Eur Radiol (2004) 14:1718–1719
DOI 10.1007/s00330-004-2234-3

LETTER TO THE EDITOR

Bertrand Bessoud
Alban Denys

Main splenic artery embolization using coils in blunt splenic injuries: effects on the intrasplenic blood pressure

Received: 17 October 2003
Accepted: 19 November 2003
Published online: 13 February 2004

B. Bessoud · A. Denys (✉)
Department of Radiology
and Interventional Radiology,
Centre Hospitalier Universitaire Vaudois,
Rue du Bugnon 46, 1010 Lausanne,
Switzerland
e-mail: alban.denys@chuv.hospvd.ch
Tel.: +41-21-3144470
Fax: +41-21-3144443

Sir,

Main splenic artery embolization is gaining acceptance in the management of severe traumatic splenic injuries [1, 2]. The technique mimics surgical splenic artery ligation, which has been successfully used to control splenic hemorrhage and allows one to preserve the spleen [3]. It is postulated that coil occlusion of the main splenic artery decreases blood flow and splenic blood pressure, thereby facilitating clots to organize and the spleen to heal. However, perfusion of the spleen after main splenic artery embolization is preserved through the rich collateral circulation from the left gastric and gastroepiploic arteries as well as pancreatic and omental branches [4]. Lowering of the intrasplenic arterial pressure during or after splenic artery embolization has not been demonstrated in reported series [1, 2].

We performed invasive intrasplenic arterial pressure monitoring during main splenic artery embolization in two patients in order to demonstrate the effects of this technique on splenic blood pressure. Both patients were men, aged 38 and 32 years, admitted for blunt abdominal trauma caused by a motor vehicle crash and a 5-m fall, respectively. In both patients, CT examination revealed grade IV splenic injuries according to the AAST Organ Injury Scale, associated with active contrast extravasation in one case; there was no associated injury except rib fractures. Patients were hemodynamically stable. After having obtained the patients' informed consent, we performed main splenic artery embolization.

Access was established via the right femoral artery using the Seldinger technique to place a 6-French introducer sheath (Radifocus Introducer II; Terumo Corporation, Tokyo, Japan). After a diagnostic celiac and splenic angiogram was performed (Fig. 1a) with a 5-French catheter (Cobra Glidecath, Terumo Corporation), a 6-French 55-cm-long guiding catheter (H-stick; Cordis Corporation, Miami, FL) was advanced in the splenic artery over a 0.035-in. guidewire. Through the guiding catheter, we placed a 0.014-in. guidewire with a mounted pressure sensor (Pressure Wire 4; RADI Medical Systems, Uppsala, Sweden) superselectively in the intrasplenic arterial branches to measure intrasplenic blood pressure. A co-axial 3-French microcatheter (SP; Terumo Corporation) was advanced into the main splenic artery through the guiding catheter parallel to the pressure wire (Fig. 1b) and Tornado microcoils (Cook; Bjaeverskov, Denmark) were deployed. The endpoint of coil placement was cease of blood flow in the main splenic artery (Fig. 1c). Intrasplenic blood pressure values were measured be-

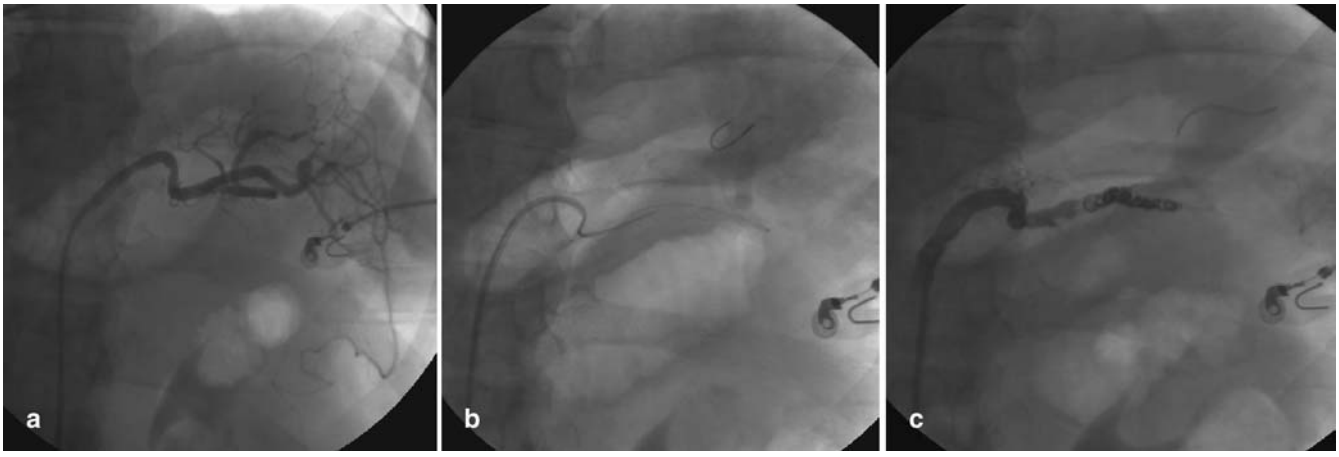

Fig. 1a–c A 38-year-old man with grade IV splenic injury. Splenic angiogram **a** shows anatomy of splenic artery and its branches. **b** A 6-French guiding catheter (*arrowhead*) placed in the splenic artery. A 0.014-in. pressure wire (*arrow*) placed in the intrasplenic arterial branches, and a 3-French microcatheter (*open arrow*) advanced in the main splenic artery, through the guiding catheter. **c** Follow-up angiogram after microcoil deployment in the hilar portion of splenic artery (*arrows*) shows stagnation of contrast medium upstream coils

fore, during, and after completion of the embolization: pre-embolization intrasplenic pressure values were 111, 79, 95 mmHg (systolic, diastolic, mean), and 133 mmHg (mean), respectively; post-embolization pressure values dropped down to 53, 47, 50, and 56 mmHg, respectively. Considering the mean intrasplenic arterial pressure, patients experienced a pressure reduction of 47 and 58%, respectively.

In conclusion, main splenic artery embolization using coils significantly reduces the intrasplenic blood pressure, a condition that may help the clot to organize in severe splenic injuries and allow one to manage the patients conservatively.

References

Sclafani SJ, Shaftan GW, Scalea TM et al (1995) Nonoperative salvage of computed tomography-diagnosed splenic injuries: utilization of angiography for triage and embolization for hemostasis. J Trauma 39:818–825; discussion 826–827

Haan J, Scott J, Boyd-Kranis RL, Ho S, Kramer M, Scalea TM (2001) Admission angiography for blunt splenic injury: advantages and pitfalls. J Trauma 51:1161–1165

Keramidas DC (1979) The ligation of the splenic artery in the treatment of traumatic rupture of the spleen. Surgery 85:530–533

Anderson JH, VuBan A, Wallace S et al (1977) Transcatheter splenic arterial occlusion: an experimental study in dogs. Radiology 125:95–102