

Barium Examination of Small Intestine

Pages with reference to book, From 86 To 87

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Radiological investigations of small intestine with contrast medium were started in early part of this century. Since then barium studies have become well established in the diagnosis of diseases of small intestine and various techniques have evolved.

Earlier "Follow Through" examination was described by Cole and colleagues (1934) using thick barium paste (227 ml. of barium and 142 ml. of water) and large films were taken one half hour after the upper G.I.T. examination and then at 2, 4 and 6 hours. In 1959 Golden perfected the technique and 113 Gm. of nonfloculating barium suspended in water was used and found better for the demonstration of mucosal detail.

To increase the speed and reduce the time of examination various suggestions were made. Barium-saline mixture followed by ice cold saline was used by Weintraub and Williams in 1949 and 90% of the examination was completed in one hour. Metoclopramide 20 mg. I/V given after the examination of oesophagus and stomach (James and Flume, 1968; Jowarth et al., 1969) and Gastrograffin added to barium (Rosenquist, 1975) also reduced the transit time. However the advantage of decreasing the transit time is offset by diminished anatomical detail, particularly in the terminal ileum.

Preliminary cleansing of colon combined with use of 284 ml. of barium suspension and placing the patient in lateral recumbent position also produced rapid uniform filling of small intestine (Nice, 1963, 1974). The only merits of barium follow through are that it is simple to perform and causes no discomfort to the patients.

For "Oral Double Contrast" technique, 60 mg. of Propentheline is given I.M and 40 minutes after a barium meal air is pumped via a flexible tube into the stomach which passes through the duodenum and distends the loops small intestine and gives better mucosal detail (Pajeskwi et al, 1970).

A good technique for demonstration of small intestine is refluxing of barium from the colon into the ileum (Miller, 1965). It is very useful in small intestine obstruction and technique of choice for demonstrating terminal ileum.

Another good technique for visualisation of ileocaecal region is administering barium orally and introducing air rectally when barium is in the terminal ileum (Kellet et al., 1977) and especially recommended for Crohn's disease of terminal ileum and carcinoma of caecum (Kellet et al., 1977).

In indirect technique barium is introduced into the small intestine by duodenal intubation. Gershon-Cohen and Shay in 1939 used a simple barium suspension in water and introduced air to obtain double contrast. The technique was called Bariumenteroclysis. Complete filling of the small intestine is accomplished in 15 minutes. Schatzki in 1943 stated that this method was better than any other available method for the study of morphological changes in the small intestine.

In one of the modifications a tube with a stiff outer sheath for stomach and a flexible inner tube for manipulation at pylorus is used. Barium is followed by water to give double contrast (Scott-Harden, 1969). The outline of the whole of small intestine is usually complete within 10 minutes of injection of water. This technique was further improved by using barium suspension of fixed specific gravity (1.25-1.32) and a low residue diet and aperient are used a day before (Sellink, 1976). This technique has proved useful for Crohn's disease and discrete and fissure ulcers, longitudinal ulceration, sinuses and fistulae thickening and cobblestoning, strictures with proximal dilatation asymmetrical involvement, skip lesions and pseudopolyps have been clearly demonstrated (Nolan, 1980; Valleuce, 1980; Flippeli and Grehn, 1978; Skjennald and Samset, 1980; Herlinger, 1978). Other small intestinal lesions in which this infusion technique has proved useful are Carcinoid tumours (Sellink, 1976; Schalanger, 1976), Lymphomas (Sellink, 1976), Yersinia enterocolitis (Wiechen, 1974), Meckle's diverticulum

(Bartram and Amess, 1980; Maglente et al., 1980), Adhesions after surgery (Bartram, 1980), Ischaemic strictures (Marks et al., 1979) and Coeliac disease (Sellink, 1976; Muller, 1976). The site of small bowel obstruction can be shown and in many cases causes can be identified (Marks and Nolan, 1978). Various types of intestinal tubes are being used to decompress the intestinal loops in intestinal obstructions. Very useful diagnostic information can be obtained by injecting barium through these tubes when these are not advancing, at the site of obstruction (Herlinger, 1978; Abbot and Johnston, 1938; Boon, 1940; Osgood, 1947; Golden et al., 1940).

Now it is known that the conventional Follow-through is not very accurate, it should be replaced by Single contrast dilute barium technique which is very satisfactory in detecting diseases of the small intestine (Sellink, 1976), Per-oral pneumocolon examination should be used for suspected ileocaecal and terminal ileum pathologies.

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