Reminder of important clinical lesson

Laceration of anterior mitral leaflet postpercutaneous balloon mitral valvuloplasty for rheumatic mitral stenosis

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Summary

A 37-year-old Caucasian female with known rheumatic mitral stenosis was admitted for Balloon mitral valvuloplasty which was complicated with a laceration of anterior mitral leaflet (A2 scallop) resulting in severe mitral regurgitation. Intra-aortic balloon pump (IABP) was instituted and the patient was referred for emergency mitral surgery. During surgery anterior mitral leaflet was excised. Most of the posterior leaflet was preserved. Mitral valve was replaced with St Jude mitral mechanical valve. Operation was uneventful and patient's recovery was uncomplicated. Complications associated with mitral valvuloplasty include ventricular perforation, leaflet laceration, rupture of chordae, sepsis, cardiac tamponade and premature ventricular contractions. Torrential mitral regurgitation postvalvuloplasty is a serious, life-threatening complication. Considering the risk of serious complication associated with percutaneous mitral balloon valvuloplasty (PMBV), this procedure should be performed in qualified cardiac catheterisation labs with a backup facility of cardiac surgery to deal with any potential life-threatening complications.

BACKGROUND

We present the case of a 37-year-old Caucasian female whose mitral valvuloplasty was complicated with laceration of the anterior mitral leaflet. She underwent emergency mitral valve replacement and recovered well. Backup cardiac surgical facilities are essential to deal with rare but potentially catastrophic complications of percutaneous mitral balloon valvuloplasty (PMBV).

CASE PRESENTATION

This woman suffered from scarlet fever as a child and presented with a long history of shortness of breath, dizzy spells and chest discomfort on minimal exertion. Echocardiography showed severe mitral stenosis. Both anterior and posterior leaflets were thickened consistent with rheumatic mitral valve disease. The valve area was 0.8 cm² and right ventricular systolic pressure was 67 mm Hg. Both atria were dilated and there was mild central mitral regurgitation and moderate tricuspid regurgitation. She had preserved left ventricular systolic function.

INVESTIGATIONS

PMBV was clearly indicated¹ (see online supplementary table S1). Transoesophageal echocardiography (TOE) ruled out left atrial appendage thrombus, mitral regurgitation was mild and there was no concomitant coronary artery disease to contraindicate PMBV. She underwent elective balloon mitral valvuloplasty which was complicated with a laceration of anterior mitral leaflet (A2 scallop) (figure 1) resulting in severe mitral regurgitation (figure 2), very high pulmonary artery pressure, acute pulmonary oedema and haemodynamic decompensation necessitating an intra-aortic balloon pump (IABP) for haemodynamic support. She was referred for emergency mitral surgery. She had an additive Euro score of 10 and a logistic Euro score of 18.8.

TREATMENT

Cardiopulmonary bypass (CPB) was instituted by standard aortic and bicaval venous cannulation. Anterior mitral leaflet was excised. Most of the posterior leaflet was preserved. Mitral valve was replaced with St Jude mitral mechanical valve size 27 mm with 2/0 ethibond interrupted everting suture. The iatrogenic perforation of the intra-atrial septum (ASD) was closed. CPB and cross clamp time was 98 and 77 minutes respectively. She was weaned from cardiopulmonary by-pass on first attempt.

OUTCOME AND FOLLOW-UP

Her postoperative recovery was complicated only by a mild lower respiratory tract infection which was treated with antibiotics. She was discharged home on the 10th postoperative day.

DISCUSSION

PMBV is a safe and effective treatment for mitral stenosis 2 and has consistently shown better results compared to open or closed surgical commissurotomy.^{3–6} The first single-balloon valvuloplasty of the mitral valve was described by Inoue *et al* in 1984.⁷ Surgical mitral valve repair/replacement has been compared to mitral valvuloplasty in patients with severe tricuspid regurgitation and in these patients surgical mitral valve repair/replacement shows better clinical outcomes than PMBV.⁸

A range of complications have been reported after mitral valvuloplasty, these include ventricular perforation,⁹ rupture of chordae of the posterior (mural) leaflet,¹⁰ sepsis,¹¹ cardiac tamponade,¹² premature ventricular contractions arising from the mitral annulus¹³ and exacerbation of mitral regurgitation.

Kirbas has reported Mitral regurgitation secondary to anterior leaflet rupture during percutaneous balloon valvuloplasty.¹⁴ In all, 12% patients who undergo PMBV

Figure 1 Laceration of A2 scallop of anterior mitral leaflet postpercutaneous balloon mitral valvuloplasty.

Figure 2 Left ventriculogram during systole before percutaneous balloon mitral valvuloplasty. (A) Left ventriculogram during systole after percutaneous balloon mitral valvuloplasty. (B) Left ventriculogram during systole after percutaneous balloon mitral valvuloplasty. Severe mitral regurgitation highlighting left atrium because of anterior mitral leaflet perforation.

develop significant mitral regurgitation and of these 40% need mitral valve replacement.¹⁵ In patients who develop severe MR in 17% patients, mechanism of MR is leaflet laceration.¹⁵ Our patient was promptly referred, was urgently operated and recovered swiftly. Backup facilities of cardiac surgery are crucial to deal with rare but life-threatening complications of PMBV in a timely manner.

Learning points

- Torrential mitral regurgitation postvalvuloplasty is a serious, life-threatening complication. Considering the risk of serious complication associated with PMBV, this procedure should be performed in qualified cardiac catheterisation labs with experience in mitral valvuloplasty procedure and with a backup facility of cardiac surgery to deal with any potential life-threatening complications.

Patient consent Obtained.

Competing interests None.

► An additional supplementary table is available online only. To view this file please visit the journal online (<http://dx.doi.org/10.1136/bcr-2012-007500>)

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