



Available online at
ScienceDirect
www.sciencedirect.com

Elsevier Masson France
EM|consulte
www.em-consulte.com/en



SURGICAL TECHNIQUE

Medial to lateral laparoscopic splenic flexure mobilization



F. Mauvais*, F. Browet

Service de Chirurgie Viscérale et Digestive, Centre Hospitalier de Beauvais, avenue Léon-Blum, BP 40319, 60021 Beauvais cedex, France

Available online 10 October 2019

Introduction

Splenic flexure mobilization is often the first step during left colectomy and proctectomy. This maneuver facilitates the colorectal or colo-anal anastomosis by allowing the descending colon to descend into the pelvis to perform a tension-free anastomosis.

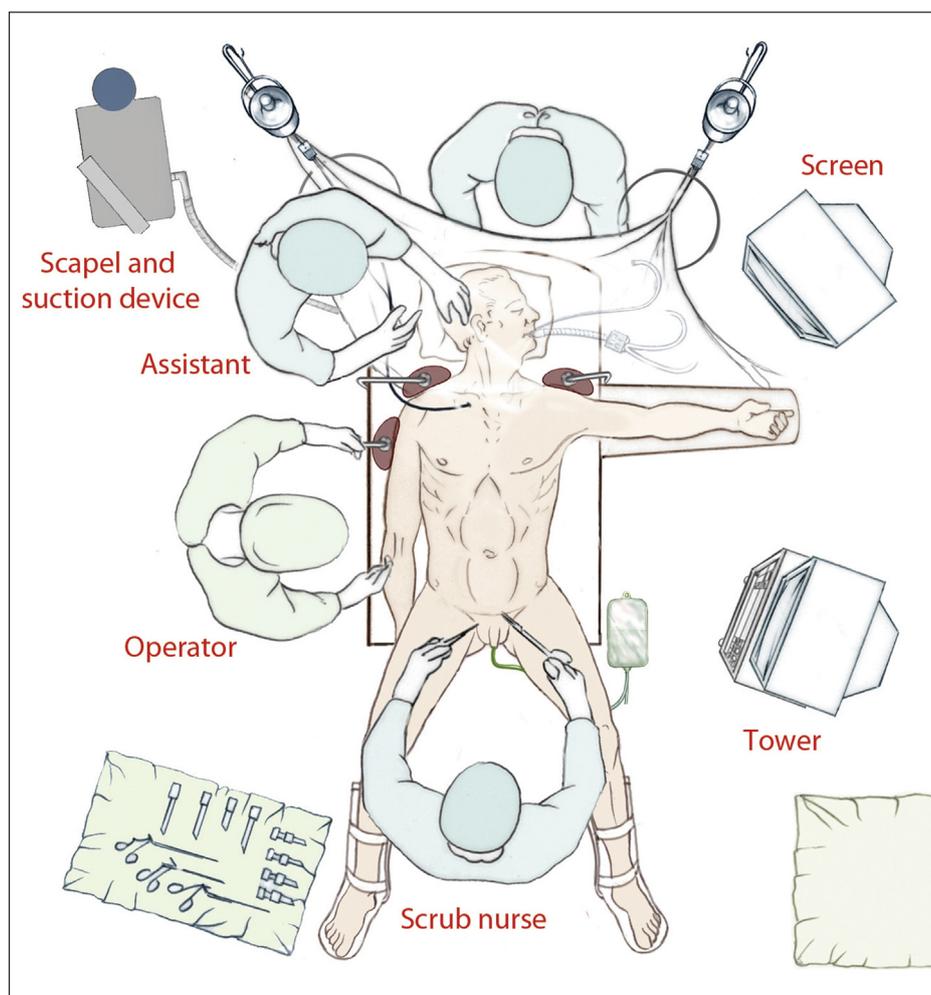
Splenic flexure mobilization can be difficult because of close anatomical relationships between the splenic flexure and the spleen, the pancreas or the greater omentum.

Its performance should be methodical in order not to lose time, in particular in the obese. Once splenic mobilization is obtained, the operator can concentrate on the subsequent operative steps of colectomy.

We propose a medial to lateral approach for splenic flexure mobilization.

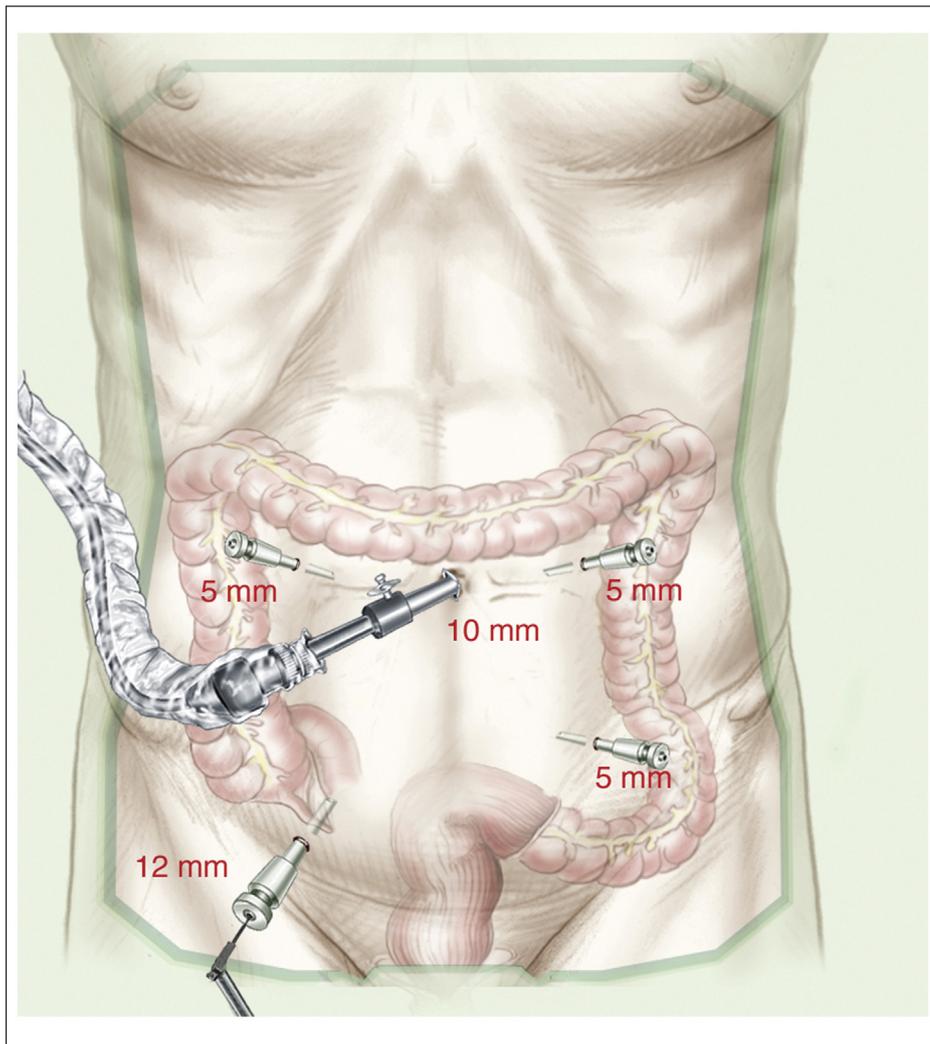
* Corresponding author.

E-mail address: f.mauvais@ch-beauvais.fr (F. Mauvais).



1 Patient position

The key to adequate mobilization is marked rotation of the operating table to place the patient in right lateral decubitus. For this, the patient should be firmly attached to the table so that the table can be tilted without any risk of the patient sliding off. A shoulder pad is placed on the right deltoid muscle, two pads above each shoulder to avoid the patient slipping cephalad, and the lower extremities are secured to each leg support. Particular attention should be paid to the right shoulder abutment to avoid any risk of compression.

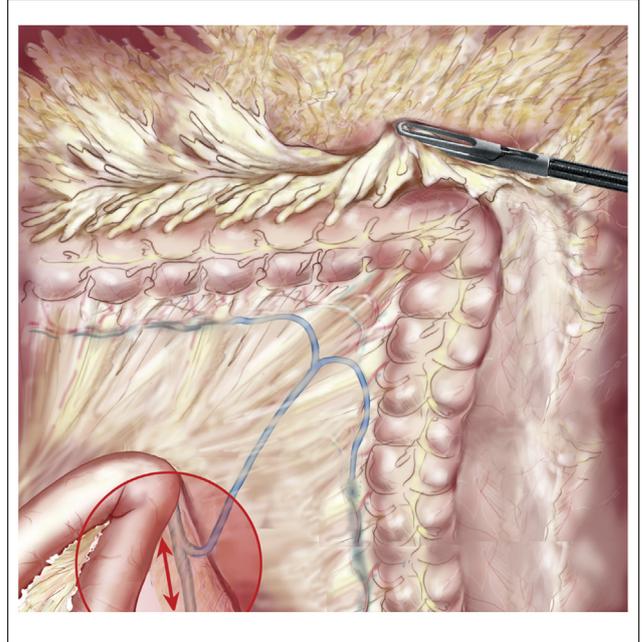


2 Trocar sites

We usually insert five trocars: a 10 mm peri-umbilical trocar for the laparoscope, placed above or below the umbilicus according to patient body build and the type of operation (infra-umbilical for rectal surgery). A 12 mm manipulation trocar is placed in the right lower quadrant, lateral or medial to the epigastric vessels, according to patient body build and disease. These two trocars should not be aligned with the splenic flexure to avoid any sword fighting effect with the operating trocar. Three 5 mm trocars are placed in the right and left flank and left subcostal sites.

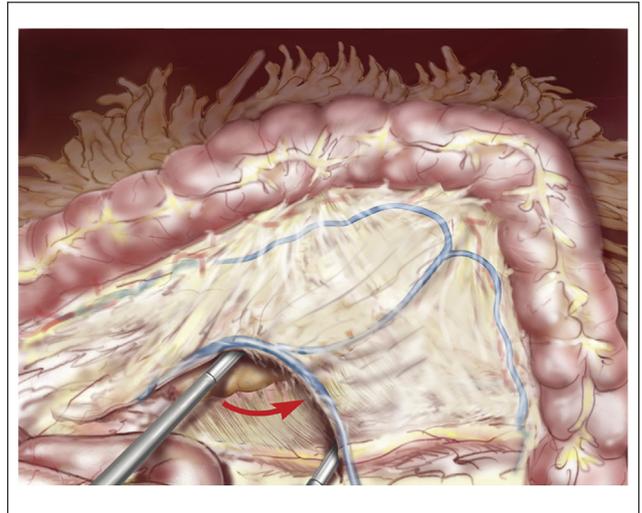
3 Exposure of the splenic flexure

The patient is positioned supine with the table horizontal; the omentum is raised above the stomach to expose the transverse colon. The left horn of the transverse mesocolon is unfolded and maintained cephalad with a fenestrated grasper. The operating table is tilted to the right so that the small intestinal loops fall into the right paracolic gutter. The fourth portion of the duodenum and the inferior mesenteric vein (IMV) should then be visible. In overweight patients, small intestinal mobilization should be performed with care, and sometimes, it is necessary to maintain traction to the right on the small intestines to permit access the IMV.

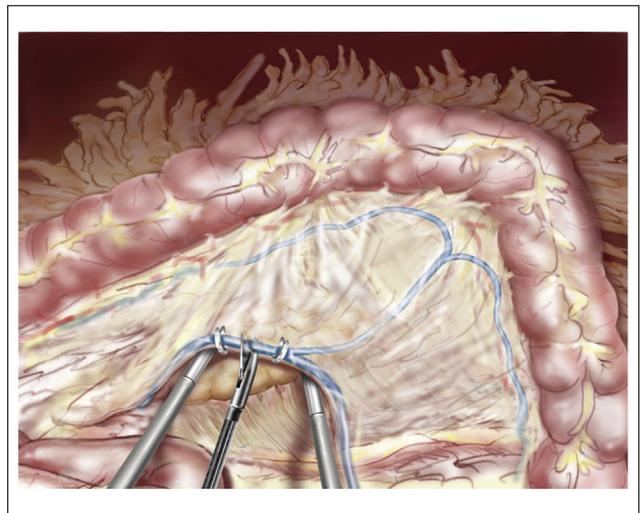


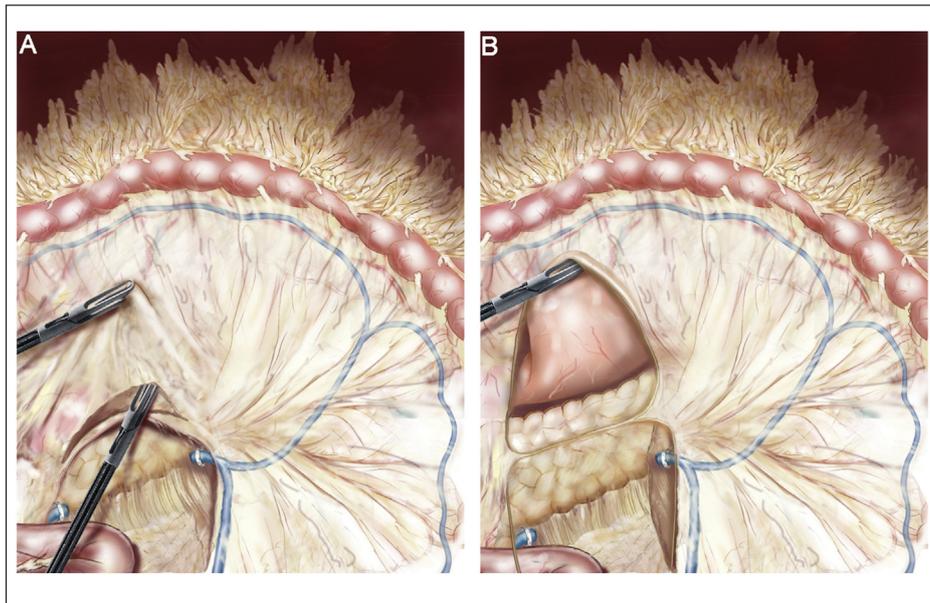
4 Left mesocolic dissection

The peritoneum is incised between the lateral edge of the fourth portion of the duodenum and the IMV, then the vein is raised to start dissection of the left mesocolon. When the IMV is not visible, the operator must check that the plane of dissection is indeed lateral to the fourth duodenum and not lateral to an adherent jejunal loop, and then lift all the tissues lateral to the duodenum to identify the IMV. The posterior aspect of the left mesocolon is dissected as far to the left as possible in front of the pre-renal Gerota's fascia. This maneuver creates a tent above the retroperitoneum. It is important that the operator does not dissect under the pancreas: the warning sign is when the splenic vein is visible.



The IMV is divided, and often, this facilitates the lower part of the mobilization.



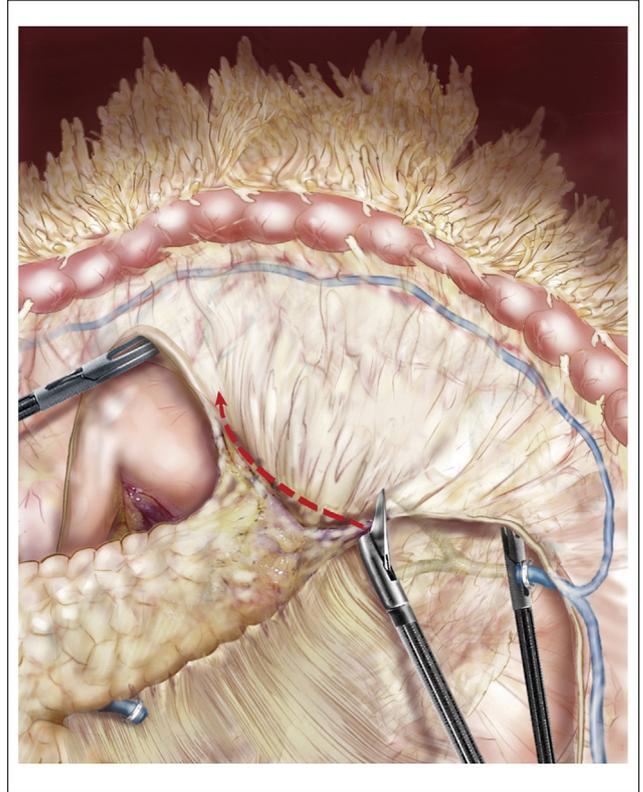


5 Access to the lesser sac

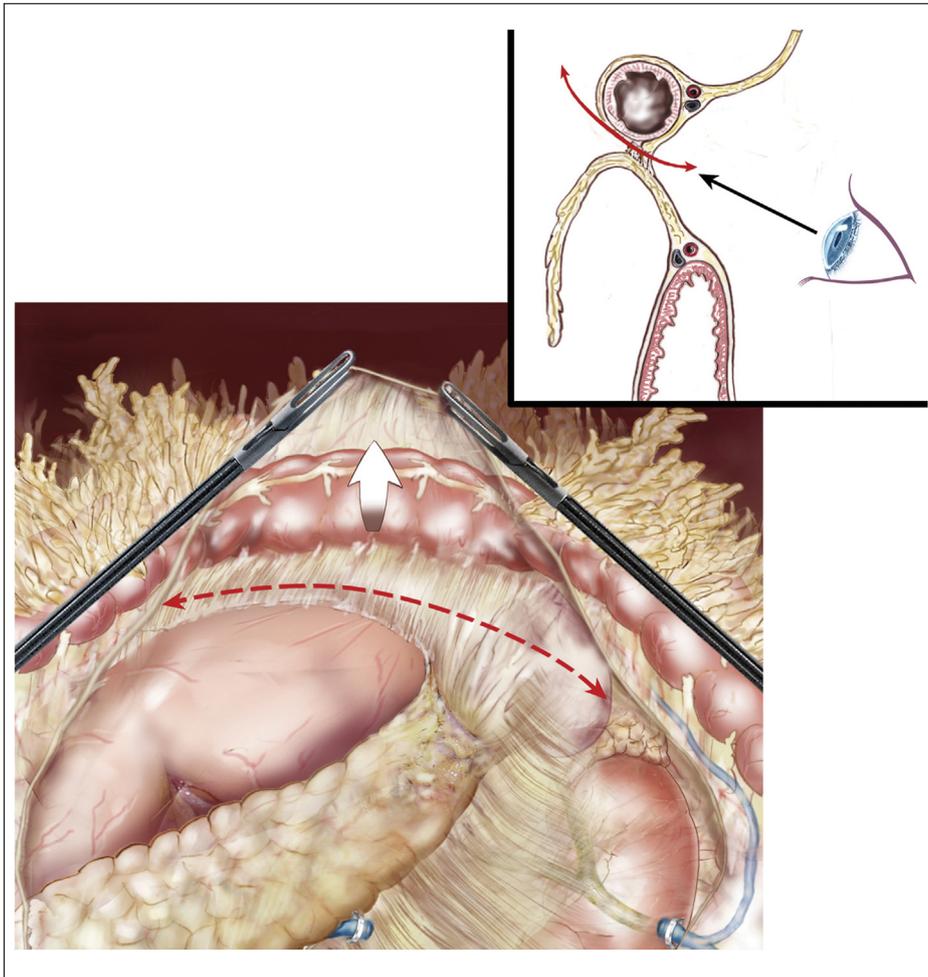
The transverse mesocolon is incised just cephalad to the pancreas, seen through the transparent part of the mesocolon and often palpable at the root of the transverse mesocolon. This plane is usually avascular. If any bleeding occurs, it might be a sign that the pancreatic capsule has been violated; the incision should then be performed again, 5 to 10 mm above the preceding incision. This opens the lesser sac exposing the posterior surface of the stomach.

6 Disinsertion of the transverse mesocolon from the antero-inferior border of the pancreas

A grasper is introduced into the lesser sac and raises the transverse mesocolon while another grasper lifts the left mesocolon. The mesocolon root running along the pancreas becomes taut and must be divided at distance from the pancreas. Particular attention must be paid to assure adequate hemostasis especially along the branches of the inferior pancreatic artery. Dissection is continued as far to the left as possible. At that point, as the omentum falls behind the colon, the posterior aspect of the left transverse colon and lower down on the left, the descending colon, appear.

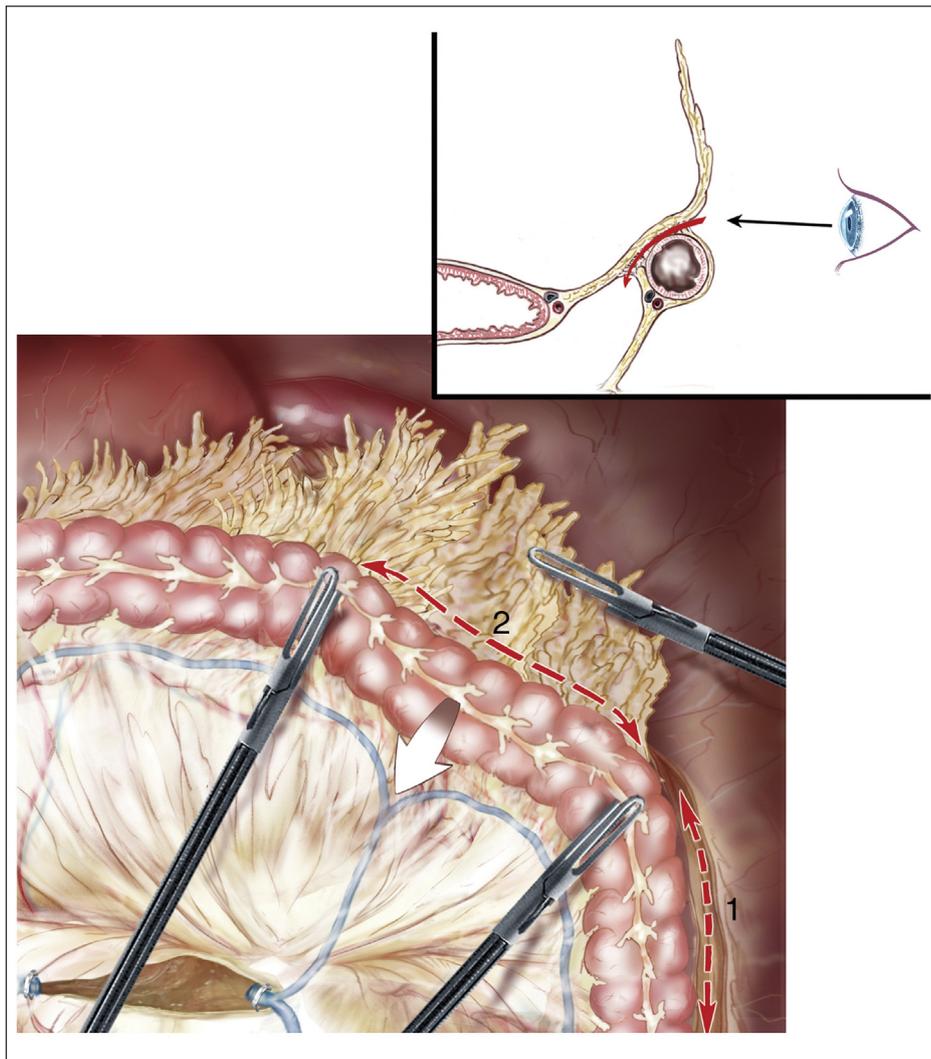


7 Colo-epiploic separation and division of the left (colo-parietal) Toldt fascia



7.1 Mobilization back to front

For this step, the operator is more comfortable standing between the patients' legs. To finalize the splenic flexure mobilization, dissection progresses from back to front: dissection is continued under the tent formed by the mesocolon pursuing the left colo-epiploic dissection from back to front, because once the colon and left transverse mesentery are raised, the omentum falls behind and facilitates the dissection. Likewise, the Toldt fascia can be divided from back to front when the peritoneum is translucent.



7.2 Mobilization front to back

Sometimes, it may be easier to perform this step in front of the colon and mesocolon, by dissecting the splenic flexure from front to back counterclockwise: the laparoscope is positioned above the colon, the left colon is tented medially and the Toldt fascia can be divided. The omentum is raised cephalad, and thanks to counter-traction on the left transverse colon, left colo-epiploic dissection is performed from left to right, until reaching the initial dissection point along the posterior aspect of the mesocolon.

This step can be difficult in particular in patients with thick mesenteries: the operator can get lost in the left horn of the omentum. In this situation, it is useful to get one's bearings again by returning under the mesocolon. When more colo-epiploic dissection is necessary (to obtain slack for a colo-anal anastomosis), dissection can start in the middle of the transverse colon to open the lesser cavity, where dissection is easier.

8. Conclusion

This methodical technique for splenic flexure mobilization is easily reproducible and usually quick to perform. To the contrary of laparotomy, splenic capsule tears are rare during laparoscopic splenic flexure mobilization [1], and the medial to lateral approach described here, at distance from the spleen, may be a contributing factor to decreasing this risk. The main risk of this technique in our opinion is pancreatic injury, and the operator must be particularly careful not to injure the pancreas during the disinsertion of the root of the transverse mesocolon.

The authors thank Professor Brice Gayet who taught them this technique.

Disclosure of interest

The authors declare that they have no competing interest.

Reference

- [1] Isik O, Aytac E, Ashburn J, et al. Does laparoscopy reduce splenic injuries during colorectal resections? An assessment from the ACS-NSQIP database. *Surg Endosc* 2015;29:1039–44.