



## Emergency Colonoscopy

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**Different diagnostic techniques for massive active lower gastrointestinal hemorrhage are reviewed. According to data in the literature and personal experience in 409 emergency endoscopic examinations of the large bowel, emergency colonoscopy is a valuable diagnostic tool in cases of massive colorectal bleeding.**

Many changes and advances have been achieved in the last 15 years in the diagnosis of massive colorectal bleeding and, although not unanimous, standardized criteria are now accepted. The word massive active hemorrhage, itself, is not accepted worldwide, often being related to subjective clinical evaluation. We define massive lower intestinal bleeding as a condition in which there is rectal bleeding of a sufficient degree to result in an acute reduction of circulating blood volume (Hb < 10 g/100 m).

It is important that a rapid diagnosis be made. The site and cause of the bleeding is the main target of such a search in order that the right therapeutic approach can be planned. In dealing with a patient with massive hemorrhage, the first step is to understand whether the bleeding is from the upper or lower gastrointestinal tract. Upper gastrointestinal tract bleeding can produce bright red rectal bleeding. The first examination should be an upper gastrointestinal endoscopy, which is easier and more fruitful than nasogastric suction drainage [1-4].

The diagnostic methods now available in detecting active lower gastrointestinal tract hemorrhage are: technetium 99m scintigraphy, selective arteriography, colonoscopy, and intra-operative colonoscopy. Scintigraphy with sulphur colloid labeled with technetium 99m (Tc 99m) or red blood cells labeled with Tc 99m can detect a bleeding rate of 0.1 ml/min and thereby confirm the bleeding activity. Both markers should be employed at the same time since they are supplementary: the sulphur colloid test has a higher sensitivity; the simultaneous employment of labeled red cells can reduce the failure rate [2, 5-7].

Selective arteriography (superior mesenteric artery, inferior mesenteric artery, celiac axis) in an emergency can give infor-

mation about the site of hemorrhage if contrast medium overflow and its cause (typical angiographic patterns of tumors, malformations, or vascular ectasias) are present [8-12]. This technique can be employed as the method of first choice in patients with active lower gastrointestinal tract massive hemorrhage.

Many authors have reported good results with emergency arteriography. The contrast overflow is usually present when the bleeding rate is 0.5-1 ml/min, however, intermittent bleeding can be missed by angiography [2, 8-13]. Angiography is useful in the diagnosis of 2 of 3 cases of massive hemorrhage [2, 13]; moreover, it allows therapeutic maneuvers [2, 14-18]. Even if selective arteriography should be the first choice method in lower gastrointestinal tract hemorrhage, because of organizing reasons or high operating costs, its employment is sometimes reduced, especially in an emergency when rapid diagnosis is mandatory.

Recently, colonoscopy has been employed in the diagnosis of massive active hemorrhage of the large bowel, despite the fact that opinions exist [3, 4, 19, 20], regarding other methods that can rapidly locate the site of the hemorrhage. To date, colonoscopy is included in all diagnostic protocols of lower gastrointestinal tract massive bleeding [1, 2, 13, 21-29].

Emergency colonoscopy is indicated in all cases of active massive hemorrhage of the lower gastrointestinal tract. The only contraindication of this examination is shock; before endoscopy, all cardiocirculatory and coagulative parameters should be balanced. No bowel preparation is needed if hemorrhage is massive; the blood acts as a cathartic and removes left over feces from the large bowel [1].

Rectosigmoidoscopy, rigid or flexible, with a large (5 mm) suction channel is particularly indicated in detecting anorectal bleeding and in the removal of large blood clots from the rectal ampulla [1, 30].

Emergency colonoscopy does not require particular technical devices: the insertion of the scope is done in the same manner as it is performed in routine examination, but is placed more carefully, especially during insertion under vision control. Excessive inflation should be avoided since colonic wall distension can worsen the hemorrhage. Similarly, it is better to avoid analgesic-sedative premedication both to prevent cardiorespi-

**Table 1.** Clinical diagnosis at emergency colonoscopy.

	No. of cases
Diverticular disease	56
Solitary diverticulum of the right colon	4
Ulcerative colitis	45
Ulcerative colitis plus carcinoma or polyp	2
Radiation colitis	15
Ischemic colitis	21
Ulcerated carcinoma	66
Polyp	34
Angioma	2
Solitary ulcer	5
Angiodysplasia	16
Anastomotic recurrence of carcinoma	22
Recurrence of Crohn's disease (ileotransversostomy)	4
Endometriosis	3
Postpolypectomy hemorrhage (4-5 days after)	14
Lymphoma	1
Ureterosigmoidostomy plus ulcerated carcinoma	1
Total	311

ratory depression in a hemorrhagic patient, and to have a fully cooperative patient. Antispastic drugs are useful if intestinal motility impedes the insertion of the scope.

The principles of emergency colonoscopy can be summarized as follows: cardiovascular and respiratory parameters are balanced, blood clots are removed from the rectal ampulla, colonoscopy is performed under vision control, excessive air inflation and rough twisting maneuvers are avoided, the scope is inserted as straight as possible, the procedure is stopped when the bleeding lesion is identified, and when a bloodless area is found.

### Institutional Experience

In the last 15 years, 409 emergency colonoscopies have been performed at our emergency room in patients admitted for massive active lower gastrointestinal bleeding. The site and cause of the bleeding were found in 311 cases (76%) (Table 1). No lesions were found up to the cecum (the hemorrhage was from the small bowel) in 26 cases (6.4%). No lesions were found in 72 cases (17.6%), and this is considered the diagnostic failure rate. The lesions responsible for the hemorrhage were found in the left colon in 264 (85%) of 311 cases, in the transverse colon in 12 cases, (4%) in right colon-cecum in 35 (11%) cases.

Complications due to emergency colonoscopy are extremely rare. Forde reported one perforation of a diverticulum [24]. In our series, we encountered 2 cases of worsening hemorrhage (1 patient had ulcerative colitis and 1 patient had severe diverticulitis—both had operation afterwards) [1]. If the endoscopist finds a bleeding diverticulum, the examination must be stopped. In our hands, diagnostic efficiency of emergency colonoscopy, defining the site and cause of the hemorrhage is about 80%. Many authors have had the same results, ranging from 70% to 92% (Table 2) [21–25]. In about three-quarters of the cases, the cause of bleeding was localized in the left colon; in patients with hemorrhage from the right colon, it was quite common to find bleeding angiodysplasias [13].

Emergency endoscopy, in addition to having a high diagnostic rate, allows a decisive therapeutic procedure in some cases. Endoscopic polypectomy is performed for bleeding polyps, and electrophotocoagulation is used to control bleeding vessels

**Table 2.** Emergency colonoscopy: Positive findings.

Reference, yr	Diagnostic efficiency (%)
Rossini et al., 1980	76
Forde [24], 1981	85
Colacchio et al. [21], 1982	80
Fabry and Waye [22], 1982	80
Farivar and Perrotto [23], 1982	92
Jensen et al. [25], 1983	70

(hemorrhage after polypectomy, angiomas, or angiodysplasias) [1, 28, 31–35].

In our experience, endoscopic polypectomy for bleeding polyps was performed in 18 patients. Electrocoagulation was performed in one patient with an angioma and in 9 patients with angiodysplasias. Frequently, colonoscopy can be difficult due to the presence of blood clots which interfere with the view. Endoscopic-directed washing of the bowel wall may be extremely useful in identifying the bleeding vessel; moreover, removal of the blood coating the wall allows better evaluation of the mucosal surface in order to exclude inflammatory changes.

In cases in which the site of hemorrhage has not been found, laparotomy is mandatory. During the operation, colonoscopy may also be helpful. Using peroperative colonoscopy, the endoscopist, in collaboration with the surgeon, can see small bleeding points (especially ectasias or vascular malformations) through both an intra- and extraluminal examination performed simultaneously. In such a manner, it is possible to avoid a colotomy, and an intestinal resection is better planned [1, 27–29, 36, 37].

### Concluding Remarks

In the diagnosis of massive active hemorrhage of the lower gastrointestinal tract, the benefits of emergency colonoscopy, as reported in the literature, are well recognized: (a) it is possible to identify the site of the bleeding in 80% of the cases (as high as the percentage identified by arteriography); (b) the risks and complication rates for the patients are very low in comparison to the rates for routine colonoscopy and arteriography; (c) in some cases it is possible to treat patients with hemorrhage quickly by using endoscopic operative techniques (polypectomy, electrocoagulation, laser photocoagulation), and at the time of laparotomy, the surgeon can avoid multiple colotomies or unjustified bowel resection. Even if selective arteriography is well considered, emergency colonoscopy is the first choice examination in cases of massive lower gastrointestinal tract bleeding because it is easier, quicker, and more successful in detecting and sometimes in treating the bleeding lesions. Also, nowadays, it can be performed in many centers throughout the world and is recognized as a valuable method to achieve a prompt, definitive diagnosis of acute massive colorectal bleeding.

### Résumé

Les auteurs ont analysé les différentes techniques pour le diagnostic étiologique des hémorragies intestinales basses massives. Selon les données de la littérature et une expérience

personnelle basée sur 409 coloscopies en urgence, cet examen endoscopique joue un rôle précieux dans le diagnostic étiologique de l'hémorragie colorectale massive.

### Resumen

Los autores revisan los diferentes métodos actualmente disponibles para el diagnóstico de la hemorragia aguda y masiva del tracto gastrointestinal bajo (escintigrafía con tecnecio 99m, arteriografía selectiva, colonoscopia, colonoscopia intraoperatoria). Basados en datos de la literatura y en la experiencia con 409 exámenes endoscópicos de emergencia del intestino grueso, se puede presentar la colonoscopia de urgencia como un método diagnóstico valioso en casos de sangrado masivo del tracto colorrectal.

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