Symposium

Newer Diagnostic Techniques:
Arteriography in Colorectal Disease

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Sometimes we are faced with the problem of the problem of the massive GI bleeder. It really is very difficult, as I don’t have to tell you, when the patient is spouting blood from both ends, to localize the area of the bleeding, and certainly, by opening up the patient, you subject him, possibly, to a long and traumatic experience, for both yourself and the patient. In the course of the last decade or so, and particularly in the last few years, we have become increasingly interested in the use of arteriography to demonstrate the site of arterial bleeding. (Slide, please.)

For those of you who have forgotten, or perhaps even never knew, I would like to show briefly the method by which we accomplish this. This is the Selzinger technique, percutaneous puncture of the femoral artery, which is specifically used, by a cannula. This is angulated so that it lies along the vessel. A guide wire is then passed through the cannula into the artery. I don’t quite know what this thing is doing down here; it certainly doesn’t do any good. It’s supposed to be actually at the puncture site to prevent bleeding as the cannula is withdrawn, and then the catheter is placed over the guide wire and introduced into the artery. The guide wire is then taken out, leaving only the catheter, which is then under fluoroscopic control, placed selectively in the required vessel. This, in this particular instance, would be the celiac axis, the superior mesenteric artery, or the inferior mesenteric artery. (Next slide.)

This is a study that we might expect from injection; this is, in fact, a selective superior mesenteric artery injection, but with some reflux into the aorta, and here we see extravasation starting in the region of the ileocecal valve. The dye that you see down here is actually extravasation of the contrast material from the bleeding point. (Next slide.)

As the study continues, and all the contrast material is emptied from the venous side, the pooling of contrast material remains, and here we see in this same instance the small puddle of the contrast material. It is essential to prolong the study to a sufficient period of time so that there is complete emptying of the venous structures because this, in point of fact, can confuse you, particularly when only small areas of bleeding points are demonstrated. (Next slide.)

A similar instance in the cecum here; this is being fed by the right colic artery; you can see early extravasation of the contrast material. (Next slide.)

After all the contrast material has gone, you can see the extravasation of this contrast material. (Next slide.)

This is actually cut off here; you can only see it very faintly; again, this reflux of con-
trast material into the aorta, but this is a specific injection of the superior mesenteric artery and you can see the middle colic artery going up here and, very faintly, one can see the contrast material extravasating at that point, which is way up in the splenic flexure. (Next slide.)

You can see here that just some of the contrast material has become extravasated. This is the early venous phase, with the middle colic vein. (Next slide.)

After all the venous structure is empty, we have just the extravasation of the contrast material. (Next slide.)

Now the findings are completely non-specific in terms of the disease process involved. One of these cases that I have shown you was a cecal ulcer due to uremia; one of them was a bleeding diverticulum, and the other was regional enteritis. It is impossible for us to tell exactly what the underlying disease is; all we can do is to tell you where the patient is bleeding. This, in fact, was a patient who came to us with prolonged bleeding over a long period of time, and this is selective catheterization of the superior mesenteric artery; here we were able to delineate an abnormality in the tip of the cecum. (Next slide.)

One can see that there is a little abnormal collection of veins down here — a very prominent venous return but, in point of fact, there is no extravasation. We weren't deterred by this, and we said that this was the point at which the patient was bleeding. Unfortunately, when the surgeon went in there, it was not so; this was a case of familial telangiectasia. What the patient had was a bleeding duodenal ulcer. So simply because one finds one abnormality, it behooves one to go on and examine all the other arteries. I prefer to start with the celiac axis and go from there to the superior mesenteric artery and then to the inferior mesenteric artery, simply because that's the easiest way of doing it, but, of course, one should start with the inferior mesenteric artery because low rectal lesions may be obscured by the contrast material being excreted in the bladder.

Quite a lot of contrast material is given in the course of this procedure, because we use about 60 ml of contrast material for the celiac axis and for the superior mesenteric artery. Of course, one does have to do two injections for the superior mesenteric artery in order to encompass all the gut. Also, you have to do the same for the inferior mesenteric artery, so you are injecting a minimum of 210 ml, not counting any test dose that you might prefer to give, which then takes you up to approximately 250 ml, which is the upper limit of normal, I think, for injecting into one patient. (Next slide.)

This is a postoperative demonstration. Here we have injected a specimen with barium, and there you can see a very nice extravasation of contrast material into a bleeding diverticulum. (Next slide.)

We were interested in examining with the technic why diverticula occurred and where the bleeding occurred, and here you can see the artery coming in. This is the lumen of the bowel down here; these are the diverticula with the blood vessels arranged around the diverticula. (Next slide.)

This, again, is the lumen of the bowel; here you can see the diverticulum with the blood vessels coming off up here, circle around the diverticulum, before the vessel plunges into the bowel itself. This apparently is the point of weakness, so we feel that this is the area in which one might expect to see the diverticulum on the mesenteric border, but the question still arises as to why this should bleed and where the bleeding takes place.

The question of when these studies should be performed now arises. I am sure that many of you are irate with your medical colleagues because the patients always wait until the last possible moment. Well, I have the same complaints to make about