

Conservative management of a spleen trauma using radiofrequency



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AIM OF THE STUDY: *Conservative operative management of a splenic injury has become more and more employed in order to preserve the immune function of the organ.*

CASE REPORT: *A case of a rupture of the spleen successfully treated with the use of a radiofrequency thermal energy generator is reported. The parenchymal tear was coagulated by a one cooled tip needle electrode. There were no postoperative complications and the function of the spleen was preserved.*

CONCLUSIONS: *The technique cannot be applied in case of lesion of the major vessels or in case of avulsion of the hilum. This technique integrates to the others to make the operative conservative management of a splenic injury more and more feasible.*

KEY WORDS: Radiofrequency, spleen, trauma.

Introduction

The spleen is very frequently involved in abdominal trauma. Conservative management of injuries of the spleen has become more and more popular in order to avoid the splenectomy and its consequences on the immune function. In the paper is reported a case of a splenic trauma successfully managed with a radiofrequency (RF) device.

Materials and Methods

A 29 years old man had a blunt abdominal trauma following to a car accident. At the admission to the emergency department he presented abdominal tenderness and he was developing a state of shock; systolic blood pressure was 65 mmHg, haemoglobin blood level was 9 g/dl.

An ultrasonography revealed the presence of a perisplenic fluid collection, then a surgical management was decided. A xifo-umbilical laparotomy was performed, there was an haemoperitoneum (600 millilitres). After the section of the gastrosplenic ligament and of the short gastric vessels, it was detected a tear of the splenic capsule and of the parenchyma near to the hilum measuring 30 mm. It was decided to try to employ a radiofrequency device in order to get the haemostasis of the lesion.

The control of the bleeding was achieved with 3 RF session, each of them lasting 12 minutes. The RF needle was placed inside and along the tear, keeping the area dry with the suction. Each of RF session was performed 10 mm apart from the previous, thus resulting 3 separate points of insertion of the needle along the lesion itself (Fig. 1). A probe with 3 centimetres exposed end (total length 20 centimeters), cooled with saline solution at 0 °C (Cool Tip RF, Radionics®, Burlington, Massachusetts, USA) and a 480 kHz radiofrequency generator (CC1 Cosman Coagulator System, Radionics®, Burlington, Massachusetts, USA) were used. Tissue impedance, generator power output and electrode tip temperature were controlled during the procedure. A drainage in the left hypocondrium was left in place for 48 hours.

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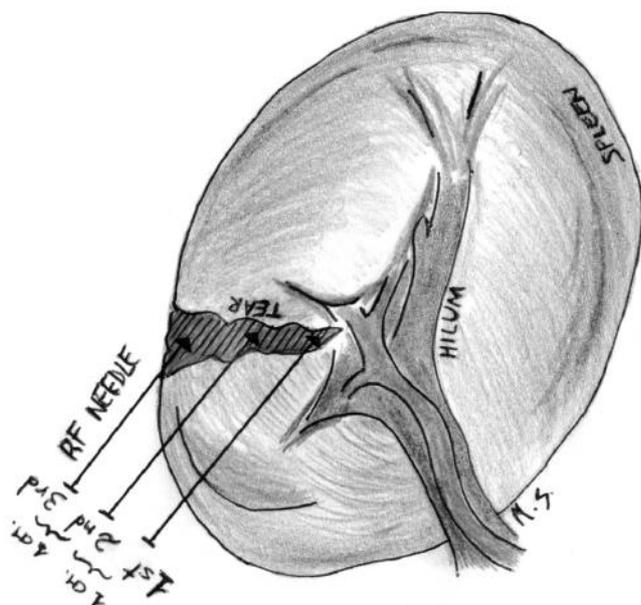


Fig. 1: The 3 RF sessions are performed along the splenic tear. Each point of insertion of the needle is 10 mm apart from the previous.

Results

Operative time was 80 minutes. Total blood loss was 800 millilitres, but the patient did not require a blood transfusion. The postoperative course was uneventful and the patient was discharged on the fourth postoperative day. Haemoglobin rate after one week was 13.5 gr/dl. Platelet count was 281.000/mm³ and 270.000/mm³ after one and two months respectively. A CT scan was obtained one month later and showed the area treated by RF as a zone of hypodensity (Fig. 2).



Fig. 2: CT scan performed after one month: the hypo dense area in the spleen corresponds to the previously RF treated injury (black arrows).

Discussion

The management of a splenic injury is depending on the gravity of the lesion, on association with the injury of other organs and to the clinical status of the patient^{2,3}. Conservative non operative and operative management of a spleen trauma in selected patients has gained great favour to avoid splenectomy and to conserve the immune function of the organ^{1,4}. After splenectomy an higher risk of infection, especially from Pneumococcus, has been reported^{5,6}. Operative preservation of the spleen can be done by the use of fibrin glue, by performing a partial resection with a stapler and by a mesh splenorraphy^{7,8}. Radiofrequency thermal ablation is traditionally used in abdominal surgery to treat unresectable liver tumour, but recently it has also been utilised to perform a liver and spleen resection^{9,10}. We utilised an RF needle to obtain haemostasis of a splenic tear, thank to the coagulative desiccation of the tissues produced by a RF thermal energy. In our case a parenchymal resection was not indicated, because the tear was central and near to the hilum; the coagulated tissue remained in place and there was no damage to the remnant splenic parenchyma. This method does not require to leave in the operative field any further device as a mesh, even if it has not be reported to be a factor of increased postoperative intra-abdominal infections⁸. This treatment cannot be applied in case of severe injuries with lesion of the main vessels or in case of hilum avulsion, but in these cases also the other conservative methods fail and the splenectomy is the operation of choice³. This technique can be added to the other operative procedures in order to make the conservative treatment of a splenic injury more and more feasible.

Riassunto

INTRODUZIONE: Il trattamento operatorio conservativo delle ferite del fegato a seguito di trauma è stato sempre più spesso utilizzato per preservare la funzione immunitaria dell'organo

CASO CLINICO: Viene riportato un caso di rottura del fegato trattato con successo mediante un generatore d'energia a radiofrequenza

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