

Successful Orthotopic Liver Transplantation after Balloon Aortic Valvuloplasty in a Patient with Severe Aortic Valve Stenosis

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ABSTRACT

A 43-year-old female patient presented with Child-Pugh B liver cirrhosis and a symptomatic severe aortic valve stenosis.

A rescue procedure – BAV – was chosen to improve patient cardiac status making her eligible candidate for liver retransplantation. Considering a low MELD score of 13 and a 6-month period of aortic valve functionality after BAV, a Non-Standard Exception status was granted by Eurotransplant and a successful liver retransplantation was performed.

REFERENCES

- Coverstone, Edward (2014), Aortic Balloon Valvuloplasty Prior to Orthotopic Liver Transplantation: A Novel Approach to Aortic Stenosis and End-Stage Liver Disease. *Case reports in Cardiology*, 2014;26:231-8
- 2020 ACC/AHA Guideline for the Management of Patients With Valvular Heart Disease: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines
- EASL Guideline for the Management of Decompensated Cirrhosis

INTRODUCTION

Surgical repair of severe aortic valve stenosis (AS) in patients with end-stage liver disease (ESLD) is contraindicated due to high morbidity and mortality. Vice versa, liver transplantation (LT) in patients with cirrhosis and severe AS is contraindicated due to large hemodynamic disturbances that aggravate cardiac status. A valve-sparing procedure, such as balloon aortic valvuloplasty (BAV) might improve cardiac status yielding patients with AS candidates for LT and afterwards candidates for successful aortic valve replacement (AVR).

CHILD-PUGH SCORING SYSTEM

- Stratification of operative risk in patient with cirrhosis

Parameter	1	2	3
Encephalopathy	None	Stage I or II	Stage III or IV
Ascitis	Absent	Slight (controlled with diuretics)	Moderate despite diuretic treatment
Bilirubin (mg/dl)	<2	2-3	>3
Albumin(g/l)	>3.5	2.8-3.5	<2.8
INR	<1.7	1.7-2.3	>2.3

- Class A :- 5-6 points Mortality : 10%
- Class B :- 7-9 points Mortality : 31%
- Class C :- 10-15points Mortality : 76%

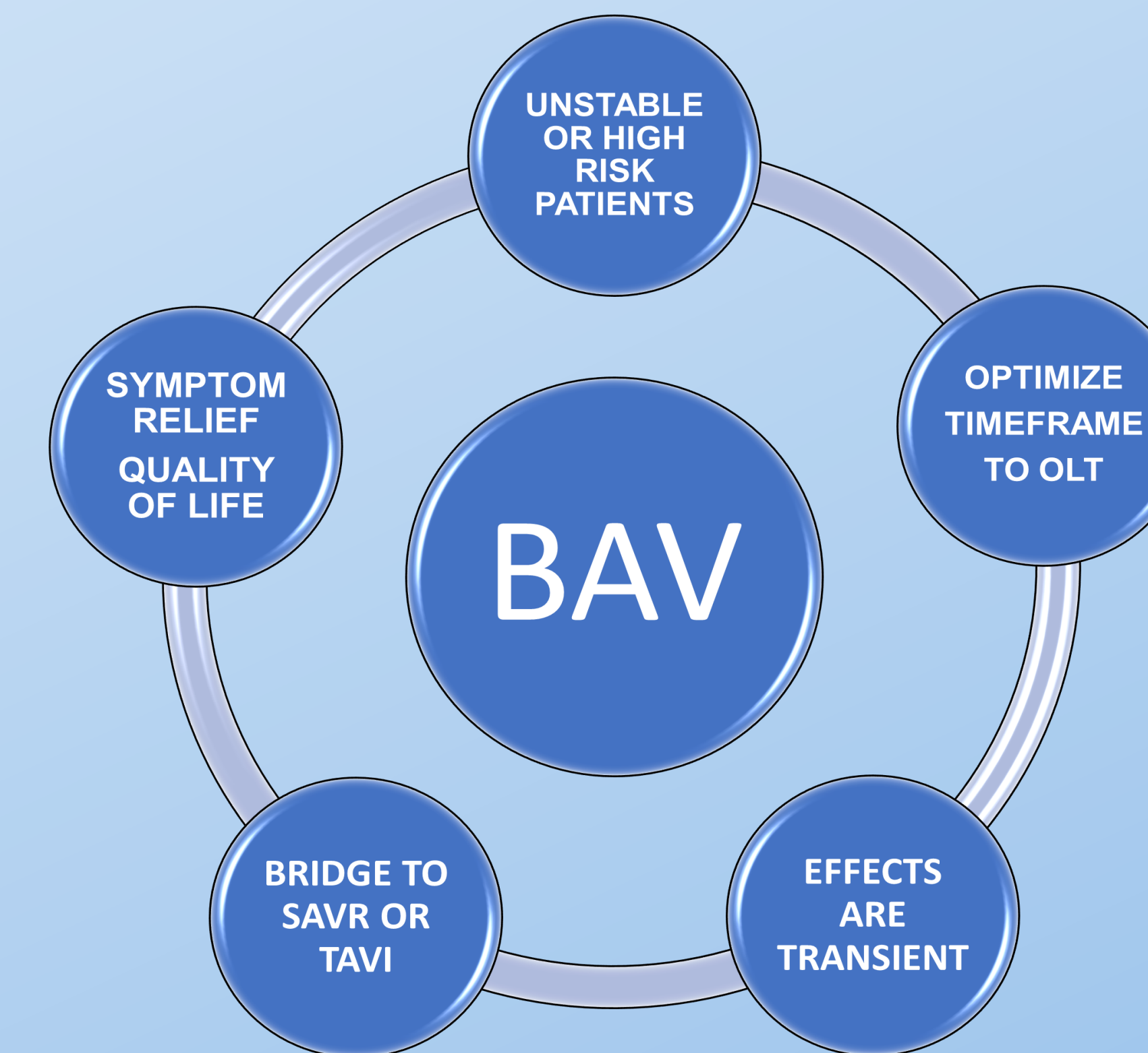
DISCUSSION

Evidence of aortic valve-sparing procedure such as BAV in high-risk ESLD patients are sparse. In patients with severe AS, hemodynamic disturbances during liver transplantation procedure could severely aggravate cardiac status and increase mortality. Unfortunately, surgical repair as well as TAVI carries great risk in this group of patients. This is mostly due to patients' high morbidity, hemorrhagic diathesis and inability for adequate postoperative anticoagulation. A less invasive procedure, such as balloon valvuloplasty, could be a bridge to a definitive AV replacement. BAV was shown to significantly reduce transvalvular pressure gradient thus improving cardiac status and making the patient eligible for liver transplant procedure. BAV provides a time frame of 6-12 months before valve restenosis occurs and during that time liver transplantation can be safely performed.

In our experience, a multidisciplinary team of experts should be consulted in such complex cases to guarantee optimal outcome.

RESULTS- HEMODYNAMIC MESURMENTS

	BEFORE BAV	AFTER BAV
Aortic valve area cm ²	0,7	1,1
PG max mmHg	86	58
Level of stenosis	SEVERE!!!	MODERATE



CONCLUSION

In patients with end-stage liver disease and concomitant severe aortic valve stenosis, balloon valvuloplasty procedure (BAV) yields improved hemodynamic settings for upcoming liver transplantation as well as successful bridging therapy to definitive valve replacement.