Skillslab 2018, Maribor, Slovenia

Paediatric gastrointestinal endoscopy

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Bacground and History

Endoscopy (biopsy) devices

Endoscopy protocol

Indications
Nonindications
Contraindications

Case report

Basic endoscope handling

Hands-on training

PAEDIATRIC GASTROINTESTINAL ENDOSCOPY

Paediatric Gastrointestinal Endoscopy: European Society for Paediatric Gastroenterology Hepatology and Nutrition and European Society of Gastrointestinal Endoscopy Guidelines

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ABSTRACT

This guideline refers to infants, children, and adolescents ages 0 to 18 years. The areas covered include indications for diagnostic and therapeutic esophagogastroduodenoscopy and ileocolonoscopy; endoscopy for foreign body ingestion; corrosive ingestion and stricture/stenosis endoscopic management; upper and lower gastrointestinal bleeding; endoscopic retrograde cholangiopancreatography; and endoscopic ultrasonography. Percutaneous endoscopic gastrostomy and endoscopy specific to inflammatory bowel disease has been dealt with in other guidelines and are therefore not mentioned in this guideline. Training and ongoing skill maintenance are to be dealt with in an imminent sister publication to this.

Keywords pediatric, esophagogastroduodenoscoy, ileocolonoscopy, colonoscopy, ESPGHAN guidelines, ESGE guidelines

(*JPGN* 2017;64: 133–153)

INTRODUCTION

Gastrointestinal (GI) endoscopy in the pediatric population has evolved during the last 30 years with an increasing number of diagnostic and therapeutic applications. Technological improvements in endoscope design and endoscopic devices have contributed to the evolution of pediatric endoscopy.

Endoscopy in the pediatric population has generally, to date, been performed by both nonpediatric endoscopists and pediatric endoscopists.

The aim of this evidence-based and consensus-based guideline, commissioned by the European Society for Paediatric Gastroenterology Hepatology and Nutrition (ESPGHAN) and the European Society of Gastrointestinal Endoscopy (ESGE) is to provide a comprehensive review of the clinical indications and timing of diagnostic and therapeutic endoscopy in pediatric

History of gastrointestinal endoscopy

Kussmaul is generally credited with the first gastroscopy in 1868.

The first approach to the tortuosity of the gut was an instrument with articulated lenses and prisms, as proposed by Hoffmann in 1911.

Semi-flexible gastroscope, the work of Wolf, a fabricator of medical instruments, and Schindler, a physician in 1930.

1954 Hopkins built a model of a flexible fibre imaging device.

1958: the flexible fibreoptic endoscope of Larry Curtiss, then a graduate student in physics, and Basil Hirschowitz, a trainee in gastroenterology.

History of gastrointestinal endoscopy

Highlights from the "golden era" (1968–1990) of gastrointestinal endoscopy

1968 Endoscopic retrograde pancreatography

1969 Colonoscopic polypectomy

1970 Endoscopic retrograde cholangiography

1974 Endoscopic sphincterotomy (w/bile duct stone extraction)

1979 Percutaneous endoscopic gastrostomy

1980 Endoscopic injection sclerotherapy (reinvented)

1980 Endoscopic ultrasonography

1983 Electronic (charge coupled device) endoscope

1985 Endoscopic control of upper gastrointestinal bleeding

1990 Endoscopic variceal ligation

INTESTINAL BIOPSY

Margot Shinner device 1957 - London

INTESTINAL BIOPSY

Suction biopsy device 1980 - Maribor

MODERN ENDOSCOPY

Modern flexible endoscopes

OESOPHAGOGASTRODUODENOSCOPY PROTOCOL (OEGDS)

2.	**Explain** the purpose and the course of the procedure.
6.	Hold the control panel of the endoscope in the **left hand**.
7.	**Check** the suction channel (first button - left index finger).
8.	**Check** the air/water channel (second button – left indexfinger).
9.	**Check** the control knobs (R/L, U/D).
10.	**Slowly** insert the endoscope - **avoid the intubation of the trachea**!
14.	Slowly push the endoscope toward the antrum and to the duodenal bulb.
17.	The hallmark of second portion of the duodenum is the papilla of Vater (usually 9 o'clock).
18.	Start the **withdrawal** phase of the endoscopy and carefully observe all the parts of the duodenum.
19.	Take **biopsy** specimens **on the way back**.
21.	For the inspection of the gastric cardia and fundus perform the **U-turn** manoeuvre - **retroflexion**.
28.	**Explain your findings** to the patient.

OEGDS

Diagnostic and therapeutic indications, nonindications and contraindications.

DIAGNOSTIC INDICATIONS	THERAPEUTIC INDICATIONS	NONINDICATIONS	CONTRAINDICATIONS
Weight loss, failure to thrive	**Percutaneous endoscopic gastrostomy (re)placement**	Uncomplicated gastroesophageal reflux disease	**To diagnose perforation**
Unexplained anaemia	Duodenal tube placement		
Abdominal pain with suspicion of an organic disease	**Foreign body removal**	Functional gastrointestinal disorders	
Dysphagia and odynophagia	Food impaction		
Caustic ingestion	**Hemostasis**		
Recurrent vomiting with unknown cause	Percutaneous jejunostomy placement		
Hematemesis	**Oesophageal varices**		
Hematochezia	Dilatation of oesophageal or upper gastrointestinal strictures		
Unexplained chronic diarrhoea	Perforation closure if this occurs during endoscopy itself		
Suspicion of graft-versus-host disease	Achalasia pneumodilation of occasionay botulinum injection		
Gastrointestinal allergy	Percutaneous endoscopuc gastrojejunostomy tube insertion		
Chronic gastroesophageal efflux disease to exclude other diseases or surveillance of Barrett oesophagus	Cystogastrostomy for drainage of pancreatic pseudocyst (preferably with endoultrasound guidance)		
	Polipectomy, endomucosal resection		

ILEOCOLONOSCOPY PROTOCOL

2.	**Explain** the purpose and the course of the procedure.
6.	Hold the control panel of the endoscope in the **left hand**.
7.	**Check** the suction channel (first button - left index finger).
8.	**Check** the air/water channel (second button – left index finger).
9.	**Check** the control knobs (R/L, U/D).
10.	Perform **digital rectal** examination.
11.	Hold the shaft of the endoscope **20-30 cm from the tip**. The distal 20 cm of the shaft is lubricated. **Slowly** insert the endoscope into the rectum. Bend the tip slightly to the anterior abdominal wall, and rotate the shaft clockwise.
12.	**Avoid aspiration** of the semi-formed stool to prevent clogging of the suction channel.
13.	Intubation of the **sigmoid** colon creates clusters of **sharply angled and bent segments**. Avoid forming larger loops.
14.	**If you do not see the lumen, pull back.**
15.	In case of sharp angle of sigmoid-descending colon angle, put the patient in the **supine position** and apply the **hand pressure** to the abdominal wall.
16.	The lumen of **descending** colon is more **oval**.
17.	**Splenic flexure** is marked by **bluish** discoloration (spleen).
18.	**Transverse** colon has more **triangular** lumen.
19.	Observe the **bluish** discoloration of mucosa acquired from the adjacent **liver**.
21.	Visualise the **appendix orifice**.
22.	Successful exploration of the **terminal ileum** is manifested by the change in colour and texture of the mucosa: it is light pink or yellowish, velvet, with multiple small (< 3mm) lymphoid follicles.
23.	After reaching terminal ileum, start **withdrawing** the endoscope and carefully observe mucosa of all the parts of the colon. Take multiple **biopsy specimen** from all the parts.
24.	Reaching the **rectum**, do the **U-turn** maneuverer to inspect the anal sphincter.
27.	**Explain** your findings to the patient.

ILEOCOLONOSCOPY

Diagnostic and therapeutic indications, nonindications.

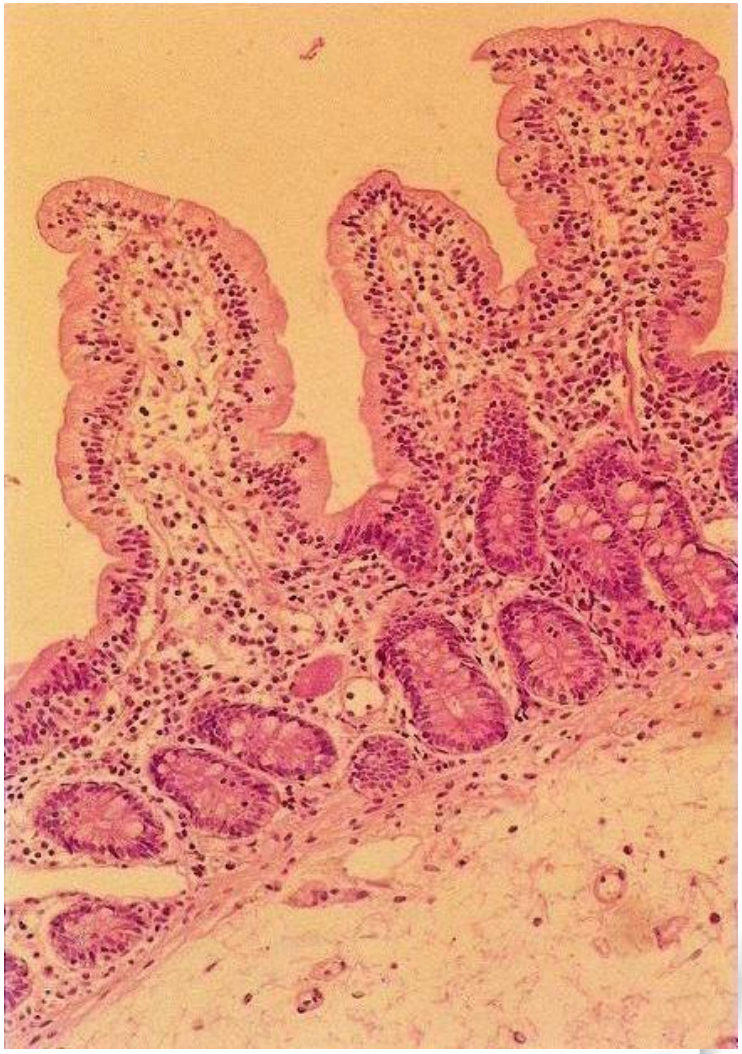
DIAGNOSTIC INDICATIONS	THERAPEUTIC INDICATIONS	NONINDICATIONS	CONTRAINDICATIONS
Unexplained anaemia **Unexplained chronic diarrhoea** **Perianal lesions (fistula, abscess)** **Rectal blood loss** **Unexplained failure to thrive** **Initial work up for inflammatory bowel disease** **Suspicion of graft-versus-host disease** **Rejection or complications after intestinal transplantation** **Radiological suspicion of ileocolonic stenosis/stricture** **Polyposis syndromes** **Orofacial granulomatosis when** **Crohn disease is suspected**	Polipectomy, endomucosal resection or extended submucosal dissection, and removal of sessile polyps Dilatation of ileocolonic or colonic stenosis Treatment of bleeding lesions **Foreign body removal** Reduction of sigmoidal volvulus Cecostomy or sigmoidostomy	Functional gastrointestinal disorders Constipation with normal faecal calprotectin	**Toxic megacolon** **Recent colonic perforation** **Recent intestinal resection (<7 days)**

BIOPSY

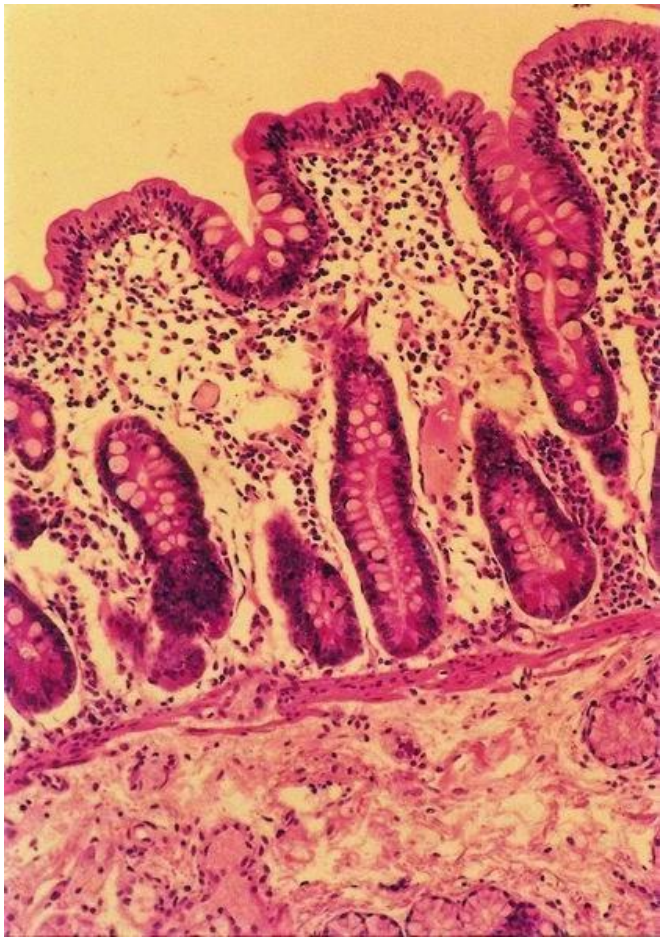
Indication and site of tissue sampling during endoscopy.

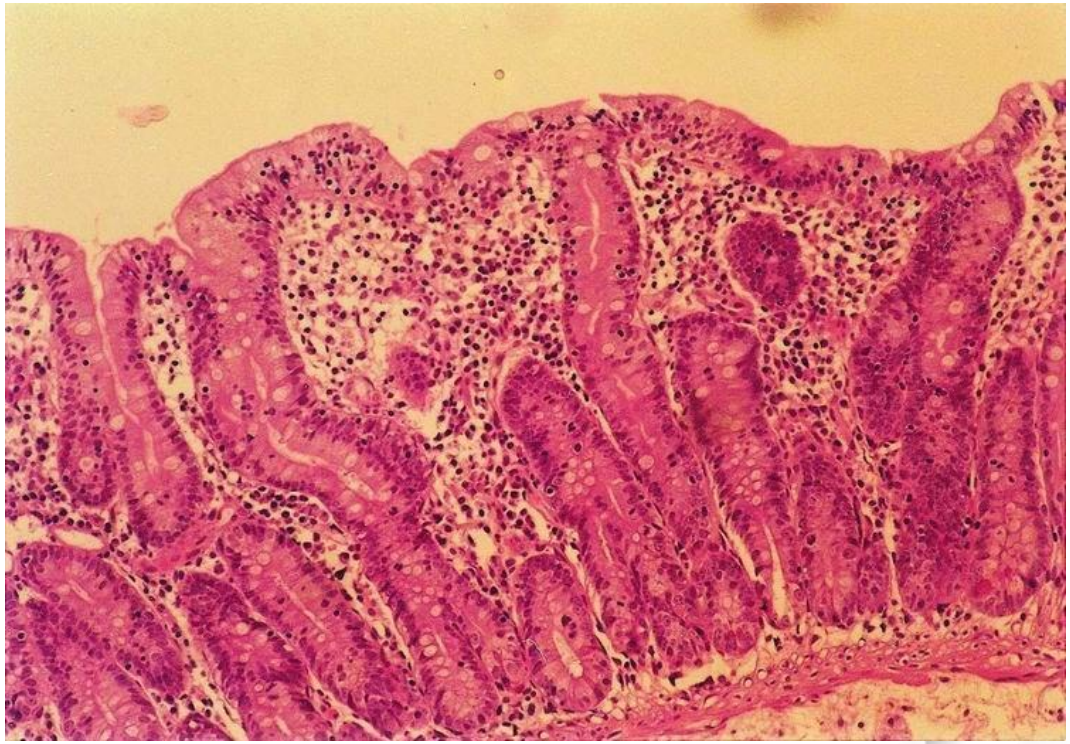
INDICATION	TISSUE SAMPLES SITES AND NUMBERS
Eosinophilic oesophagitis	At least 3 biopsy sites should be targeted with 1-2 biopsies from proximal, middle, and distal oesophagus, regardless of the endoscopic appearance of the oesophagus.
Helicobacter pyori infection	Six biopsies (2 from antrum and 2 from corpus for Sydney classification; 2 for specific H. pylori diagnosis: CLO and culture).
Coeliac disease	At least 1 biopsy from the duodenal bulb and at least 4 biopsies from the second or third portion of the duodenum.
Inflammatory bowel disease	(Multiple biopsies (2 or more per section) from all sections of the visualized GI tract, even in the absence of macroscopic lesions.

BIOPSY – COELIAC DISEASE



BIOPSY – COELIAC DISEASE





Case presentation

CASE REPORT

26m, male

history

- while reading (with mother)
- accidentally swallowed a coin

salivation/vomiting

moderate/severe discomfort

mid thoracic pain

no other signs

CASE REPORT

26m, male

rtg (upper abdomen)

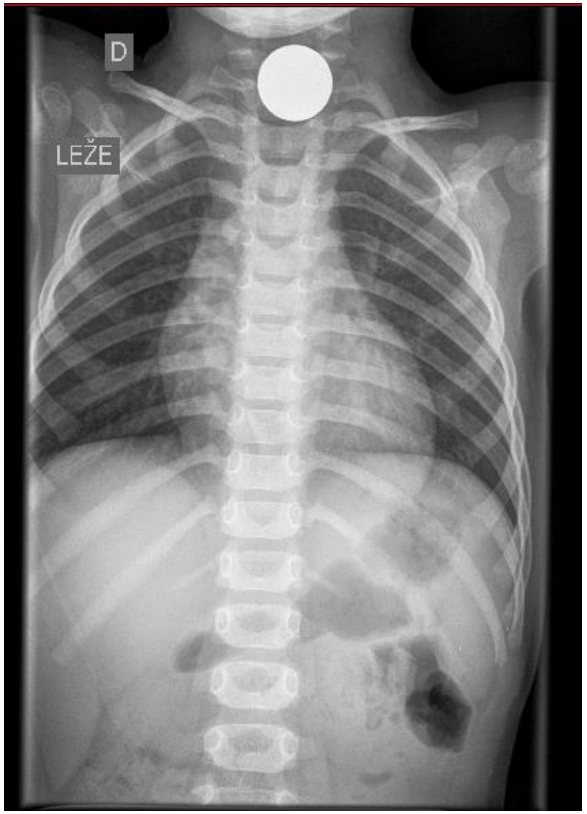
metal detector (before rtg read-out)

- strong signal over the entire upper abdomen

CASE REPORT

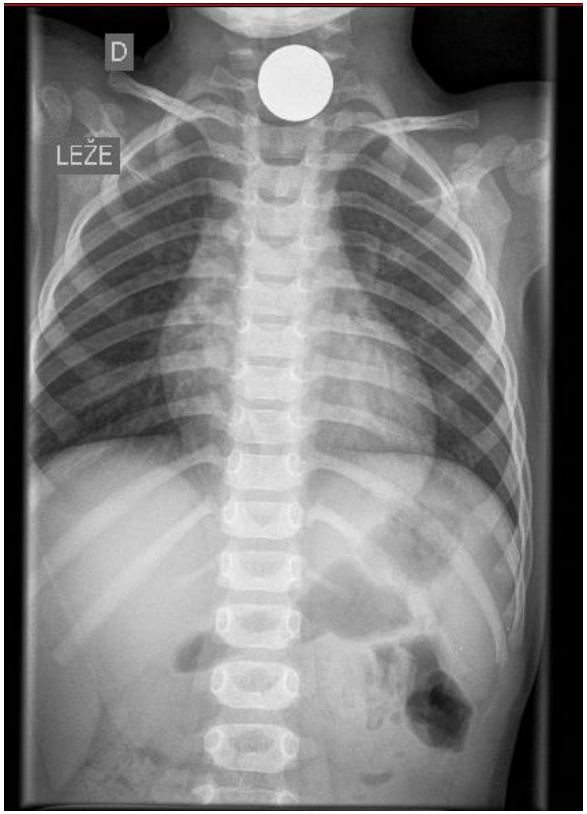
26m, male

rtg pc+abdomen



CASE REPORT

26m, male



refferal to ORL for urgent removal

rigid oesophagoscopy

- general anaesthesia
- visualisation of 1€ in distal oesophagus
- coin slips into the stomach

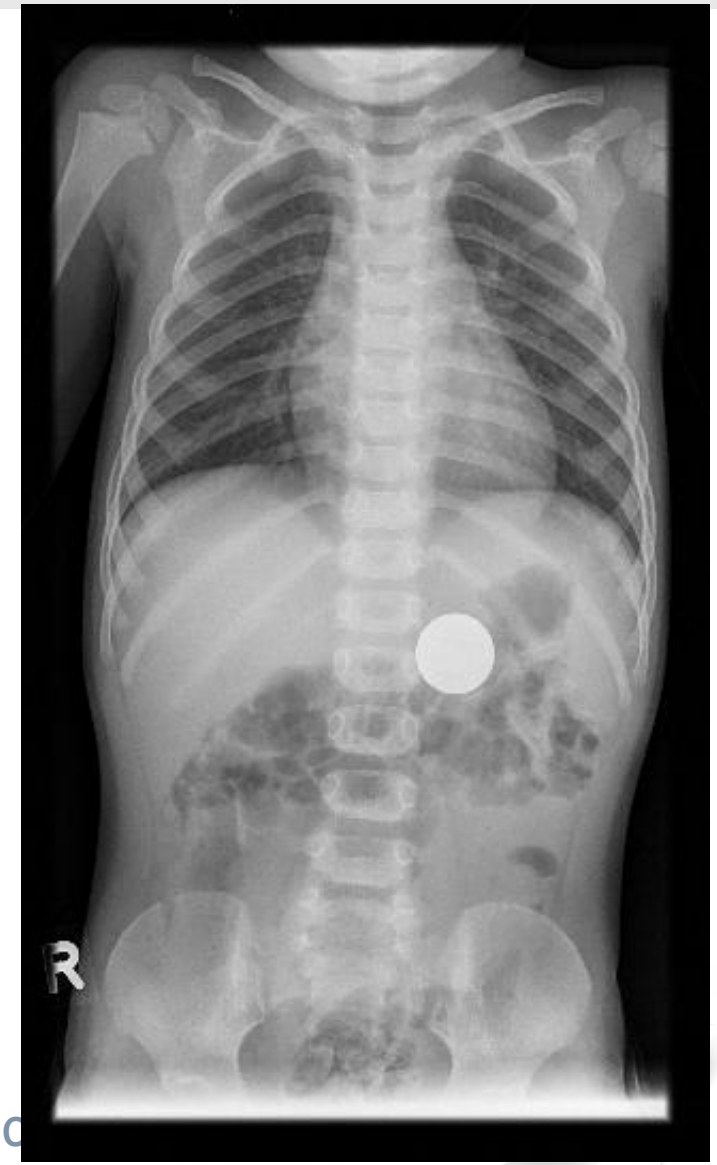
CASE REPORT

observation post anaesthesia

rtg day after

discharged

- careful parental observation of stools



CASE REPORT

control rtg

two days afterwards

- parents work at Court of law

coin in distal jejunum

CASE REPORT

after 5 days

- spontaneous defecation

CASE REPORT

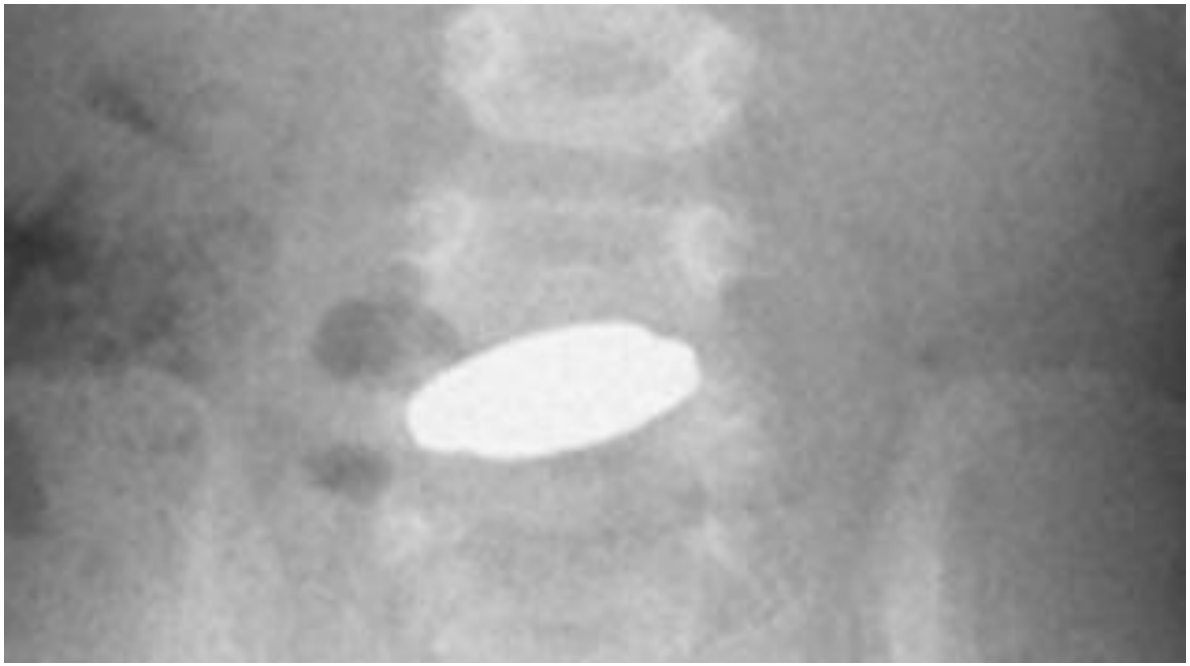
after 5 days

- spontaneous defecation

employed at Bank of Slovenia

- **strong possibility to send him to Brussels**

CASE REPORT



Endoscope handling

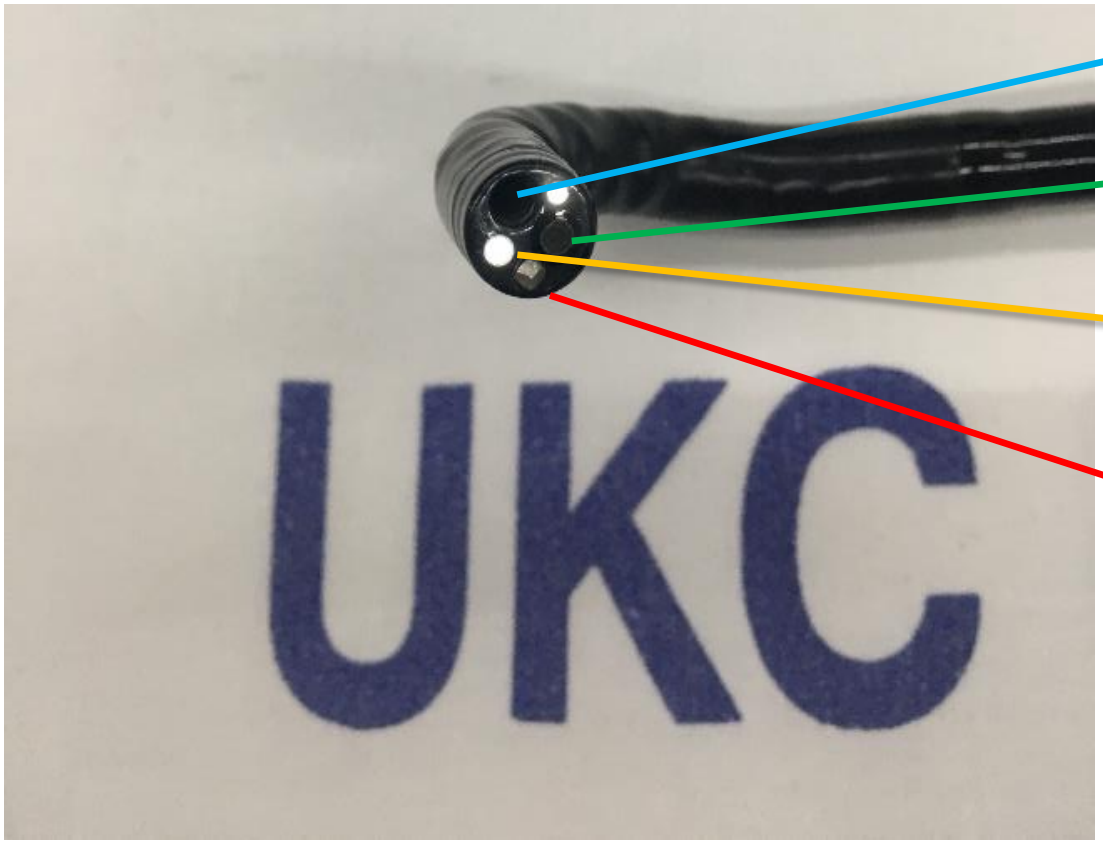
BASIC ENDOSCOPE HANDLING

UP/DOWN WHEEL

LEFT/RIGHT WHEEL

BIOPSY CHANNEL

BASIC ENDOSCOPE HANDLING



BIOPSIY CHANNEL

CAMERA LENS

LIGHT SOURCE

AIR/WATTER CHANNEL

BASIC ENDOSCOPE HANDLING

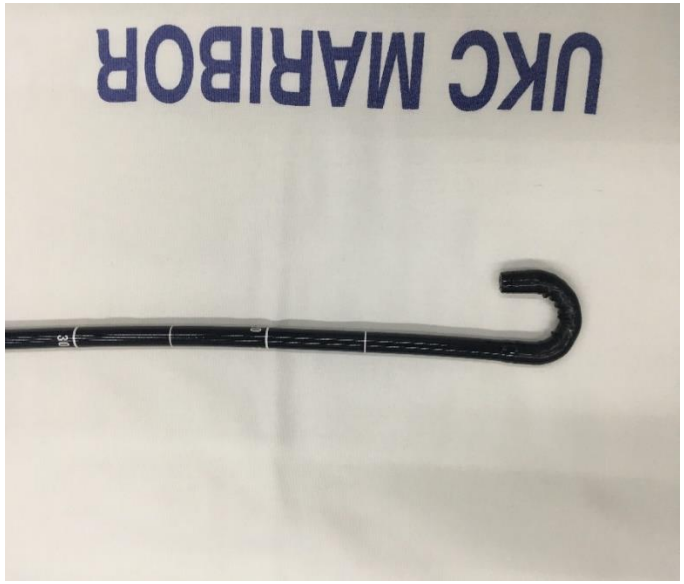
SUCTION KNOB

AIR (LIGHT TOUCH)
WATTER (HARD PRESS)
KNOB

NEUTRAL POSITION

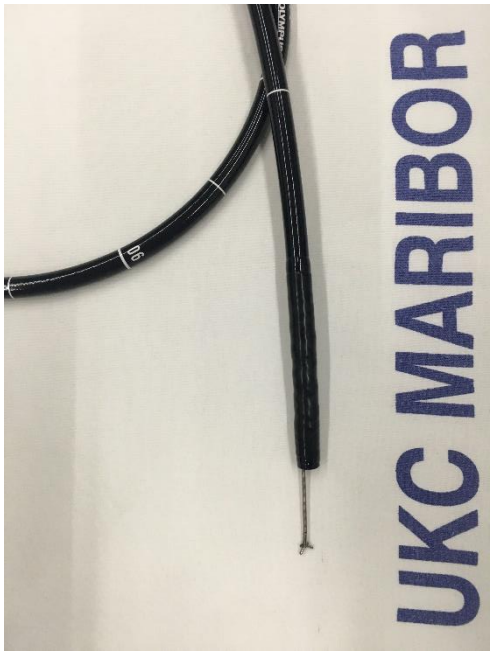
L - U alignment

LOOKING UP

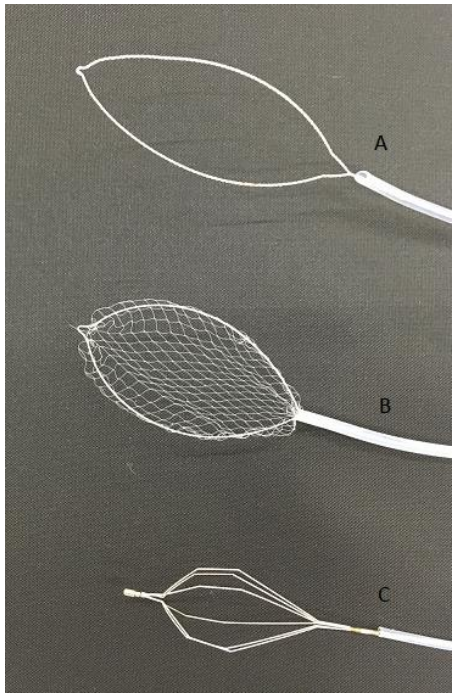


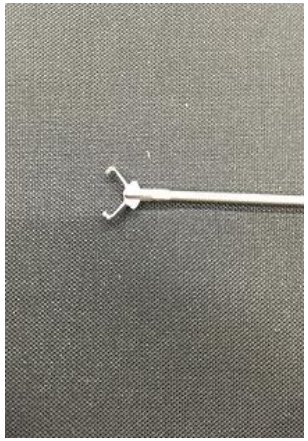
LOOKING DOWN

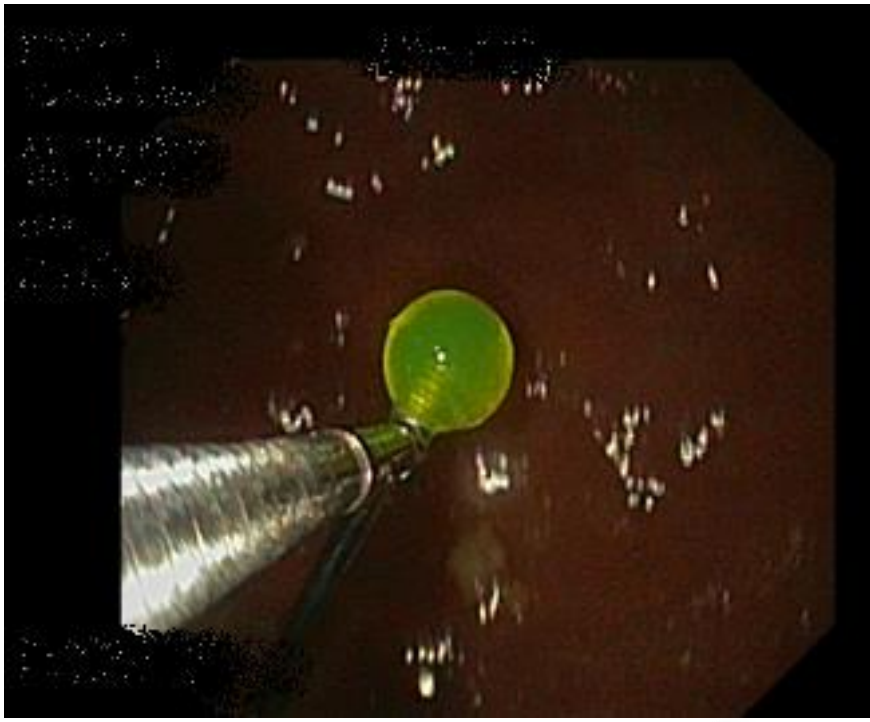
INSERTING BIOPSY FORCEPS



FOREIGN BODY REMOVAL DEVICES



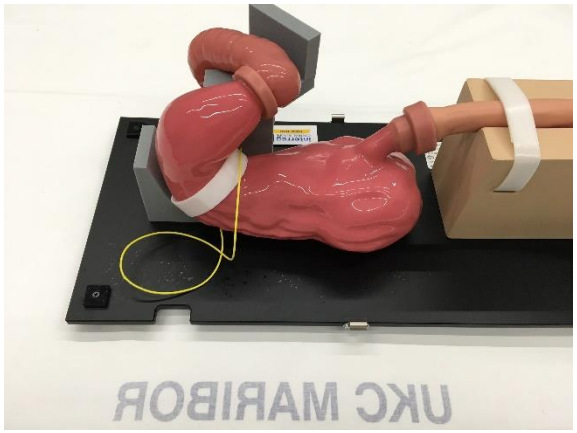




SIMULATOR TRAINING

Hands-on

Lets go



WP T1 ASSESSMENT OF CD MANAGEMENT PRACTICES

primorsko goranska županija

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