



ORIGINAL REPORT

Hepatic venous outflow obstruction after transplantation: Outcomes for treatment with self-expanding stents[☆]



G. Viteri-Ramírez^{a,*}, A. Alonso-Burgos^{a,b}, I. Simon-Yarza^a, F. Rotellar^c, J.I. Herrero^d, J.I. Bilbao^a

^a Servicio de Radiología, Clínica Universidad de Navarra, Pamplona, Spain

^b Servicio de Radiología, Fundación Jiménez Díaz, Madrid, Spain

^c Servicio de Cirugía General y Abdominal, Clínica Universidad de Navarra, Pamplona, Spain

^d Unidad de Hepatología, Clínica Universidad de Navarra, Pamplona, Spain

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KEYWORDS

Liver transplant;
Endovascular
treatment;
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Abstract

Objectives: To evaluate the safety and patency of self-expanding stents to treat hepatic venous outflow obstruction after orthotopic liver transplantation. To evaluate differences in the response between patients with early obstruction and patients with late obstruction.

Material and methods: This is a retrospective analysis of 16 patients with hepatic venous outflow obstruction after liver transplantation treated with stents (1996–2011). Follow-up included venography/manometry, ultrasonography, CT, and laboratory tests. We did a descriptive statistical analysis of the survival of patients and stents, technical and clinical success of the procedure, recurrence of obstruction, and complications of the procedure. We also did an inferential statistical analysis of the differences between patients with early and late obstruction.

Results: The mean follow-up period was 3.34 years (21–5331 days). The technical success rate was 93.7%, and the clinical success rate was 81.2%. The rate of complications was 25%. The survival rates were 87.5% for patients and 92.5% for stents. The rate of recurrence was 12.5%. The rate of primary patency was 0.96 (95% CI 0.91–1) at 3 months, 0.96 (95% CI 0.91–1) at 6 months, 0.87 (95% CI 0.73–1) at 12 months, and 0.87 (95% CI 0.73–1) at 60 months. There were no significant differences between patients with early and late obstruction, although there was a trend toward higher rates of primary patency in patients with early obstruction ($P=0.091$).

Conclusions: Treating hepatic venous outflow obstruction after orthotopic transplantation with self-expanding stents is effective, durable, and effective. There are no significant differences between patients with early obstruction and those with late obstruction.

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* Corresponding author.

E-mail address: gviteri@gmail.com (G. Viteri-Ramírez).

PALABRAS CLAVE

Trasplante hepático;
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suprahepáticas;
Endoprótesis;
Complicaciones

Obstrucción del drenaje venoso hepático tras trasplante: resultados del tratamiento con endoprótesis autoexpandibles**Resumen**

Objetivos: Evaluar la seguridad y permeabilidad del tratamiento de la obstrucción del drenaje venoso hepático tras trasplante ortotópico con endoprótesis autoexpandibles. Valorar las diferencias en la respuesta en pacientes con obstrucción precoz y tardía.

Material y métodos: Análisis retrospectivo de 16 pacientes trasplantados con obstrucción del drenaje venoso hepático tratados con endoprótesis (1996–2011). El seguimiento se realizó mediante venografía/manometría, ecografía, TC y pruebas de laboratorio. Se realizó análisis estadístico descriptivo de supervivencia de pacientes e injertos, éxito técnico y clínico, recurrencia y complicaciones del total de la muestra, así como inferencial para comparar las diferencias entre pacientes con obstrucción precoz y tardía.

Resultados: La media de seguimiento fue de 3,34 años (21–5.331 días). La tasa de éxito técnico fue del 93,7%, y la de éxito clínico, del 81,2%. La tasa de complicaciones fue del 25%. La tasa de supervivencia para pacientes fue de 87,5%, y para injertos, de 92,5%. La tasa de recurrencia fue del 12,5%. La tasa de permeabilidad primaria a los 3, 6, 12 y 60 meses fue de 0,96 (IC 95% 0,91–1), 0,96 (IC 95% 0,91–1), 0,87 (IC 95% 0,73–1) y 0,87 (IC 95% 0,73–1), respectivamente. No hubo diferencias significativas entre los pacientes con obstrucción precoz o tardía, aunque las tasas de permeabilidad primaria mostraron tendencia a ser significativamente superiores en el grupo precoz ($p=0,091$).

Conclusiones: El tratamiento con endoprótesis autoexpandibles en obstrucciones del drenaje venoso hepático tras trasplante ortotópico es efectivo, duradero y seguro. No hay diferencias significativas entre pacientes con obstrucción precoz y tardía.

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Introduction

The piggyback technique for liver hepatectomy and orthotopic liver transplant (OLT) described by Calne and Williams in 1968 and Tzakis et al. in 1989^{1,2} is one of the reference techniques. It is characterized by the preservation of the retrohepatic inferior cava vein (ICV) of the receiver to be connected to the donor's ICV by terminolateral anastomosis through a vascular cuff created from the receptor's suprahepatic veins. Potential pros of this technique are: (a) the absence of the receptor's venovenous bypass and associated complications; (b) lesser time of warm ischemia and of the total duration of the procedure, and (c) a reduction of the complications associated with the dissection of the receiver's retrohepatic ICV. Yet despite all its pros the piggyback technique does not restore completely the pre-transplant physiological situation; this is why the risk of obstruction of the liver venous drainage increases. As a consequence the OLT performed through the piggyback technique eliminates the risk of potentially serious complications.

The incidence of the obstruction of the liver venous drainage post-OLT ranges between 1% and 7% when taking all transplant variants into consideration—cadaver donor, living donor, reduced graft, pediatric transplant. With the piggyback technique the incidence in the cadaver donor is 1–2.5%.^{3–6} The clinical manifestations include ascites, hepatomegaly and liver failure. Endovascular therapy through balloon angioplasty and/or endoprosthesis has been widely covered for the post-OLT^{7–9} management of the ICV and portal vein stenoses. However there are not too many studies that have analyzed the results of endovascular therapy

of suprahepatic vein-stenoses post-OLT.^{10–12} One first issue that needs to be assessed is choosing the access route that will be used since there are several options available: transjugular, transfemoral, and transhepatic. The most common access route described in the reference is transjugular access. This access makes the use of catheters in the suprahepatic veins easier on a technical level—in particular in piggyback type of anastomoses.¹³ Transfemoral access can be used to release the endoprosthesis in suprahepatic veins, yet in piggyback type-anastomoses the angle between the ICV and suprahepatic veins is steeper making at times the catheterization difficult or even impossible. Ultrasound controlled-transhepatic access allows the simultaneous catheterization of multiple suprahepatic veins to better view venous orifices and the relation of these orifices with the donor's ICV; however, there is a higher risk of immediate complications due to the hepatic capsule perforation.^{14,15} When choosing one or another access route the number and localization of stenoses is a very important factor. In patients with single stenoses the preferred access route is transjugular access. In patients with multiple stenoses transhepatic access allows the endoprosthesis simultaneous release, so it can be a good alternative to transjugular access—the type of endoprosthesis to use is another kettle of fish. When it comes to stenoses of suprahepatic veins self-expandable and balloon-expandable endoprostheses can be used.¹⁶ Several studies have showed that the radial resistance of balloon-expandable endoprostheses is greater,¹⁷ yet we still need studies to confirm if this implies a better response. To these issues we need to add the fact that there is little information on long-term safety and patency outcomes.^{18,19}

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