



Role of angiogram and embolisation in patients with haemophilia

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Objective

- To report our experience in the use of angiography and embolisation in the management of bleeding and other complications in haemophilia.

Patients and Methods

- Data of all patients with haemophilia related complications who required angiography between 2000 to 2011 was reviewed using the computerised hospital information system and PACS.
- Details including indication for the procedure, patient preparation for the procedure, imaging findings, details of angiography with intervention if any, and outcome as well as follow up data was collected and analysed.

Results

- Seven patients, age between 16 to 59 years, underwent angiographic procedures.
- All had severe haemophilia.
- The indications included
 - expanding massive spontaneous anterior abdominal wall haematoma - 1
 - persistent postoperative bleeding from an amputated stump - 1
 - chronic osteomyelitis with bleeding - 1
 - pre-operative evaluation of expanding / compressing pseudotumour - 3 (one each in paravertebral region, right thigh, iliopsoas)
 - pseudotumour adjacent to gastric wall with chronic upper gastrointestinal bleeding - 1
- All patients underwent angiogram through femoral arterial access, and embolisation if needed
- Adequate factor replacement to cover the procedure and 48 hours after
- Bleeding vessels were identified in -- cases and were embolized
- Polyvinyl alcohol particles were used for embolisation
- Peripheral hypervascularity was noted in pseudotumours
- Embolization of major vessels on the surface was done to ease dissection and excision of pseudotumours
- There were no complications during the procedure nor were there any post-procedure bleeding or hematoma at the site of arterial access

Table 1

Case no	Age in years (all males)	Clinical presentation	Cross sectional imaging	Vascular access	Angiographic findings	Embolisation material used	Complication	Outcome
1 (Figure 1,2)	40	Acute - History of fall, left iliac fossa haematoma, persistent bleeding post evacuation	CECT abdomen, angiogram	Right femoral, 5F sheath	Faint parenchymal blush of inferior epigastric artery at site of haematoma	Gel foam	Nil	Short term resolution post-embolisation, with recurrence of bleeding. Re-operated with exploratory laparotomy and debridement of abdominal wall. No further bleeding
2	16	Sub-acute - Right hip disarticulation with post-op bleeding from stump	CECT abdomen, angiogram, MRI of right thigh	Left femoral, 4F sheath	Right pelvic mass with hypervascularity along periphery of mass	40-150µ PVA particles	Nil	No further bleeding
3 (Figure 3,4)	50	Acute - Post-operative right above knee stump bleed	Nil	Left femoral, 4F sheath	Hypervascularity of distal stump, mild dilatation of stump of distal SFA	Pushable 0.035" helical metal coils, 500-710µ PVA particles.	Nil	No further bleeding Healing of surgical wound
4	26	Chronic - Left psoas and L1 vertebral body haematomas	MRI spine	Right femoral, 4F sheath	Hypervascularity of L1 and L3 vertebral bodies supplied by respective lumbar arteries	500-710 µ PVA particles	Nil	No significant bleeding intra-op.
5 (Figure 5,6,7)	27	Chronic - Right thigh pseudotumour	MRI right thigh	Left femoral, 4F sheath	Mild hypervascularity of right Profunda femoris and right superficial femoral arterial branches	150-255 µ PVA particles, gelfoam	Nil	No extensive bleed post-op
6	59	Chronic - Abdominal swelling with extensive retroperitoneal right iliopsoas pseudotumour	CECT abdomen, CT pulmonary angiogram	Left femoral, 4F sheath	Large ilio-psoas pseudotumour	510-710 µ PVA particles	Nil	No significant bleeding intra-op
7 (Figure 8,9,10)	42	Recurrent melena; fistula with blood and pus discharge along posterior wall of stomach seen on gastroscopy. Operated for lesser sac pseudotumour. Gradual drop in haematocrit post-op	CECT abdomen	Right femoral, 4F sheath	A large pseudotumour indenting greater curvature of stomach	Gel foam, 250 µ PVA particles.	Nil	No further melena

Case 1 (spontaneous haemorrhage – embolised)



Please refer table 1 for details.
Figure 1. CECT abdomen venous phase – large anterior abdominal wall haematoma, overlying left iliac fossa (arrow)

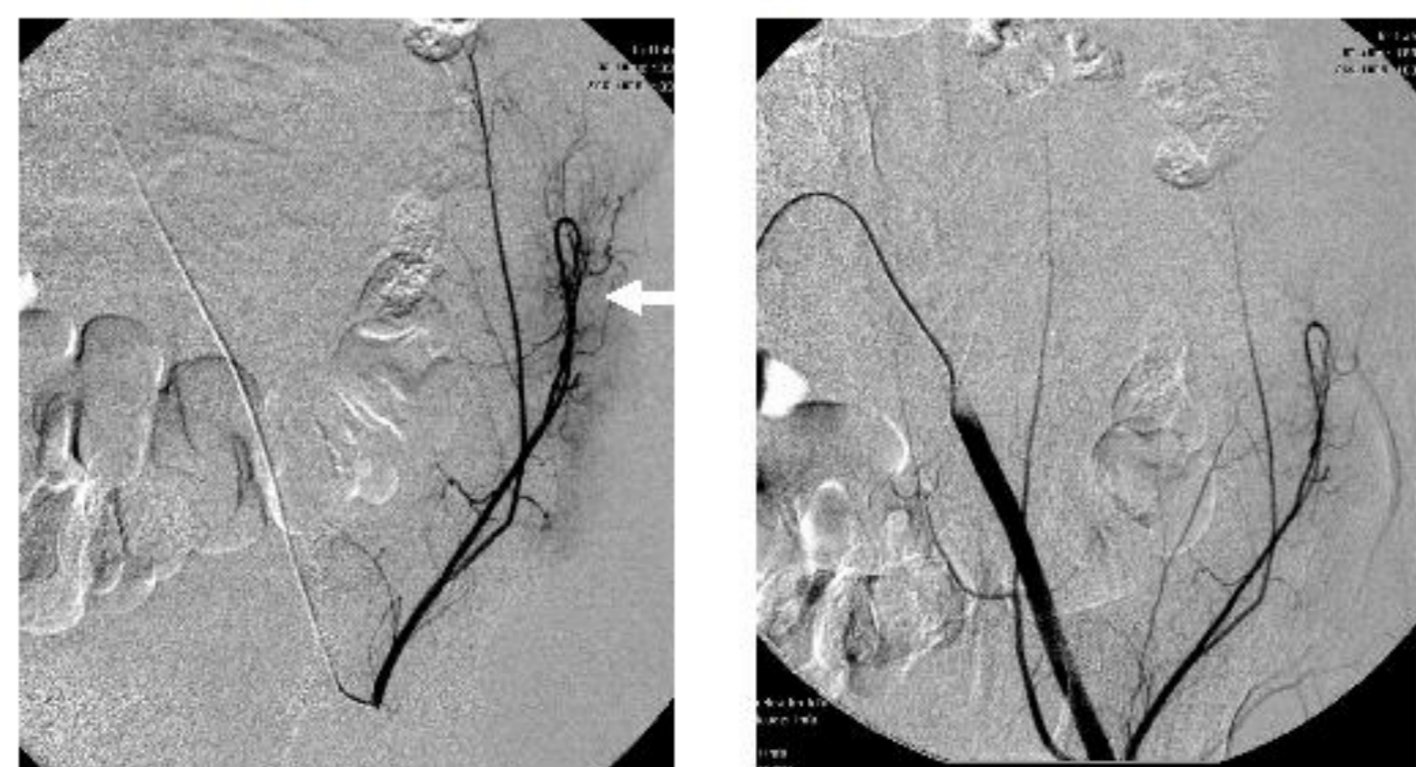
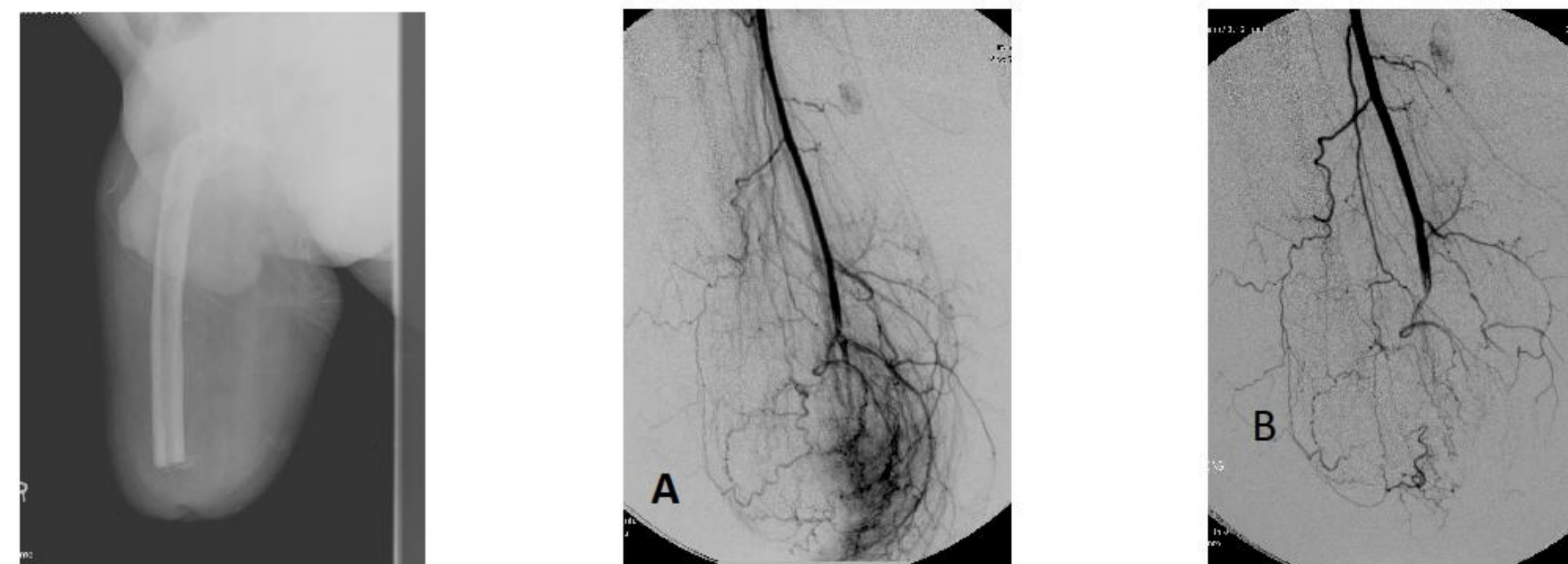


Figure 2. DSA: abnormal blush (arrow) in the left inferior epigastric artery (A), embolised with Gelfoam (B).

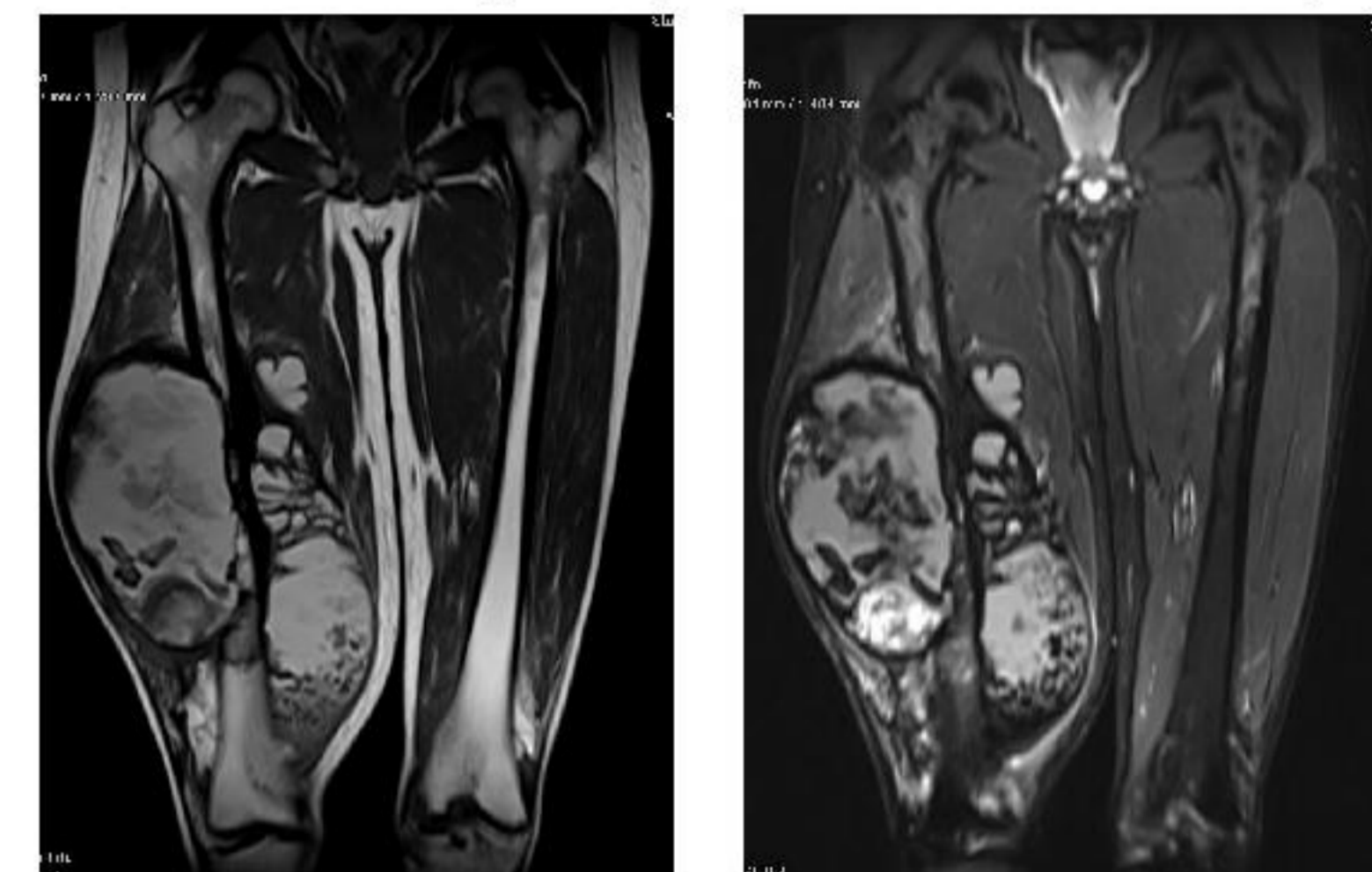
Case 3 (postoperative bleed – embolised)



Please refer table 1 for details.
Figure 3. Plain radiograph – post-op. above knee amputation stump on right side

Figure 4. DSA: right SFA, hypervascularity of the stump (A). Postembolisation with PVA particles (B)

Case 5 (pre-operative embolisation)



Please refer table 1 for details.
Figure 5. MRI coronal T1W (A) and (B): a large pseudo-tumour of right thigh

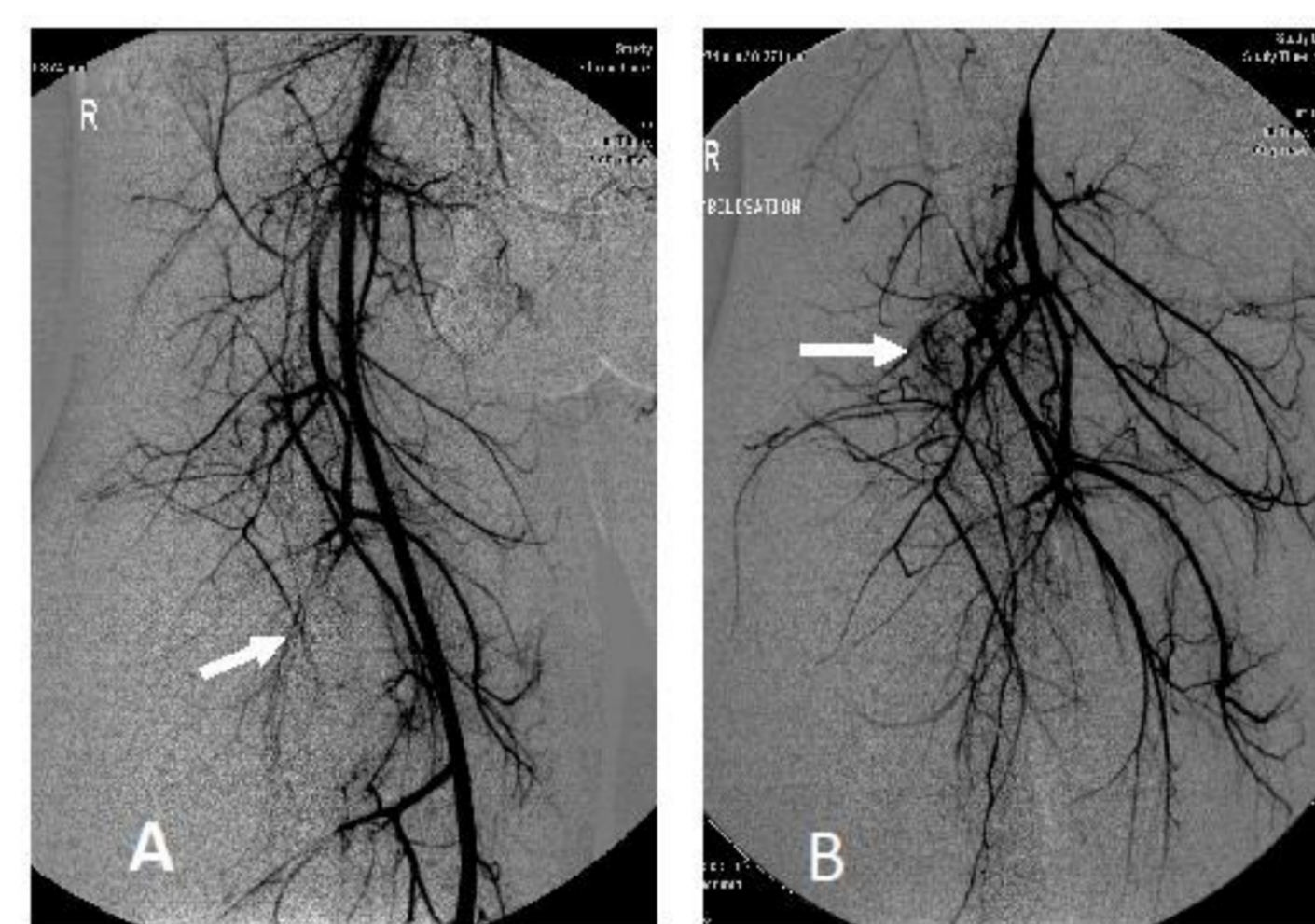


Figure 6. Right SFA (A) and PFA (B) selective angiograms – hypervascularity of some branches (arrows)

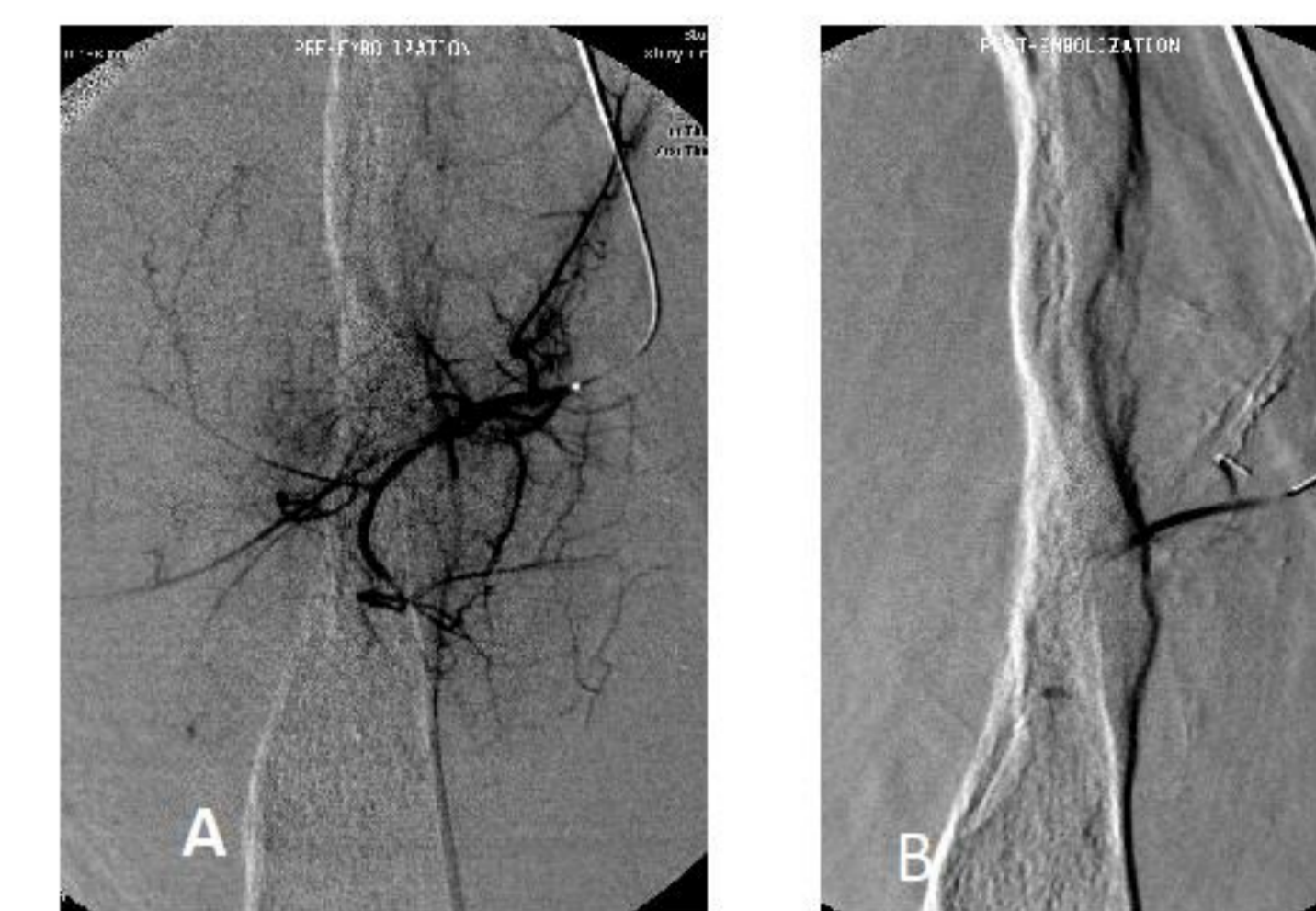
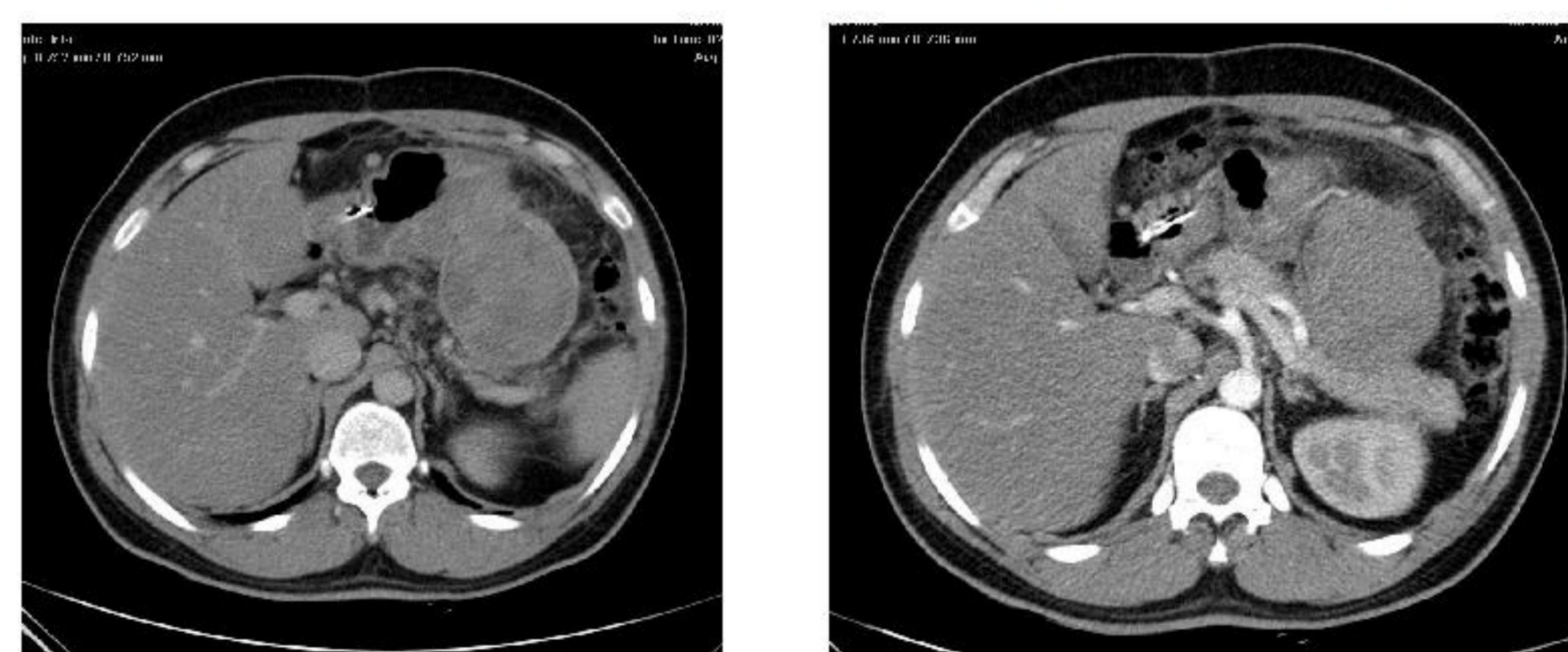


Figure 7. Embolisation – Right Profunda femoris artery branch selectively cannulated (A) with PVA particles and gelfoam (B)

Case 7 (embolisation)



Please refer table 1 for details.
Figure 8. CECT abdomen – pseudotumour indenting greater curvature of stomach (arrow)



Figure 9. Coeliac artery angiography – hypertrophied right gastro-epiploic artery

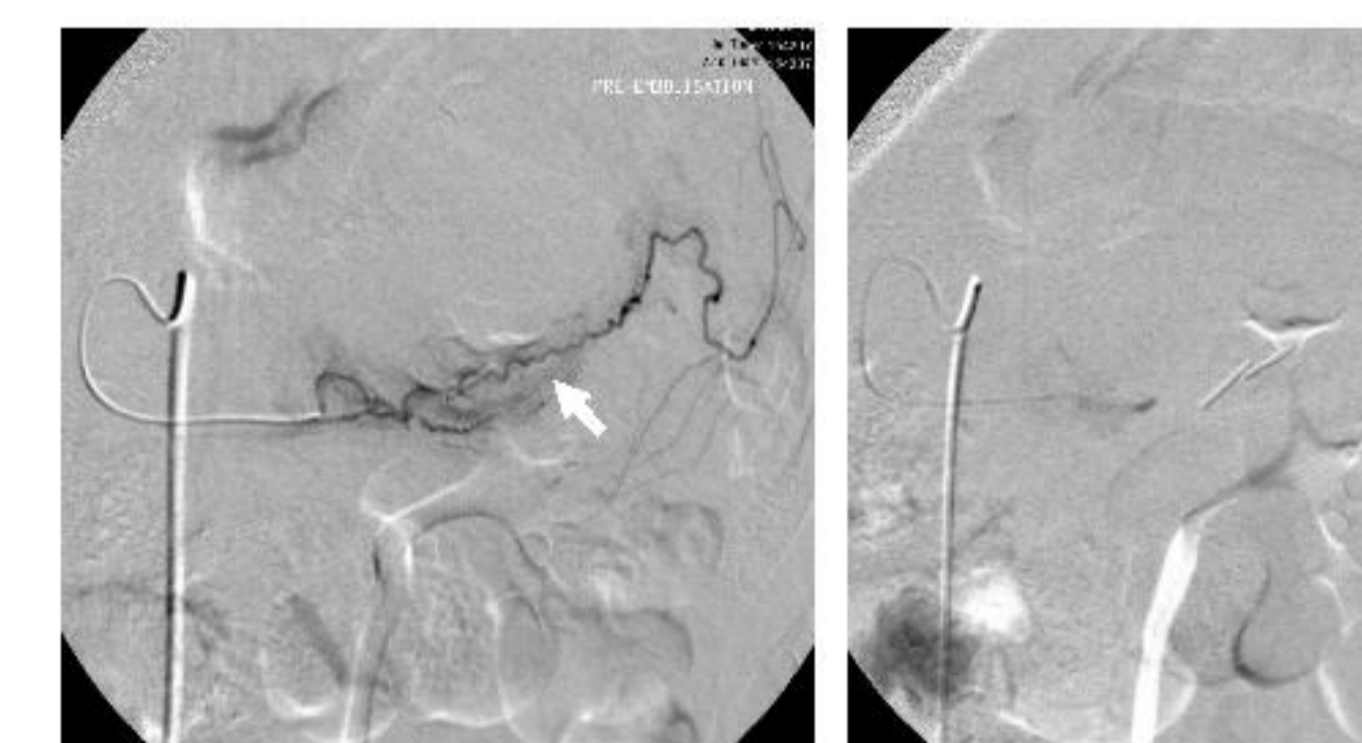


Figure 10. DSA: selective cannulation of hypertrophied right gastro-epiploic artery (arrow) (A) with gelfoam and PVA particles (B)

Conclusion

Angiogram and embolisation, if needed, is a useful procedure in carefully selected patients with haemophilia to either stop persistent bleeding which may be from a vessel or excision and reduce the chances of bleeding at the time of surgery in patients with large pseudotumours.

Abbreviations and expansions

PVA : Poly vinyl alcohol , MRI : Magnetic resonance Imaging

DSA : Digital subtraction angiography , CECT : Contrast enhanced computed tomography

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