

## Response to article on endoscopic ultrasound-guided thrombin injection, a management approach for visceral artery pseudoaneurysms



We read and analyzed an article published in your esteemed journal by Maharshi S et al. in volume 8, March 2020 [1]. First of all, we would like to congratulate the authors on their innovative paper and appreciate the high technical and clinical success they achieved with endoscopic ultrasound (EUS)-guided thrombin injection for management of visceral artery pseudoaneurysms (PAs). Visceral artery PAs are prone to rupture with life threatening intra-abdominal hemorrhage and high mortality rates. The authors have injected thrombin under EUS guidance, which though a very useful tool in experienced hands, is still an invasive procedure requiring sedation with its own implications and difficulties especially, in hemodynamically unstable patients.

At our institution, we have managed visceral artery pseudoaneurysms using ultrasound and fluoroscopy or computed tomography guidance to percutaneously access and inject thrombin or glue without having to resort to either endovascular or endoscopic route. We have achieved high technical success rates and good clinical outcomes and have recently published our experience, which to the best of our knowledge is the largest such series reported [2,3] Percuta-

neus injection of thrombin or glue has its own advantages over AN EUS-guided procedure, such as shorter procedure time; relative ease of doing the procedure especially in hemodynamically unstable patients; and greater affordability, especially for patients in developing countries like India. Visceral PSAs, in our experience, can be managed with a percutaneous approach if they have certain features such as peripheral location, good neck-to-dome ratios, favorable anatomical locations for needle placement, and lack of demonstrable high-flow arteriovenous communication. We would like to emphasize that use of percutaneous injection of thrombin or glue can be a quick, cheap, and effective treatment option for certain visceral artery PSAs with favorable anatomy without need to resort to an endovascular or EUS approach.

### Competing interests

The authors declare that they have no conflict of interest.

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