SPECTRUM INDIA 2024
8TH - 10TH NOVEMBER, 2024 | GRAND HYATT MUMBAI

Registration number: 576

Title of the presentation: On table CT guided glue injection to control intraprocedural bleeding in high risk biopsy case.

Presenting author: Dr. Chirag Kurane
Co-author: Dr. Varun Yadav
Institute: Tata Memorial Centre, Mumbai

Introduction/ Review of Literature:

Direct percutaneous embolization has been employed in the past in a variety of circumstances, including the treatment of aneurysms , pseudoaneurysms, endoleaks, and varices. However, to our knowledge, it has been very infrequently previously utilized as a way to achieve urgent haemostasis in the case of ongoing arterial haemorrhage. We report a case of direct percutaneous SMA artery glue embolization following iatrogenic puncture during CT-guided biopsy. Institutional review board approval was not required for this report.

Aims/ Objectives:

To demonstrates that CT-guided glue injection through a biopsy needle is a feasible method to control intra-procedural bleeding in high-risk biopsy cases, especially in non-tertiary settings, emphasizing the need for adaptable techniques and preparedness among interventional radiologists in peripheral centres.

Methodology:

- A 58-year-old male patient visited our hospital due to ongoing worsening abdominal pain, loss of appetite, and weight loss over the past few months. An abdominal ultrasound and subsequent CT scan revealed a necrotic pancreatic head mass with loss of fat planes with the gastric antropyloric region, D1 and D2 segments of duodenum infiltrating into the hepatic flexure and air pockets seen within the mass likely mass perforating into the hepatic flexure and encasing the patent superior mesenteric artery and anteriorly its middle colic and right sided ileocolic branches.(Figure 1)
- The patient was scheduled for a CT-guided biopsy subsequently. The pre-interventional platelet count and coagulation profile were within normal limits. Under CT guidance, a 16 G coaxial needle was introduced into the aforementioned necrotic pancreatic lesion with an anterior abdominal approach and the patient in the supine position. (Figure 2)
- Following the fourth biopsy needle pass, brisk arterial flow occurred through the coaxial needle, which raised concern for an artery puncture due to the close proximity of the lesion to the encased SMA and its branches.
- The central stylet was instantly repositioned into the coaxial needle in order to tamponade the ongoing bleeding, while a mixture of glue (N-Butyl cyanoacrylate) and Lipiodol® (Guerbet; France) was prepared in a 1:1 ratio. Upon removal of the central stylet, the mixture (1 mL in total) was continuously injected through the coaxial needle, while the latter remained in its position and also while it was being withdrawn and removed from the patient's abdomen, in order to achieve track sealing. A new CT angiography was then obtained, revealing a hyperdense-embolic material in the course of the coaxial system, throughout the lumen of the proximal segment of the middle colic and proximal part of the right sided ileocolic branch with persistent arterial flow distally in both the branches (Figure 3A, B, C). Importantly, no contrast extravasation or additional complications were noted. The patient remained hemodynamically stable, with no drop of the HCT/Hb counts and no clinical signs or symptoms of bleeding throughout the procedure and remaining hospitalization.
- Follow-up CT obtained after 1 week showed no signs of active extravasation but there was new onset bilateral pleural effusion and mild ascites (Figure 4) which was tapped and sent for cytology and was straw coloured with no evidence of hemoperitoneum. The HPR report confirmed the diagnosis to be adenocarcinoma of pancreatico-biliary origin (Figure 5) and a joint committee discussion was done following which the patient was planned for palliative systemic therapy.

Results:

- Direct percutaneous embolization is a technique that has been utilized in the past in the management and treatment of various medical conditions. Heye et al have reported the successful direct CT-guided percutaneous embolization of internal iliac artery aneurysms in three different patients, a procedure which was attempted due to the internal iliac aneurysms' inaccessibility from the transarterial route (1). Krueger et al have reported a case of CT-guided direct percutaneous thrombin injection in a pancreatitis- induced splenic artery pseudoaneurysm which was impossible to selectively catheterize in the angiography suite (2).

- For many years, vessel ligation following surgical exploration has been the standard of care for vascular injuries (3). However, since the discovery of digital subtraction angiography (DSA), interventional radiology has evolved to include a variety of different endovascular procedures and treatment techniques. Among them, transcatheter arterial embolization (TAE) is a procedure performed in the angiography suite under fluoroscopic guidance by gaining arterial access (usually through the common femoral artery) with the use of the Seldinger technique after making a small incision in the skin (3).

- The decision to conduct an on-the-spot CT-guided percutaneous embolization of the SMA artery branch through the previously positioned coaxial system instead of transferring the patient to the angiography suite for TAE was largely based on the brisk haemorrhage which was noted through the coaxial needle and the high risk of accidental needle displacement if the patient was to be relocated. The choice of 1:1 glue mixture was decided to achieve good penetration and adequate proximal sealing while retrieving the needle to prevent the glue from flying off more distally into the main trunks of the SMA and its distal main terminal branches but with an increased risk of inadequate occlusion, as the glue could have been stuck within the needle without sealing the entry site.

Figure 1

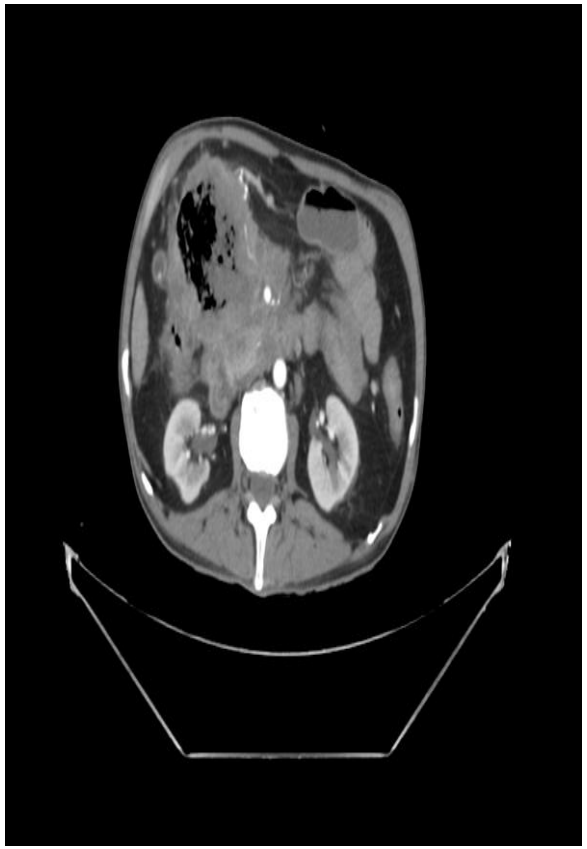

Figure 2

Figure 3A,B

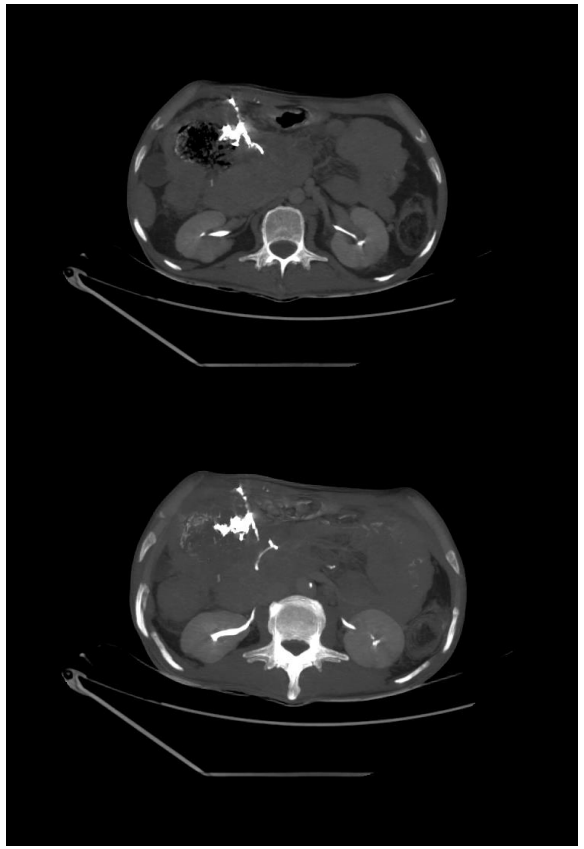

Figure 3C

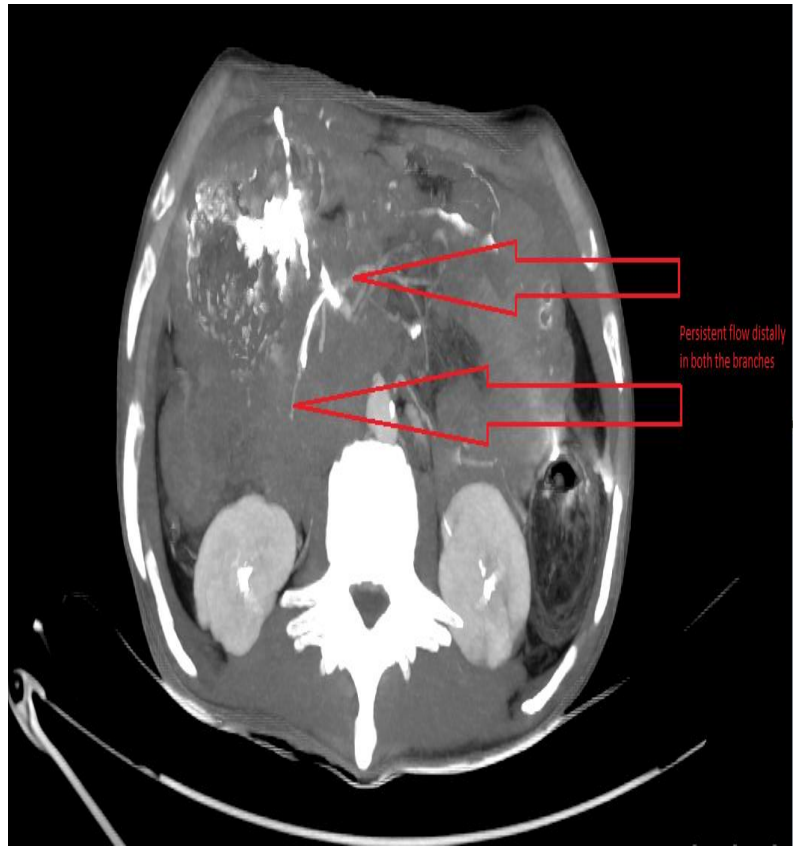

Figure 4

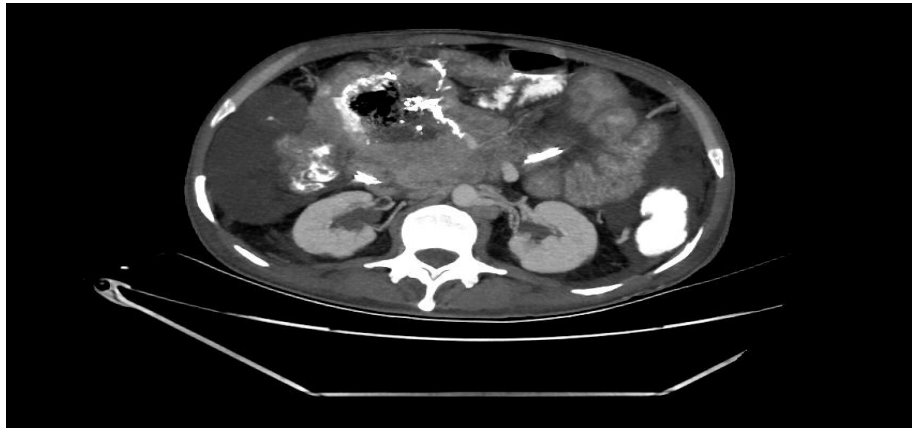

Figure 5

Nature of Material Received: 1 Biopsy

Gross Description:

Pancreas, CT guided biopsy:

Received in formalin labeled with patient's name is a specimen of "Pancreas, CT guided biopsy" containing multiple grey-white to grey-brown soft tissue cores largest measuring 1.2 cm. Submitted entirely.

Sections:

1. Pancreas, CT guided biopsy.

Microscopic Description:

Pancreas, CT guided biopsy:

Section show multiple cores of fibrocollagenous tissue infiltrated by adenocarcinoma.

Areas of necrosis are also noted.

By immunohistochemistry, the tumor cells are positive for CDX2 and show focal staining for CD20, while they are negative for CK7.

Features are those of adenocarcinoma of pancreatico-biliary origin.

Impression:

- **Pancreas-CT guided biopsy :**
  - **Adenocarcinoma of pancreatico-biliary origin.**

Clinico-radiological correlation is recommended.

Conclusion:

This case demonstrates that CT-guided glue injection through a biopsy needle is a feasible and effective method to control intra-procedural bleeding in high-risk biopsy cases, even in a peripheral IR centre. Such innovative on-table interventions highlight the potential for effective management of complications in non-tertiary settings, emphasizing the need for adaptable techniques and preparedness among interventional radiologists in peripheral centres.

References:

1. Heye S, Vaninbroukx J, Daenens K, et al. Embolization of an internal iliac artery aneurysm after image-guided direct puncture. Cardiovasc Intervent Radiol. 2012;35:807–814. doi: 10.1007/s00270-010-0061-2. [DOI] [PubMed] [Google Scholar]

2. Krueger K, Zaehringer M, Lackner K. Percutaneous treatment of a splenic artery pseudoaneurysm by thrombin injection. J Vasc Interv Radiol. 2005;16:1023–1025. doi: 10.1097/01.RVI.0000162167.54455.C0. [DOI] [PubMed] [Google Scholar]

3. Bauer JR, Ray CE. Transcatheter arterial embolization in the trauma patient: a review. Semin Intervent Radiol. 2004;21:11–22. doi: 10.1055/s-2004-831401. [DOI] [PMC free article] [PubMed] [Google Scholar]