SENGSTAKEN-BLAKEMORE TUBE CAN PREVENT WHOLE LIVER TWISTING THE RIGHT HEPATIC FOSSA IMPROVING VENOUS OUTFLOW POST-ORTHOTOPIC LIVER TRANSPLANTATION

O emprego do balão de segstaken-blakemore pode evitar o bloqueio do efluxo venoso por torção do fígado implantado

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ABSTRACT

Introduction: Reduced-size liver transplantation in combination with an unusual situation poses an increased risk for venous outflow obstruction. Reduced-size liver transplantation using ex-vivo graft reduction or splitting has become standard procedure in children, with some of these cases described in literature after the successful management use of Sengstaken-Blakemore, although used in orthotopic whole liver transplantation (OLT) has never been described. The aim was to report the successful management of acute venous obstruction after OLT by using a Sengstaken-Blakemore tube within the hepatic fossa in a 51-year-old male patient. **Case Report**: A 51-year old male patient with hepatitis C cirrhosis and alcoholism, C Child-Pugh, 24 MELD score was submitted to OLT by using the piggy-back technique. The donor and recipient body-weight ratio was 1.38 (65/90kg). The liver recipient weight was 1,152g and the donor liver was 992g. After reperfusion time, the patient showed a venous outflow obstruction in supra-hepatic anastomosis with total resolution after clockwise rotation of the graft, but reduced venous outflow was observed after liver twist to the right hepatic fossa and mean arterial blood pressure (MAP) was reduced to 30 mmHg . After five attempts, a Sengstaken-Blakemore tube was inserted into the right subphrenic space and the gastric and oesophageal balloons were inflated to maintain the graft at the midline position with normalization of the MAP and venous outflow. Although data on hemodynamic measurements were maintained during the ICU period, a Doppler ultrasonography (DUS) was carried out daily to ensure that venous outflow was maintained. On 4th day, the gastric balloon was deflated; after 2 hours the oesophageal balloon was deflated and no systemic abnormality was detected. The Sengstaken-Blakemore tube with deflated balloons was removed on 5th day using slight traction. Later, DUS was carried out after it was shown that venous outflow was maintained and the liver was fixed in a hemodynamically correct position without interfering in the mechanical outflow. The patient was discharged, and he is in good condition. **Conclusion**: The Sengstaken -Blakemore tube is a good tool to improve liver venous outflow due to mechanical problems such as twist of the right hepatic fossa and preventing re-operations.

Keywords: Liver Transplantation; Balloon Occlusion; Torsion, Mechanical.

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Received: May 15, 2015 Accepted: June 22, 2015

INTRODUCTION

Reduced-size liver transplantation in combination with an unusual situation poses an increased risk for venous outflow obstruction. Reduced-size liver transplantation using ex-vivo graft reduction or splitting has become standard procedure in children, with some of these cases being described in the literature after the successful management use of the Sengstaken-Blakemore, although its use in orthotopic whole liver transplantation (OLT) has been described in few reports.[1-5]

PURPOSE

Case report on the successful management of acute venous obstruction after OLT using a Sengstaken-Blakemore tube within the hepatic fossa in a 51-year-old male patient.

CASE REPORT

A 51-year old male patient with hepatitis C cirrhosis and alcoholism, C Child-Pugh, 24 MELD score, was submitted to OLT using the piggy-back technique. The donor and recipient body-weight ratio was 1.38 (65/90kg). The liver recipient weight was 1,152g and the donor liver was 992g.

After the reperfusion, the patient showed a venous outflow obstruction in the supra-hepatic anastomosis with total resolution after clockwise rotation of the graft, but reduced venous outflow was observed after the liver twist to the right hepatic fossa, and the MAP was reduced to 30 mmHg. After five attempts, a Sengstaken-Blakemore tube was inserted into the right subphrenic space, and gastric and oesophageal balloons were inflated to keep the graft at the midline position with normalization of the MAP and venous outflow.

Although data on hemodynamic measurements were kept during the ICU period, a Doppler ultrasonography (DUS) was carried out daily to ensure that the venous outflow was maintained. On the 4th day, the gastric balloon was deflated; after 2 hours, the oesophageal balloon was deflated and no systemic abnormality was detected. The Sengstaken-Blakemore tube with deflated, and balloons were removed on the 5th day using a slight traction (figure 1). Later, DUS was carried out after it was shown that venous outflow was maintained, and the liver was fixed in a hemodynamically correct position without mechanical outflow interference. The patient was discharged and he is in good condition.

Figure 1 *– Use of Sengstaken-Blakemore tube for twisting right liver*

A

B

A - The tube placed on right hypochondryum under the liver graft.

B – The tube being removed

DISCUSSION

Vascular complications after liver transplantation represent a diagnostic challenge and a serious morbidity and mortality source.[1] Early hepatic venous outflow obstruction (HVOO) is a rare but serious complication, which can lead to acute Budd–Chiari syndrome that may result in graft loss.[2]

Early HVOO is mostly caused by technical problems such as tight anastomosis, twisting of the hepatic veins, intimal flaps, and wrong graft positioning. The key point in the treatment of this form of obstruction is the early diagnosis, which allows the proper treatment to prevent graft dysfunction or graft loss.

Mechanical venous outflow obstruction occurs as result of an anatomical mismatch between the liver graft and the placement in the abdomen of the recipient. It may result from the presence of deep and wide subphrenic space with a relatively small sized graft offering a wider range of movement of the graft and allowing the kinking of the venous anastomosis.[3-7] Also, it may result from compression of the venous anastomosis by a very large graft after abdominal wall closure causing abdominal compressive syndrome.[3-4]

Clinically, early HVOO presents manifestations of hypovolemic shock due to decreased systemic venous return. Fluid resuscitation will not correct such hypovolemia 3. In our case, the patient developed hypotension that was not explained and did not respond to fluid resuscitation.[3-6]

During an orthotopic liver transplantation, we observed HVOO due to a small liver twisting and a Sengstaken-Blakemore tube was placed under the right segment liver with venous pressure normalization being obtained.

This use of a Sengstaken–Blakemore tube was reported by Malassagne et al.[3] and Steinbrück et al.[4] supporting the graft and correcting the venous outflow for repositioning and fixation of the graft to overcome the venous outflow obstruction.

Wahab et al [7] reported the use of a Foley balloon to the temporary fixation of the graft in position and to correct the venous outflow obstruction. It is a simple and safe way to save the graft, as the Sengstaken-Blakemore can be easily monitored and removed under Doppler US without any complication related to the device.

Mechanical venous outflow obstruction due to the kinking or twisting of the venous anastomosis should be surgically managed by repositioning the graft or the venous anastomosis or even by retransplantation.[4-6] The use of additional cavo-caval anastomosis or retransplantation is dangerous and associated to a high mortality rate. The use of Sengstaken-Blakemore under the liver into subphrenic space can be used whenever that space is large due to small liver replacement.

CONCLUSION

The Sengstaken-Blakemore tube is a good tool to improve liver venous outflow due to mechanical problems such as swing to the right hepatic fossa and avoidance of re-operations.

RESUMO

O transplante de fígado de tamanho reduzido pode acarretar aumento de risco, levando à obstrução venosa hepática. O transplante de fígado de tamanho reduzido utilizando redução ou divisão do enxerto ex-vivo tornou-se um procedimento padrão em crianças. Alguns casos foram descritos na literatura após uso bem sucedido do balão de Sengstaken-Blakemore na vigência de obstrução do efluxo venoso. Seu uso em transplante total ortotópico de fígado (TTOF) foi pouco relatado. O objetivo deste trabalho foi relatar o manejo bem sucedido da obstrução venosa aguda após TTOF utilizando um tubo de Sengstaken-Blakemore inserido na fossa hepática direita sob o fígado. **Relato de Caso**: Paciente de 51 anos de idade com cirrose hepática por vírus C e alcoolismo, Child-Pugh "C', com escore MELD = 24, foi submetido a TTOF pela técnica piggy-back. A proporção do peso corporal do doador e do receptor foi de 1,38 (65/90 kg). O peso do receptor do fígado foi de 1.152g e o fígado do doador foi de 992g. Após a reperfusão, observou-se obstrução do efluxo venoso supra-hepático com resolução total após rotação no sentido horário do enxerto, porém redução do fluxo venoso após novo deslocamento do fígado para a fossa hepática direita e redução da pressão arterial média. Após cinco tentativas, um tubo Sengstaken-Blakemore foi inserido no espaço subfrênico direito e os balões gástricos e esofágicos foram inflados para manter o enxerto na posição da linha média, com normalização da pressão arterial média e do efluxo venoso com o fígado melhorando sua coloração e consistência. Embora os dados sobre as medidas hemodinâmicas tenham sido mantidos durante o período da UTI, realizou-se ultrassonografia Doppler diária para observar o fluxo venoso mantido. No quarto dia, o balão gástrico foi desinsuflado e nenhuma anormalidade sistêmica foi detectada. O balão de Sengstaken-Blakemore com balões desinflados foi removido aplicando-se ligeira tração. Posteriormente, realizou-se estudo ecográfico para demonstrar o fluxo venoso mantido e o fígado numa posição hemodinamicamente correta, sem interferência mecânica na saída venosa hepática. O paciente teve alta e está em boas condições. **Conclusão**: O tubo de Sengstaken-Blakemore foi uma boa ferramenta para melhorar o efluxo venoso do fígado devido a problemas de torção do fígado na fossa hepática direita, e pode evitar reoperações.

Descritores: Transplante de Fígado; Oclusão com Balão; Torção Mecânica.

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