond fasting, and are well tolerated by most patients. No sedation is necessary in children at any age. Barium is pleasant tasting. However many patients do find the texture and chalky residue unpleasant. In experienced hands adequate assessment is possible in all but the most uncooperative toddlers. Even with these difficult customers it is very rare that no useful information is obtained. At ARG we have experienced radiologists with the expertise required for thorough and accurate assessment of upper gastrointestinal problems in both children and adults.

**Glen Thomson**

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