published, manuscript in preparation) showed modified rotational thromboelastometry and multiple electrode aggregometry results as predictors of excessive bleeding after cardiac surgical procedures. Preoperative platelet function assessment and intraoperative hemostatic property optimization guided by thromboelastometry can reduce the tendency toward excessive bleeding, leading to diminished use of rFVIIa with even better efficiency after functional hemostatic properties optimization before rFVIIa administration. It is noteworthy that concomitant use of multiple-electrode aggregometry and modified rotational thromboelastometry can help to discriminate excessive bleeding as a surgical or a coagulopathic bleeding. Any rFVIIa administration should follow previously mentioned preoperative and intraoperative hemostatic optimization measures determined from suitable bedside hemostatic monitoring devices with a short time frame from blood sampling to getting results. In our experience, such an algorithm can help in reducing both chest tube output and blood product transfusion requirements, with only sporadic need for rFVIIa administration.

We congratulate Goksedef and colleagues¹ on their elegant and timely research.

Mate Petricevic, MD^a

Bojan Biocina, MD, PhD^a

Davor Milicic, MD, PhD^b

^aDepartment of Cardiac Surgery

^bDepartment of Cardiovascular

Diseases

University of Zagreb School of

Medicine

University Hospital Center Zagreb

Zagreb, Croatia

References

1. Goksedef D, Panagopoulos G, Nassiri N, Levine RL, Hountis PG, Plestis KA. Intraoperative use of recombinant activated factor VII during complex aortic surgery. *J Thorac Cardiovasc Surg.* 2012;143:1198-204.
2. Ferraris VA, Ferraris SP, Joseph O, Wehner P, Mentzer RM Jr. Aspirin and postoperative bleeding

after coronary artery bypass grafting. *Ann Surg.* 2002;235:820-7.

3. Chapman AJ, Blount AL, Davis AT, Hooker RL. Recombinant factor VIIa (NovoSeven RT) use in high risk cardiac surgery. *Eur J Cardiothorac Surg.* 2011;40:1314-8; discussion, 1318-9.
4. Hacquard M, Durand M, Lecompte T, Boini S, Briancon S, Carreaux JP. Off-label use of recombinant activated factor VII in intractable haemorrhage after cardiovascular surgery: an observational study of practices in 23 French cardiac centres (2005-7). *Eur J Cardiothorac Surg.* 2011;40:1320-7.
5. Spiess BD, Gillies BS, Chandler W, Verrier E. Changes in transfusion therapy and reexploration rate after institution of a blood management program in cardiac surgical patients. *J Cardiothorac Vasc Anesth.* 1995;9:168-73.

<http://dx.doi.org/10.1016/j.jtcvs.2012.06.062>

PERVENTRICULAR CLOSURE OF POSTINFARCT SEPTAL RUPTURE REVISITED

To the Editor:

We read with great interest and sense of nostalgia the brief report on the technique of perventricular device closure in post-myocardial infarction septal defect by Love and colleagues¹ in 2011. They reported 2 cases of cardiogenic shock after myocardial infarction with septal defects sized 25 and 28 mm. They used the Amplatzer septal occluder (St Jude Medical, Inc, St Paul, Minn) sized 34 mm through a 12F and 13-cm Cook (Cook Group Incorporated, Bloomington, Ind) sheath advanced over a guide wire. The large 50-mm left disk of the Amplatzer device was placed flush with the septum and delivered in the left ventricular cavity. Then, with traction on the delivery system and countertraction on the right ventricular free wall, the proximal disk was deployed exteriorly on the right ventricular surface. After detachment of the device from the delivery system, they went on to tie the purse-string suture and sutured a piece of bovine pericardium between the right ventricular free wall and the device to prevent device erosion caused by movement. Both patients had an uneventful recovery despite a small residual ventricular septal defect, and early discharge from the hospital compared with conventional open techniques of repair

(though one of them needed an additional ventricular septal defect muscular occluder inserted transfemorally on the 10th postoperative day). Of these 2 patients, 1 continued to do well 13 months postoperatively; however, after 3 weeks the other returned in a state of profound low cardiac output and died despite a minimal residual ventricular septal defect, primarily because of biventricular myocardial failure.

Although Love and colleagues¹ noted that they were unaware of any previous such reports in the indexed literature, we would like to take this opportunity to bring readers' attention to our previous presentation, the world's first case report video with this hybrid technique in 2006. The technique video with 13-month follow up was presented in the teaching video sessions of the 2008 annual conference of the International Society of Minimally Invasive Cardiothoracic Surgery meeting in Boston. The abstract was published in the Society's official journal *Innovations*.²

This 62-year-old male, hypertensive, nondiabetic patient presented in cardiogenic shock as a result of inferior wall myocardial infarction, which also involved the right ventricle, and anuria. The patient was initially managed with an intra-aortic balloon pump for 9 days. As urine started flowing and renal function improved, coronary arteriography revealed critical triple vessel disease with a left ventricular ejection fraction of 30% and a right ventricular ejection fraction of 25%. The patient had a septal aneurysm on the right ventricular side, with multiple sievelike septal necroses (type III dissecting septal rupture) measuring 18 mm. In view of the prohibitive risk of conventional open surgery in this situation, we (like Love and colleagues¹) involved a pediatric cardiologist and decided to use transesophageal echocardiography for hybrid imaging and off-pump triple bypass. This included a left internal thoracic artery graft to the left anterior descending coronary artery

and reversed saphenous vein grafts to the right and circumflex coronary arteries. The right, left anterior descending, and left circumflex coronary arteries were grafted in that order with proximal first technique for the reversed saphenous vein grafts. This actually led to immediate improvement of the right ventricular ejection fraction, as confirmed on echocardiography. Then with the finger-dip technique we passed a 16-gauge needle through a pledgeted purse-string 4-0 polypropylene (Prolene) suture on the right ventricular anterior wall to insert a guide wire across the septal tear into the left ventricle. The 20-mm Amplatzer septal occluder device was then deployed through a 9F vascular sheath entirely into the necrotic cavity in the septum. The device deployment did not appear satisfactory initially because of the nature of the large septal necrotic cavity. It soon became clear, however, that the device had entrenched itself nicely, was well trapped in the septal aneurysm, and had nearly completely obliterated the large 3:1 shunt. In 2008, we had a 13-month follow-up with stable device intracardiac and septal position with New York Heart Association class I functional status.

Unlike Love and colleagues,¹ we deployed the device totally intracardiac and were able to discharge the patient on the 9th postoperative day. The patient exhibited no evidence of subsequent myocardial failure and continued to show improved contractile function despite a continued small residual ventricular septal defect. We believe that placing a large disk on the exterior anterior right ventricular surface may contribute to late myocardial failure because of fibrosis on a device primarily meant for intravascular placement. This kind of technique would also be limited in application if a right ventricular infarction is present, as in our case, because of the risk of erosion into the infarcted myocardium.

Harshbir Singh Pannu,
MBBS, MS, MCh^a

Puneet Kumar Verma,
MBBS, MD, DM^b

Radha Krishnan^c

^aIVY Heart and Superspeciality
Institute

Mohali, India

^bACE Heart and Vascular Institute
Mohali, India

^cEscort-Fortis Heart Institute and
Research Centre
New Delhi, India

References

1. Love BA, Whang B, Filsoufi F. Periventricular device closure of post-myocardial infarction ventricular septal defect on the beating heart. *J Thorac Cardiovasc Surg.* 2011;142:230-2.
2. Pannu HS, Verma P, Krishnan R. World's first case report of a unique therapeutic strategy in post myocardial infarct ventricular septal rupture [abstract]. *Innovations (Phila).* 2008;3:118.

<http://dx.doi.org/10.1016/j.jtcvs.2012.05.083>

CAN WE IMPLANT VALVED MITRAL PROSTHESIS WITHIN ALL KINDS OF MITRAL RINGS THROUGH A TRANSAPICAL APPROACH?

To the Editor:

We appreciate the admirable efforts of Holzhey and colleagues¹ to treat a patient who had double valve disease and coronary heart disease with poor left ventricular function. The patient had undergone mitral valve reconstruction and coronary artery bypass grafting 12 years previously and was in New York Heart Association functional class IV. The echocardiographic examination revealed structural degeneration of the repaired mitral valve, with moderate to severe mitral stenosis and grade II insufficiency. Further echocardiographic findings included severely stenosed aortic valve disease and moderate tricuspid insufficiency. Moreover, 2 de novo lesions of the proximal right coronary artery were detected by coronary angiography. Summarizing

briefly, it was a complex case for intervention. Nonetheless the patient was treated successfully.

Anson and associates² performed transcatheter mitral valve-in-valve implantation in circular-shaped prosthesis in 11 patients. They concluded that proper anchoring of the balloon-expandable valve within the sewing ring of the mitral prosthesis ensured stability and minimized paravalvular leakage. We think that some points about the procedure performed in the mitral position have to be clarified to avoid misunderstanding.

First, what kind of ring had been implanted in previous surgery: rigid, semirigid, or flexible? We know that some of the flexible rings, which are easily deformable, have polyester cores. The Carpentier-Edwards classic ring (Edwards Lifesciences Corp, Irvine, Calif), which is hardly deformable, has a titanium core, and Carpentier-McCarthy-Adams IMR ETlogix ring (Edwards Lifesciences), which is nondeformable, also has a rigid titanium core.³ The structures of the rings are important even if the patient hasn't undergone coronary artery bypass grafting. If the ring has rigid structure such as a titanium core, balloon valvuloplasty or balloon inflation to expand the valved prosthesis may not result in circular mitral ring. This may lead to paracommissural leaks between the prosthesis and the ring. Holzhey and colleagues¹ claim that there were 2 trivial jets between the prosthesis and the ring. Was the previously implanted ring flexible? Another point to be clarified is the balloon pressure during balloon valvuloplasty or expansion of a valved prosthesis in the mitral position. In such cases, how much is the pressure that we can apply to make the ring in circular shape?

In conclusion, this is an appreciable study. We as readers thank Holzhey and colleagues¹ for sharing their knowledge and experience about such a complicated case.