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How to reduce the risk of residual shunt during percutaneous treatment of ventricular septal defects

Cómo reducir el riesgo de cortocircuito residual durante el cierre percutáneo de comunicación interventricular

To the Editor,

It was with great interest that we read the study by Solana-Gracia et al., published in *Revista Española de Cardiología* in July 2021.[1] In that interesting article, the authors reveal the feasibility, safety, and effectiveness of the Nit-Occlud Lê VSD (pmf medical, Germany) in the treatment of ventricular septal defects (VSD), although this procedure has frequent and serious complications (residual shunt) that should not be tolerated after VSD closure, especially in the elderly and children.[2,3] Unfortunately, in some patients, residual shunts do not disappear in the short-term and may continue to destroy blood cells.[4] Interestingly, recent studies by Bu et al.[3,5] and Hu et al.[6] have shown that residual shunts may affect the stability of the device and aggravate mechanical hemolysis, so that if any residual shunt (width $>$ 2 mm; flow rate $>$ 3.0 m/s) are identified, it may be recommended to withdraw the device and convert to conventional surgical closure before release to avoid the high risk of persistent hemolysis. Excitingly, transesophageal echocardiography (TEE), performed immediately after deployment of the device, has been considered as a standard technique for the VSD closure procedure.[3,5,6] TEE can provide beneficial information for occlusion and a repeat image can also be obtained to assess the effectiveness of VSD closure, including the device position and the presence of a residual shunt. Therefore, the use of TEE is generally recommended to optimize information on the shape and size of the defect and to evaluate the effect of the procedure.[5] Consideration of these issues may help to decrease the incidence of residual shunt. In addition, it would be better to provide basic information on all residual shunt patients, such as defect diameter, the device diameter used in procedures, and the width and flow rate of the residual shunt to analyze the factors related to the incidence of residual shunt and hemolysis. Moreover, hemolysis may have been aggravated by multiple-exit VSD or the larger size of VSD and could have been resolved by additional device implantation or a VSD coil.[7] To reduce the high risk of foreseeable persistent hemolysis and residual shunt, we suggest that patient selection should be meticulous, with the exclusion of multiple-exit and large VSD, which may help to improve the effectiveness and safety of this procedure. Altogether, we believe that paying full attention to the above problems and formulating appropriate strategies may help to reduce the incidence of hemolysis and residual shunt with Nit-Occlud Lê VSD coil closure of VSD.

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AUTHORS' CONTRIBUTIONS

Both authors wrote and revised the manuscript; H. Bu prepared the literature.

CONFLICTS OF INTEREST

None declared.

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