Double Contrast Barium Investigation

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THE TRADITIONAL barium meal and enema are common methods of investigation of gastro-intestinal symptoms. Diagnosis depended upon irregularities (tangential and "en face") or filling defects in the filled organ assisted by some air contrast or compressive coning. Observer error and low diagnostic accuracy especially in acute haemorrhage (assessed by endoscopy) should stimulate us to carry out routine double contrast examinations as briefly described below.

Barium Meal

Barium Sulphate is kept in the patient's mouth and then gulped to distend the oesophagus. Besides

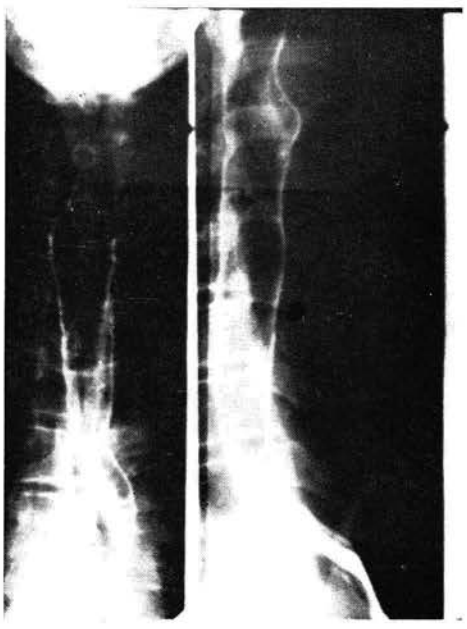

Fig. 1
Double Contrast Oesophagus

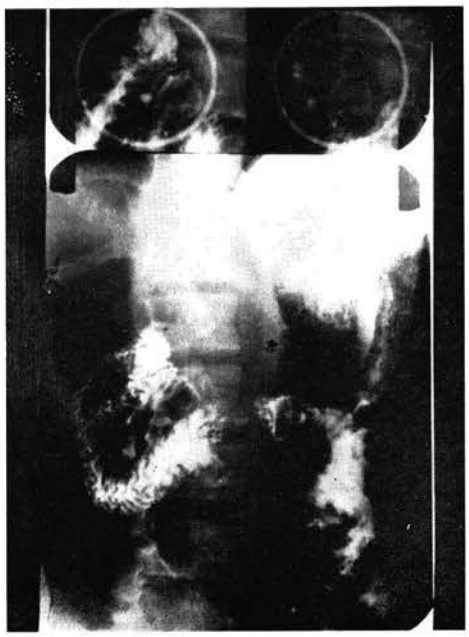

Fig. 2
Cone Views showing Duodenal Bulb Ulcer Crater with radiating folds ("fingers") pointing to it.

PA and Lateral views of the upper oesophagus, erect oblique views taken during the brief moment when the Barium is at the lower end of the oesophagus, shows the upper two thirds distended with gas.

The patient is turned prone and the table tilted to horizontal position with the pad under the abdomen to obtain a view of the anterior wall of the

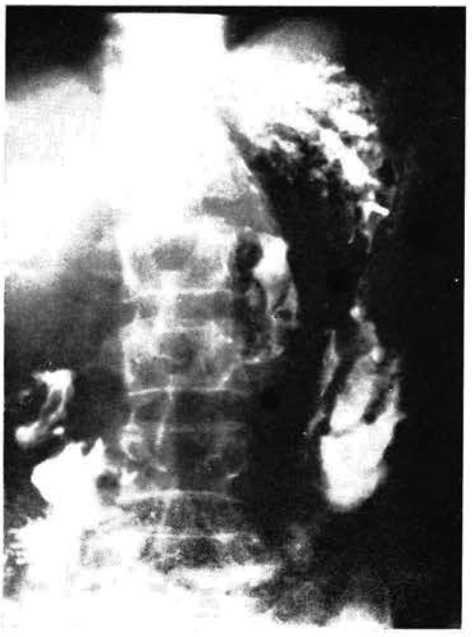

Fig. 3
Supine PA showing Giant Gastric Ulcer Lesser Curve.

Fig. 4
Further Views of Malignant Gastic Ulcer Greater Curve and benign ulcer posterior wall of stomach. Left – Erect P.A. Right – L.A.O.

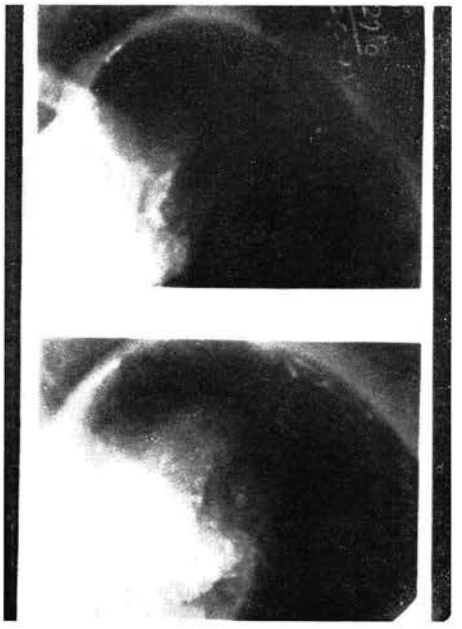

Fig. 5
Carcinoma Fundus.

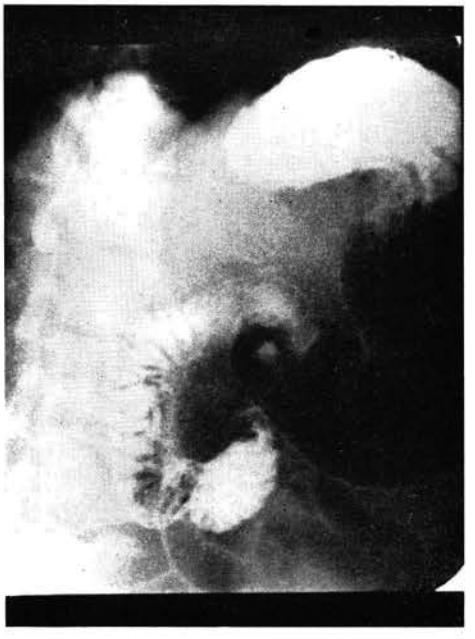

Fig. 6
Tubeless Hypotonic Duodenogram.

stomach. Coca-cola or efferverscent powder/tablets are given and the patient turned supine over the left side (reduces barium entry into duodenum)-added Siloxane helps reduce gas bubles but is not essential.

The patient is moved side to side to coat the stomach surface with barium before AP (for posterior wall of stomach), RAO & LAO films are taken.

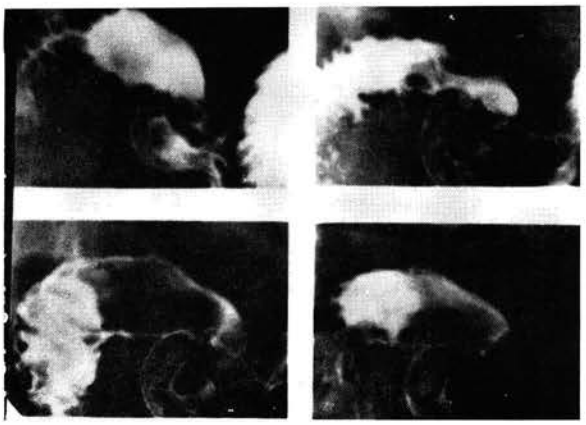

Fig. 7
"Fingers" (lines) pointing to healed (scarred) pyloric canal of perforated gastric ulcer.

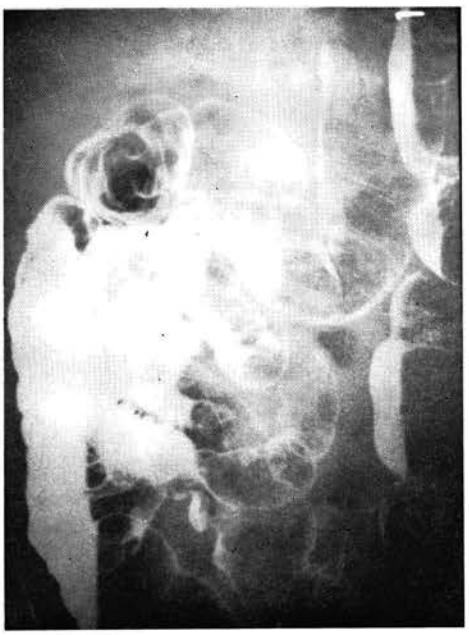

Fig. 8
Ba-enema – Decubitus View in Multiple Polyps of Colon.

The table is brought erect or semi erect for double contrast views of the fundus.

Finally cone compression serial pictures of the duodenum are taken. If pancreatic or distal duodenal disease is suspected, atropine, buscopan, or Glucagon (not available yet) should be given intravenously just before the examination to obtain a modified tubeless hypotonic duodenogram.

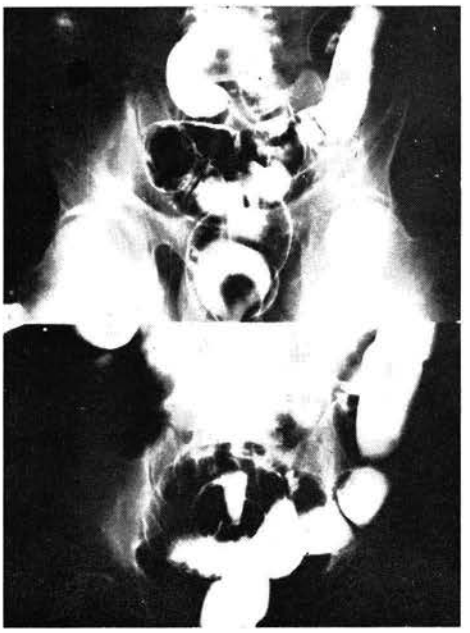

Fig. 9
Ba-enema – Normal
Supine and Prone 45° angled film.

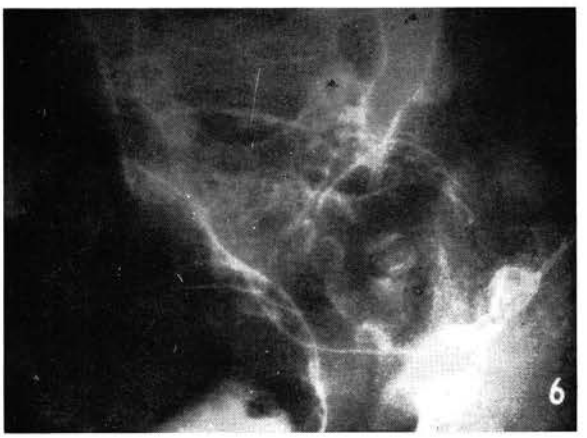

Fig. 10
Close up view of multiple polyps of colon.

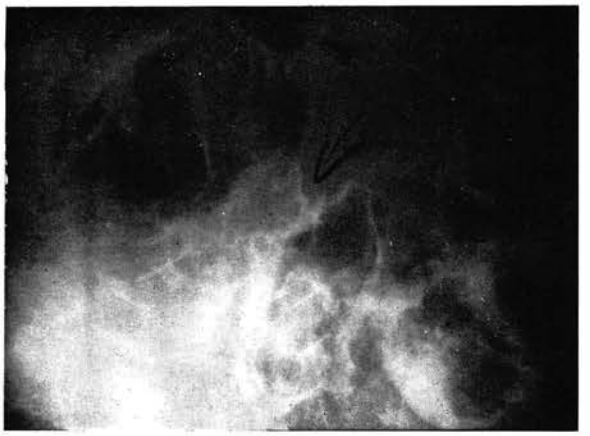

Fig. 11
Close up of Cauliflower like growth and stricture of sigmoid colon not obstructed by adjacent barium filled loops in supine 45° angled film.

Barium Enema (modified Malmo technique)

The patient should be well prepared to clear the bowel of faecal material. After a plain x'ray of the abdomen, barium is introduced through a wide-bore catheter per rectum. After barium has reached the proximal transverse colon, the rectum is drained and air slowly injected with a Higginson syringe while the patient rotates 360 degrees.

Although screening and undercouch films may be done, the following films are taken with the over-couch tube:–

1) Supine/Prone with 45° tube tilt for rectosigmoid region and caecum.

2) Left and right erect obliques for flexures.

3) Left lateral for rectum.

4) AP & PA decubitus films using horizontal beam for ascending and descending colon.

5) AP or PA for transverse colon.

Discussion

The advantages of double contrast barium investigations are:–

1) Mucosal surface shown and therefore even small lesions are visualised and they correspond to mascroscopic and endoscopic appearances.

2) Suture irregularities can be differentiated from ulcer niches.

3) Guide lines point straight accusing fingers at benign ulcers of stomach and duodenal bulb. In cases of Gastric malignant ulcers the guide lines do not run straight, are irregularly thickened and show sudden amputation.

4) Bleeding ulcer craters do not fill with barium but "larval flow" patterns run away from the ulcer.

5) Gastric rugal hypertrophy can be distinguished from carcinoma.

6) Areas of intrinsic rigidity and deformity can easily be seen and distinguished from extrinsic pressure defects.

7) Translucent colon allows lesions to be visualised even though it is overlaid by other segments of colon.

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Acknowledgement

I wish to thank the Director General of Medical and Health Services of Malaysia, Tan Sri Datuk (Dr.) Abdul Majid Ismail for permission to publish this article and my Radiographers who took the excellent radiographs and especially Mr. Mohd Amin bin Deta for typing this paper and Mr. Francis Leong Foo Sen for taking the photographs.