SIGMOIDOSCOPY

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FIG. 1

Cold Lite sigmoidoscope
Magnifying eye-piece

Biopsy forceps and spoon

Biopsy forceps
Cold Lite proctoscope

The improvement in construction of the modern sigmoidoscope has relegated diagnostic sigmoidoscopy from the operating theatre to the consulting room, to the mutual benefit of the patient and physician. It is essentially an out-patient method of examination and the elaborate ritual of preparation and premedication, except in special cases and in young children, is a relic of the past.

Method

A Cold Lite sigmoidoscope with a plastic barrel and telescopic viewing lens is employed (Fig. 1). The 6 volt car bulb gives an excellent illumination, and a magnifying eye-piece of four diameters is used. It is advisable to darken the room during the examination. This type of sigmoidoscope can be sterilized by boiling but it is essential that it

should be allowed to cool completely before being used otherwise the plastic barrel will bend and be rendered useless. Under no circumstances must any disinfectant containing phenol be used as it will produce a cloudiness of the plastic and eventually render the instrument unserviceable.

My own practice is to clean the barrel thoroughly after use with soap and water or cetavlon and then soak it in 1/500 hydrarg. biniodide for $\frac{3}{4}$ hour, it is then washed through under the tap and dried before putting it away. On a busy morning I use six spare barrels in rotation.

Preparation of the Patient

If the patient is in hospital a light lunch and tea are followed by a bowel wash out with plain tap water at 8 p.m.; no supper is given that night.

No early tea or breakfast is given on the morning of the examination. A natural call to stool must be obeyed and the bladder must be emptied prior to examination.

In the case of out-patients a 3-hour fast is sufficient, and the patients are asked to empty their bowels before being examined.

Lubricant

A water soluble lubricant such as KY jelly is used or, if large numbers are being examined, the following lubricant is cheap and satisfactory:—

R Tragacanth 3 x, glycerine 3 xii, water to the pint.

Position of Patient

Seriously ill bed patients should be examined in the left lateral or Sims position, but it is much more satisfactory to adopt a knee elbow position as shown in the accompanying photograph (Fig. 2). An ordinary examination couch is perfectly satisfactory, although an inverting proctoscopic table using Buie's position is an additional refinement for the specialist.

Technique of Examination

It is essential to allay the natural anxiety of the patient, especially on a first examination, explaining exactly what one is about to do and what sensations will be produced and the reasons for their production. Only in this way will the co-operation of the patient be secured and the much-dreaded painful examination will resolve into a merely uncomfortable rectal sensation.

The patient, having assumed the necessary position, is asked to hollow his back and a careful inspection is made of the anal region for the presence of fissure. A sentinel tag when present shows the exact location of the lesion and the finding of an enlarged anal papilla immediately proximal to the ulcer completes the triad of anal fissure, sentinel tag and hypertrophic anal papilla, which with the characteristic history of pain following defaecation has already directed the examiner's attention to the presence of this condition. The local application of 2 per cent. novocain is essential in this condition before proceeding to carry out a rectal examination which is inevitably extremely painful unless this is done.

The inspection being completed a lubricated gloved finger is inserted into the rectum and a careful palpation is carried out. Bidigital examination palpating the tissues on each side between index finger in the rectum and thumb on the outside should not be omitted. Should any abnormality be detected the next step in the examination is visual inspection through a proctoscope, or what our American friends call an anoscope. It is

not proposed to describe internal haemorrhoids, cryptitis, etc., as these surgical conditions belong to the province of the ano-rectal surgeon, but it is necessary to stress that one must never rest content with the diagnosis of internal haemorrhoids as a cause of rectal bleeding without examining the upper rectum and sigmoid for a neoplasm or amoeboma as a primary cause.

Introduction of the Sigmoidoscope

The patient is asked to keep his mouth open and to breathe deeply to relax the sphincter. Holding the sigmoidoscope firmly in the right hand with the thumb or index finger over the handle of the obturator, the examiner explains to the patient that he is about to pass the instrument and that the patient must concentrate on breathing deeply and trying to relax his sphincter. The anal clefts should be spread apart with the fingers of the left hand and the instrument gently passed in the direction (1) (Fig. 3), that is towards the umbilicus. As soon as the tip of the well-lubricated instrument enters the ampulla of the rectum the examiner feels the sudden cessation of resistance of the anal sphincter; he assures the patient that the worst of the examination is over. The distal end of the instrument is then depressed and the proximal end is transferred from the examiner's right to his left hand. The right hand is then used to remove the obturator. The patient is assured that the full feeling in his rectum is due to the presence of the instrument and he is instructed to breathe very slowly with his mouth open and to let his abdominal muscles sag. He is asked to say if at any time the examination hurts him and to avoid any movement. Following the removal of the obturator the instrument is passed by sight and never blindly. Using this position for the patient it is rarely necessary to employ any air inflation in the further passage of the instrument. The only exception to this is the 'sticky bowel' in which, in spite of the inverted position, the walls of the gut do not fall away. In such an instance it is probably safer to use gentle air inflation in identifying the lumen. Air inflation is used to the best advantage during the withdrawal of the sigmoidoscope to facilitate thorough inspection of all surfaces. The greater the experience of the operator the less he uses air inflation in routine sigmoidoscopies. If a spasm of the bowel appears it is necessary to wait until this has passed off before the further onward passage of the instrument. The instrument is then shifted slowly towards position (2) and is carefully advanced further into the rectum, the examiner keeping a careful watch for the lumen, the course of the sigmoidoscope being altered to the left or right during its advance depending on the varying configuration of the gut in each individual.

FIG. 2.—Knee elbow position in sigmoidoscopy. The operator is standing on the right side of the patient to demonstrate the position of the patient. In actual practice one always stands on the patient's left side.

FIG. 3.—Diagrammatic scheme of manoeuvres employed during introduction of the proctoscope (Buie's Practical Proctology).

By kind permission.

patient. When the distal end of the instrument has reached the recto-sigmoid (12 to 15 cm. from the anus) it must be levered anteriorly into position (3).

This manoeuvre invariably gives rise to an abdominal cramp felt above the symphysis pubis and due to a pull on the mesentery. It is wise to warn the patient before this happens saying 'You will probably feel a cramp in the tummy due to my pulling on the bowel as I get the instrument round the corners, try not to strain against it. The cramp will disappear as soon as I remove the instrument.' This last stage is the crux of the examination and it must be remembered that in about 5 per cent. of individuals a short mesentery will prevent this manoeuvre being successfully accomplished, and the wise man knows when to cease his efforts for it is here that rupture of the bowel may occur. Unfortunately it is in just this area of the sigmoid colon that the proctologist and radiologist may overlook a neoplasm. When the presence of one is suspected above the recto-sigmoid, and one has failed with the ordinary sigmoidoscope, it is wise for the expert to attempt to pass a sigmoidoscope with a smaller lumen and to use air inflation to facilitate its passage. The presence of intense spasm at the recto-sigmoid juncture should make one suspicious of a lesion higher up, fortunately in most medical conditions the diagnosis is readily made without having to proceed beyond the recto-sigmoid junction. To quote Bockus, 'Beyond the recto-sigmoid area the examiner is practically

"on his own." Various folds and angles are encountered which cannot be appreciated by the study of the anatomy in the cadaver. There is no routine method which can be described or employed in the passage of the sigmoidoscope beyond the recto-sigmoid junction. Gradually the physician learns with experience just how much pressure may be exerted on this or that fold in order to push them gently aside with the distal end of the sigmoidoscope. In some cases the passage of the instrument through the recto-sigmoid is exceedingly easy, the angle not being very acute and the lumen easily seen. However such circumstances are exceptional and it is only by very gentle forward movement in this or that direction that the angle is passed.' The Cold Lite sigmoidoscope can be passed to 25 cm.

The Examination

The examiner having safely and gently introduced the sigmoidoscope can now devote his attention to a detailed observation during the withdrawal of the instrument. He may see the pulsation of the hypogastric artery when the distal end of the sigmoidoscope lies to the right of the sacral promontory. This serves as a landmark to the sigmoid colon and is not seen until the instrument has reached a point proximal to the recto-sigmoid. In the distal sigmoid one notices the concentrically arranged folds of mucous membrane characteristic of the colon proper, as one withdraws the instrument through the recto-sigmoid one informs the patient that the abdominal cramp will cease. The smooth mucosa of the well-distended rectum is seen divided by the crescentic folds known as the rectal valves of Houston, usually two or three in number. Since it is possible that a lesion may be hidden behind them it is advisable to examine each corner by slowly sweeping the end of the instrument in clockwise circles during its withdrawal. Just before the end of the instrument is withdrawn into the anal canal the internal haemorrhoidal zone is inspected, and the examiner looks out for the presence of hypertrophied anal papillae, the opening of fistulae, etc.

Pitfalls

1. *The blind pouch.* This is due to the examiner having failed to follow the true lumen, a curve has been missed or the lumen obscured by a fold of a rectal valve. The instrument should be withdrawn a few centimetres and by gentle manipulation, by pushing a fold to one side or by air inflation the true lumen can be revealed. Frequently it is necessary to wait until a spasm has relaxed before attempting this manoeuvre.

2. *Trauma.* The tell-tale semicircle due to trauma from the end of the instrument is self

revealing, accusatory and diagnostic and should not occur. It is usually present at corners and being mucosal in depth fortunately heals readily. Inflation with air must be avoided if this trauma has occurred.

3. *Enema ulcer.* This is due to the tip of the enema syringe and invariably is present on the anterior wall of the rectum. Hard tips should be obsolete in home and hospital and a soft rubber catheter used instead.

4. *Soap enemata.* These should never be used in premedication as they produce a hyperaemia which will persist for 12 hours. In actual fact anyone who has looked at a rectum through a sigmoidoscope an hour after a soap enema will forbid their use for all time. The insensitive bowel mucosa is unfortunately dumb or soap enemata would have disappeared long since from medical practice.

5. *Hyperaemia.* This *per se* is not of diagnostic importance, the rectum can blush as readily as the stomach and hyperaemia follows spasm as night follows day. The author has seen an intense spasm and hyperaemia develop during the sigmoidoscopic examination of a woman patient during which she was asked if the real cause of her anxiety was not the fear of her husband being sent overseas.

Sigmoidoscopic Appearances in Disease

1. AMOEBIASIS

Lesions of amoebic dysentery occur in the rectum and sigmoid in 80 per cent. of cases (Manson Bahr). In 215 cases of proved amoebiasis, excluding symptomless cyst-carriers, a normal mucosa was seen in 20 per cent. (Morton) the lesions in this minority being present out of reach of the sigmoidoscope in the caecum and upper colon.

(a) *Acute stage.* The ulcers are scattered and are frequently covered with a greyish-white covering known as the 'white cap' over the centre of the ulcer. On swabbing this away a bleeding crater with overhanging margins is revealed. The intervening mucosa is relatively normal but scattered petechial haemorrhages, linear haemorrhages or pin-point raised lesions may be present. The sigmoidoscopy is comparatively painless as compared to the findings in bacillary dysentery or idiopathic ulcerative colitis. The lesions are commonly present over the valves of Houston, but may be present throughout the rectum. The diagnosis is confirmed by scraping the floor and margin of the ulcer with a blunt spoon and examining the material obtained in normal saline under the microscope as soon as practicable; numerous active *Entamoeba histolytica* containing ingested red blood corpuscles are usually found

FIG. 4.—Amoebic ulcers showing petechial haemorrhages, linear haemorrhages and ulcers covered with sloughs.

(Fig. 4). In cases of long standing, large ulcers with a blackish central slough may be present. The smell from the bowel in these cases is quite characteristic and is noted on removing the obturator of the sigmoidoscope. It is vaguely reminiscent of the smell from cases of gas gangrene. Occasionally a solitary large ulcer is seen inside the anal margin, suggestive of malignancy, but which on scraping proves to be due to the *E. histolytica* (Manson Bahr).

(b) *Amoeboma (amoebic granuloma)*. Recently attention has been drawn to this condition which may be defined as a hyperplastic localized tissue reaction of the colon, the hypertrophy chiefly affecting the submucosa which is infiltrated with monocytes and plasma cells together with localized clusters of *E. histolytica*. The process spreads through the bowel wall affecting the adjoining tissues. Typical amoebic ulcers may be present on the surface of the tumour but there may be no naked eye lesions suggestive of amoebiasis.

The condition is comparatively rare and out of nine cases in my experience the rectum was involved in five, the caecum in two and the sigmoid in two. The symptoms are atypical and unless the surgeons are warned of the possibility of its occurrence many cases may be operated upon unnecessarily with disastrous results. On sigmoidoscopic examination the presence of a painful fungating cauliflower mass in the rectum naturally suggests malignancy, but scrapings taken from the ulcers will reveal *E. histolytica* in spite of the fact that numerous stools may have been examined with negative results. Stenosis of the bowel is usually present, but following specific therapy the growth simply fades away and fibrosis and stricture rarely develop. If the response to specific treatment does not lead to the complete

FIG. 5.—Chronic quiescent amoebiasis showing the typical crateriform pitting.

disappearance of the growth a dual pathology must be considered and the presence of a concomitant malignant growth is likely.

(c) *Chronic quiescent amoebiasis*. Sigmoidoscopic examination (Fig. 5) is of the greatest help in the diagnosis of this insidious and elusive disease. The characteristic lesion is a raised crateriform pit, circular in shape, 1 to 2 mm. in diameter and raised a millimetre above the surrounding mucosa. In order to recognize such lesions it is essential that no bowel wash out be administered for at least six hours before the examination as the resultant hyperaemia caused by even so bland a fluid as tap water or normal saline will completely obscure them (Morton, 1946). It is also essential to use a magnifying eyepiece of two to four diameters. Multiple lesions were present in 169 patients, in 78 of whom *E. histolytica* were eventually found, usually following purgation with salts. The pits are most commonly seen on the valves of Houston or at the recto-sigmoid junction, and disappear after specific anti-amoebic treatment. In some cases after treatment small depressed circular pits are left at their site. The author looks upon this as evidence of their healing; these healed pits have been aptly described as 'pig skin pitting' by Cropper (1945).

It is necessary to distinguish these crateriform pits from raised lymphoid follicles, the latter are evidence of a lymphoid hyperplasia and lack the characteristic central fovea or pit. Active crateriform pitting shows either a petechial haemorrhage at the fovea or in more acute cases a small yellow cap with a surrounding well-defined hyperaemic margin, the 'pin point' ulcer of the American writers. These are the earliest amoebic lesions visible in the rectum (Manson Bahr) and are the openings of the small flask shaped amoebic lesions

present in the submucosa, the yellow cap being composed of broken down tissue. It is these lesions that form by coalescence the acute amoebic ulcers which are almost invariably present when this sigmoidoscopic picture is seen.

To summarize, active crateriform pits (pin point ulcers) are the earliest amoebic lesion visible in the rectum. Crateriform pits with a central fovea are evidence of quiescent latent amoebiasis and depressed pig skin pitting is evidence of healed amoebiasis as far as the rectum is concerned; there may of course be associated active lesions higher up and out of reach of the sigmoidoscope.

2. BACILLARY DYSENTERY

In acute bacillary dysentery sigmoidoscopy is painful and unnecessary as the diagnosis is readily made. In practice if an acute clinical bacillary dysentery has not responded to a course of 100 gm. of sulphaguanadine or 200 gm. of sulphasuccidine taken over five to seven days, stools must be re-examined and a sigmoidoscopy is advisable. A sigmoidoscopy is essential in chronic bacillary dysentery to establish the diagnosis and control treatment.

The sigmoidoscopic appearances in chronic bacillary dysentery are as follows:—

1. A generalized hyperaemia with an excess of adherent tenacious faecal-stained mucus lining the wall of the gut.

2. A generalized hyperaemia with a tubular stenosed lumen, the mucosa having a granular appearance and bleeding readily on instrumentation or gentle swabbing. Sigmoidoscopy is painful, and a view up to the recto-sigmoid is all that is necessary. The appearance is identical with that seen in certain stages of idiopathic ulcerative colitis (Morton, 1949). In some cases the granularity is confined to the distal 3 in. of the rectum.

3. Superficial oval or circular ulcers up to 1 cm. in diameter, the bowel wall distends readily and there may be no inflammation of the intervening mucosa. The lesions are readily mistaken for amoebic dysentery, scrapings from the ulcers should be examined for *E. histolytica* and cultures made from the scrapings for the shigella group.

4. A rare condition originally described by Manson Bahr is a pseudo-cystic condition arising from the occlusion of the crypts of Lieberkuehn. The appearance suggests 'sago-grain' elevations varying in size from 1 to 3 mm. scattered over the mucosa, sometimes the whole mucosa is studded in this way. These cysts are easily ruptured on pressure with the distal end of the sigmoidoscope, they contain clear or bloodstained mucus from which the causative organism can frequently be

isolated by culturing direct swabbings obtained at sigmoidoscopy.

5. Pitting is frequently seen in healed bacillary dysentery cases (Hamilton, Fairley and Boyd, 1942), but it is irregular in shape and size, is tessellated and lacks the circular uniformity of the 'pig skin pitting' of healed amoebiasis.

3. POST-DYSENTERIC HYPERPLASTIC COLITIS

This is a rare condition; the author encountered four cases in the last world war. Sigmoidoscopy showed deep greyish depressions, the site of healed ulcers surrounded by overhanging hypertrophied bridges of red mucosa giving one the impression of a rabbit warren. It is probable that this condition is an excessive healing response to extensive ulceration—a mucosal hyperplasia analogous to keloid. The condition, provided the patients did not get constipated, gave rise to no trouble, but constipation was at times followed by rectal haemorrhage.

4. IDIOPATHIC ULCERATIVE COLITIS

The sigmoidoscopic appearances in this disease have been recently well described in the POSTGRADUATE MEDICAL JOURNAL by Devine (1950). A word of warning is necessary. Sigmoidoscopy must be very carefully carried out as rupture of the gut has been reported more frequently in this condition than in any other. A typical case can be diagnosed by passing the sigmoidoscope into the ampulla of the rectum and this should suffice in all but a small minority of cases. No previous bowel wash out is necessary.

(a) *Appearances—acute stage.* In this the mucosa is uniformly fiery red and granular. It bleeds readily on gentle swabbing or instrumentation. The vascular pattern is obscured and at a more advanced stage small irregular superficial ulcers may be present.

(b) *Chronic stage.* Here, as a result of fibrosis, a tubular contraction and thickening of the rectum and sigmoid has developed with an ironed out or rounded appearance of the valves of Houston, the mucosa is more granular. Later deep ulcers with irregular edges appear and a polypoidal epithelial hyperplasia of the mucosa at the edges of these ulcers is a characteristic feature of this terminal stage.

The diagnosis between a post-bacillary dysenteric colitis and idiopathic ulcerative colitis in the 'red granular stage' is impossible on sigmoidoscopic examination alone and all extraneous aids to diagnosis such as serum agglutinations against shigellae must be invoked. Fortunately the treatment is similar. In the post-bacillary dysenteric cases the prognosis is better, although a small

FIG. 6.—Annular carcinoma producing stenosis (from Hirschman, L. J. (1942), 'Ano-Rectal Diseases.')

minority go on to a true ulcerative colitis with its inevitable remissions and relapses.

5. SPRUE

The diagnosis is commonly made on other grounds, but in acute cases the bowel has a rosy pink colour with loss of lustre and the typical pale, semi-solid faeces may be observed pouring down from the sigmoid. In 80 cases of sprue that were sigmoidoscoped during the last war 46 per cent. were found to be harbouring pathogenic protozoa or bacteria (Morton, 1946).

6. RECTAL POLYP

One or two sessile or pedunculated polyps in the rectum are seen on routine sigmoidoscopy, but the condition of multiple polyposis is rare. This is shown by the presence of numerous polyps in the rectum and sigmoid; it is a familial disease and is precancerous (Dukes). Only one case was seen in a series of 1,000 routine sigmoidoscopies.

7. LYMPHOGRANULOMA OF RECTUM. ESTHIOMENE (GENITO-ANO-RECTAL SYNDROME)

This condition, although very rare in Europeans, must be considered in every case of rectal stricture, especially if there has been a previous history of climatic bubo. It is much commoner in females than males. The presence of a hard, craggy stricture with or without ano-rectal fistulae should arouse suspicion. The author has only encountered one case in a European male. A Frei test and complement fixation test should be carried out to confirm the diagnosis in every case.

8. SYPHILIS

Recent work has shown that syphilis as a cause of stricture of the rectum is very rare. Many cases of lymphogranuloma inguinale producing the ano-rectal syndrome have been put down to syphilis on

FIG. 7.—Showing numerous slightly raised bilharzial elevations affecting extensive areas of the mucosa of the lower bowel, after A. G. Biggam.

the strength of a positive Wassermann test prior to the introduction of the Frei test and lymphogranuloma complement fixation test. The author did, however, see a case 28 years ago with an annular ulcerated mass encircling the bowel some 6 cm. from the anus. This case had a strongly positive Wassermann test and complete healing followed a course of N.A.B. and mercury.

9. MALIGNANT DISEASE

Palpation of the rectum with the gloved finger must never be omitted, a small malignant growth near the anus can easily be missed on sigmoidoscopy. If a growth is felt near the anus a careful examination with a proctoscope should be made prior to using the sigmoidoscope. In every case of suspected malignant disease the sigmoidoscope should be passed beyond the recto-sigmoid to its full extent, namely 25 cm. The writer uses a special sigmoidoscope with a longer barrel extending to 30 cm. in these cases. A typical adenocarcinoma is shown on the accompanying Fig. 6.

10. SCHISTOSOMIASIS AFFECTING THE RECTUM

This disease must be considered in patients who have lived in endemic areas. Biggam and Arafa (1930) report that in the early stages small patches of granulation tissue can be observed at the bifurcation of blood vessels in the mucosa. In these hyperaemic areas small red spots and pale elevated tubercles may be seen and eventually small ulcers develop (Fairley, 1933). In some cases polypi and adeno-papillomata may be recognized. These appearances have been described in Egypt (Fig. 7). Gelfand (1950) in Rhodesia has not found a single case of papilloma in Rhodesia in 185 cases of

schistosomiasis which were examined at autopsy or in 50 cases of schistosomiasis mansoni examined sigmoidoscopically. This variation in findings is probably due to the fact that hyperinfection is so constant in Egypt.

Summary

Sigmoidoscopy is an essential aid to diagnosis in the routine investigation of patients complaining

of symptoms referable to the lower intestinal tract or rectum. Its limitations must, however, be clearly realized and all further auxiliary aids to diagnosis such as repeated examinations and cultures of stools must be carried out. If the sigmoidoscopy is negative and the history warrants it, a barium enema using preferably the double contrast method is advisable as the next stage in the investigation of a difficult case.

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COLOSTOMY: THE PATIENT'S POINT OF VIEW

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There are many surgeons who believe that to be left with a permanent incontinent abdominal anus is for most patients an almost insufferable burden, and use this as their main argument in support of the sphincter-saving operative procedures. Close enquiry is necessary to test the validity of their belief, for their argument, if true, must carry much weight in favour of the less extensive resections. Every surgeon who practises abdominal surgery must surely have some idea of the disability which a permanent colostomy involves, but his impression will depend in large measure on the social group to which the majority of his patients belong. It is also probably true that he tends to remember only his more successful cases. He can contentedly enumerate the ones who are happily at work in the most arduous or the most responsible occupations, the fate of the less fortunate remainder being conveniently forgotten. Few studies have been made of large numbers of colostomy patients, a notable exception being the follow-up of 100 St. Mark's cases reported by Cuthbert Dukes in 1947. His impressions were on the whole favourable, but one felt inclined to attribute this happy state of affairs to an excellence of practice in this highly specialized clinic which

was unlikely to be rivalled in the average general hospital.

It was for this reason that in company with the hospital almoner we visited 20 of our old colostomy patients in their own homes. They were selected only by the accident of their living within easy reach of the hospital. They all belonged to what we have hitherto called the 'hospital class,' and of this group they can, we believe, fairly be taken as an average cross-section. As a former council hospital, we have probably admitted for treatment rather more of the elderly and indigent than would be the case in an established voluntary hospital. The youngest was 42 years of age, the oldest 79; the average age of the whole group was 65. The colostomy was in every case a permanent one. As Lahey (1946) has pointed out, the bad impression which many surgeons have formed of the results of the operation may well be due in part to the unhappy experience of the average patient with a palliative colostomy. His troubles are, of course, largely due not so much to the colostomy itself, as to the continued presence of the rectal neoplasm. In every one of our cases an attempt had been made to remove the primary growth, although subsequent events have suggested that at the time