



## INTERVENTIONAL RADIOLOGIST : CHANGING PERSPECTIVE AND ROLE IN MANAGING PATIENTS WITH GASTROINTESTINAL BLEED

### Radiodiagnosis

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### ABSTRACT

**Introduction:** Interventional Radiologist (IR) have become an essential part of Multidisciplinary team (MDT), managing patients with Gastrointestinal (GI) bleed. Here we report a case of a young male with upper GI bleed, to highlight how IR helps MDT at various steps, in managing these patients.

### KEYWORDS

GTCS – Generalized Clonic Tonic Seizures, TPN – Total Parenteral Nutrition, GDA – Gastroduodenal artery, IVC – Inferior Vena Cava, CECT – Contrast enhanced Computed Tomography, UGIE – Upper Gastro-intestinal Endoscopy, FJ Tube – Feeding Jejunostomy tube

### INTRODUCTION

Interventional Radiologist (IR) have become an essential part of Multidisciplinary team (MDT), managing patients with Gastrointestinal (GI) bleed. Here we report a case of a young male with upper GI bleed, to highlight how IR helps MDT at various steps, in managing these patients.

### CASE REPORT:

A 20 year young man presented to emergency in shock, with severe anemia. He had blood in vomitus and melena for 10 days, fever with chills for 3 days and altered sensorium for 1 day. He had suffered 2 episodes of Generalized Tonic Clonic Seizure (GTCS), 1 month and 10 days back, and after these seizures, he had not taken any treatment. CT done outside, had showed evidence of calcified granuloma in left frontal lobe. He also had blackening of tips of fingers and toes. Vasopressors were started for resuscitation at a local hospital, for severe anemia and hypotension. UGIE was done at time of admission, and showed evidence of altered blood in fundus, body and antrum of stomach, and a large ulcer of size 30 x 20 mm at D1/D2 junction (Forrest type 1b) with active ooze. Emergency team, in consultation with GI Surgeon and IR, took decision to shift patient directly to Radiology Digital Subtraction Angiography (DSA) room, without CT Angiography abdomen, as patient was unstable. Angiography revealed no active site of bleed and prophylactically, Gastroduodenal artery (GDA) was coil embolized (figure 1). Patient stabilized for 24 hours, after GDA embolization. However, patient had again episode of GI bleed and this time GI Surgeon took decision for Emergency Laparotomy, in consultation with MDT. During laparotomy, GI Surgeon found actively bleeding giant ulcer in posterior wall of duodenum, and this ulcer was adherent to infrahepatic IVC. There was also evidence of Gastric Outlet Obstruction (GOO). GI surgeon had to dissect and repair infrahepatic IVC, to stop bleeding after prolonged surgery. Gastrojejunostomy (GJ) with pyloric exclusion was done with biliary diversion (T tube) and retrograde tube duodenostomy, to divert the pancreatic and enteric effluent. Feeding jejunostomy was done, 20cm distal to GJ, using a Witzel tunnel technique, with 12F Ryle's Tube (RT).

Vasopressor support for UGI bleed was continued postoperatively. Trial of FJ feeds was started, which was tolerated well by the patient. Persistent gastroparesis prevented RT removal. T-tube and duodenostomy were functional, with T tube draining bile and duodenostomy draining clear pancreatic juice. Drain output gradually reduced over 3 days, with removal of both pelvic drain and retroduodenal drain. Patient developed fever spikes on day 8, for which he underwent CECT abdomen. No drainable collections were found. However, there was evidence of floating thrombosis in the right external iliac vein and thrombus in infrahepatic IVC, near site of repair.

IR inserted filter in IVC, at level above site of IVC repair (figure 2). Aspirin and Dabigatran were started. Blood culture during fever spikes yielded *Enterococcus faecium* and *Klebsiella pneumoniae*, which were sensitive only to Doripenem and Carbapenems respectively. Acute onset of agitation and confusion also developed, for which Neurology and Psychiatry reference were sought. Neuroimaging was done, which revealed a calcific granuloma in the frontal region, suggestive of a calcified neurocysticercosis. Agitation settled over next 2 days. EEG was normal and leviteracetam was continued, and haloperidol started for agitation. Dyselectrolytemia was also corrected. In view of persisting sepsis and high RT output, decision was taken in consensus with IR, for re-evaluating patient with CT abdomen, with no oral or intravenous iodinated contrast, and only positive iodinated contrast through T tube. There was evidence of leak from the duodenum, tracking to right paracolic gutter and then into the wound in anterior abdominal wall (figure 3, 4, 5 and 6). A dilated segment of bowel was also found between GJ and FJ. In MDT discussion, it was decided to continue FJ feeds, and supplement this with TPN, to augment the nutritional demands of patient. The wound culture and T tube culture, showed evidence of *Streptococcus* maltophilia. Thereafter, levofloxacin was started intravenously. In view of the infection, bile refeeding was stopped. High NG output settled over one week. FJ feed was continued for 24 days and TPN was stopped, after resumption of oral diet. VAC dressing was applied to the anterior abdominal wall wound, after due consultation with Plastic Surgery department. Wound granulation was seen within one week, and would healing improved with Vaseline gauze dressing. Patient started to develop fever spikes again on day 34, with tachycardia, cough and expectoration. Sputum sample was sent for culture, with report coming positive for *Klebsiella pneumoniae*, sensitive to Piperacillin, Tazobactam and Amikacin. Patient had episode of GI bleed again, with evidence of blood from duodenostomy tube. Decision was taken to do CT angiogram, which revealed no evidence of active contrast extravasation. Octreotide was thereafter started and bleeding settled over 2 days. The patient was discharged on day 52, with advice for IVC removal in next one month. IVC Filter was finally removed successfully after one month by IR.

### DISCUSSION:

Charles Dotter is considered Father of IR, and he popularized Seldinger technique, to access vessels percutaneously, using minimally invasive route<sup>1</sup>. IR has grown by leaps and bounds, and now IR are considered essential part of MDT, managing patients with GI bleed<sup>2,3</sup>. Endoscopy and/or Colonoscopy is done first by Gastroenterologist, to see site of bleed. Thereafter, in stable patients, CT Angiography abdomen is done and patient is managed, based on CT findings. If patient is unstable, then patient is taken for Surgery or IR procedure, depending on available expertise and facility<sup>4</sup>. In our patient, endoscopy was done first, followed by prophylactic GDA coil

embolization, in consultation with GI Surgeon. This stabilized patient for 24 hours, followed by another episode of GI bleed, which was managed by Exploratory Laparotomy. This can be explained by Emergency Laparotomy finding of posterior duodenal ulcer, adherent to infrahepatic IVC. So, probably bleed was directly from infrahepatic IVC into duodenum. Thereafter, patient had evidence of free floating thrombus in right external iliac vein and thrombus in infrahepatic IVC. This was managed successfully by IR, with insertion of IVC filter, along with aspirin and dabigatran.

IR is integral part of MDT team, and helps not only in managing patients therapeutically, but also for diagnosing leaks, in confusing conditions. In our case, IR helped GI surgeon in diagnosing duodenal leak, extending into right paracolic gutter and then into the wound in anterior abdominal wall, along with dilated segment of bowel between GJ and FJ. Herein, patient was managed conservatively by continuing FJ feeds, supplemented with TPN, in consultation with MDT. IR was integral part of MDT discussion, which took decision for CT abdomen, with iodinated positive oral contrast through T tube, and this was decisive in demonstration duodenal leak.

Finally, IR successfully removed IVC filter, one month after discharge. So, IR helped in managing this patient successfully, by guiding and treating patient at multiple steps, during and after his hospital stay, in due consultation with GI Surgeon and other members of MDT.

### CONCLUSION

Our case report highlights role of team approach, which is integral to management of patients with GI bleed. Sixty years back, Radiologists were considered angiographers, with role only in diagnosing diseases. But, now IR have role not only in diagnosis, but also in treating complex diseases, and that too under image guidance, with percutaneous minimal invasive approach. IR are running specialty clinics, taking daily ward rounds, and doing procedures in day care, with advantage of less morbidity and improved quality of life. IR now have to make themselves available, 24 hours x 365 days in a year, as they can be called for Emergency case, in whatever time of day or night. This makes IR schedule, a daunting task. However, the satisfaction that IR gets, when a patient is successfully managed by him and his colleagues in MDT, is immense and this is drive, which makes IR work hard and do procedures, whatever time of day and night.

### CONFLICT OF INTERESTS

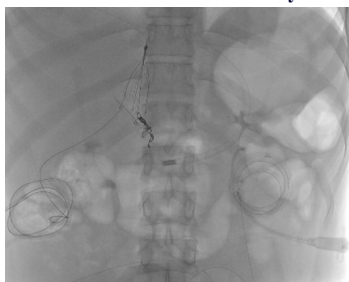
The authors declare that there is no conflict of interests regarding the publication of this paper.

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**Figure 1:** Catheter angiogram post coiling of Gastro-duodenal artery shows no flow in Gastro-duodenal artery.



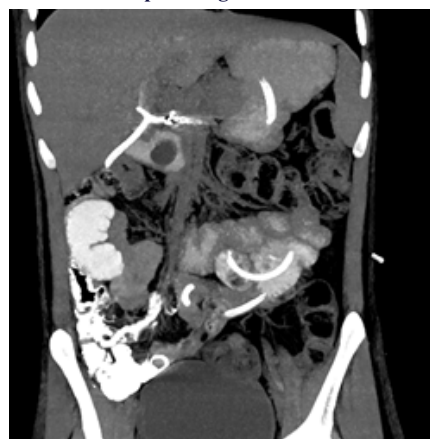
**Figure 2:** IVC filter with Gastro-duodenal artery coil in-situ.



**Figure 3:** CECT abdomen post exploratory laparotomy with Gastrojejunostomy with pyloric exclusion showing Foley's tube duodenostomy and biliary diversion with T tube.



**Figure 4:** Axial CECT abdomen showing midline defect with herniation of bowel loops through it.



**Figure 5:** NCCT abdomen with IV, oral and T tube contrast which showed leak from the posterior wall of the duodenum, tracking to right para-colic gutter and then tracking into the wound (Not shown).



**Figure 6:** CECT abdomen post IVC filter shows IVC filter in-situ with no thrombus noted in whole of the IVC.

**REFERENCES:**

1. Misty M. Payne. Charles Theodore Dotter: The Father of Intervention. Tex Heart Inst J 2001; 28(1): 28-38.
2. Ramaswamy RS, Choi HW, Mouser HC, Narsinh KH, et al. Role of interventional radiology in the management of acute gastrointestinal bleeding. World J Radiol 2014; 6(4): 82-92.
3. Navuluri R, Patel J, Kang L. Role of Interventional Radiology in the Emergent Management of Acute Upper Gastrointestinal Bleeding. Semin Interv Radiol 2012; 29(3): 169-177.
4. Zurkiya O, Walker TG. Angiographic Evaluation and Management of Nonvariceal Gastrointestinal Hemorrhage. American Journal of Roentgenology 2015; 205: 753-763.