

# Massive Late Post-Coronary Arterial Bypass Graft Cardiac Tamponade

E Azzopardi, P Farrugia, M Sammut, M Cachia

## Citation

E Azzopardi, P Farrugia, M Sammut, M Cachia. *Massive Late Post-Coronary Arterial Bypass Graft Cardiac Tamponade*. The Internet Journal of Emergency Medicine. 2007 Volume 4 Number 2.

## Abstract

Massive late post CABG pericardial tamponade is a rare, rapidly lethal complication. A case of apparently spontaneous massive tamponade presenting 400 days after surgery is reported. To our knowledge this is the latest-presenting case reported in the literature. Salient Emergency Care Issues which led to a favorable outcome are reviewed, and literature is discussed.

## INTRODUCTION

Post Coronary Artery Bypass Graft (CABG) massive tamponade is a rare,<sup>1, 2, 3</sup> and rapidly lethal complication. We review a case occurring 400 days post-Coronary Artery Bypass Graft (CABG) that drained 1350 ml in total. To our knowledge this was the latest-occurring acute case reported after surgery. A number of factors contributing to favorable outcome are reviewed including the importance of keeping a high index of suspicion even months after surgery with no apparent precipitating factors, prompt EMS response, accurate diagnosis and decisive action, since rapid deterioration can be reversed by prompt diagnosis and aggressive treatment. ATLS works!

## CASE REPORT

A 48 year old male presented to A&E department six months after undergoing quadruple CABG, with a history of three episodes of near fainting, and collapsed after taking his evening dose of Atenolol 50 mg. There was no history of trauma. The patient was reviewed in A&E department 20 minutes after the ambulance call. Our patient had a history of Ischemic Heart Disease, smoked four cigarette packs per day for 37 years; had a Body Mass Index of 35 and was chronically hypertensive, with documented Grade Two hypertensive retinopathy. He suffered an Anterior Myocardial Infarct in 2003; underwent a Primary Coronary Intervention in two coronaries; and suffered a Non-ST Segment Elevation Myocardial Infarct in May 2006.

A Percutaneous Trans-Femoral Coronary Angiogram in 2003 reported an acute anterior Myocardial Infarct with apical akinesia, ectatic Right Coronary Artery with a modest

mid-vessel lesion. A high grade diagonal lesion with thrombus was present in mid-Left Anterior Descending Artery. PCI with direct stenting of the Left anterior descending and pre-discharge Primary Coronary Intervention to diagonal and Right Coronary Artery was achieved with good end result. On echocardiography there was mild Left Ventricular impairment, with normal morphology and a normal Mitral Valve. Cardiac catheterizations in 2005 reported good diastolic Left Ventricular function, significant lesions in Left Anterior Descending, First Diagonal Branch, and Right Coronary Artery, and normal Left Ventricular and Mitral Valve morphology. The Patient underwent CABG in May 2006 with a Parsonnet score of three, and Euroscore of zero. This was a four vessel procedure, Left Anterior Descending to Left Internal Mammary Artery; Second Diagonal Branch to Saphenous Vein Graft; Obtuse Marginal to Left Radial Artery and Posterior Descending Artery to SVG. There was a Cold Ischemic Time of 43 minutes and a Bypass time of 84 minutes.

Primary Survey revealed an intact airway, rapid shallow symmetrical breathing pattern, a regular pulse of 120/min, and a blood pressure of 80/40. The patient initially responded to 100% oxygen by mask and rapid infusion of 1L ringer's lactate though two large-bore peripheral cannulae. There was a Glasgow Coma Scale of 14/15 and a core temperature of 96 F. Secondary survey elicited a severely congested face, a visibly and persistently raised Jugular Venous Pressure and muffled heart sounds. An ECG showed a small complex tachycardia. After five minutes, the patient collapsed. The diagnosis of cardiac tamponade was made.

An emergent echocardiography at A&E confirmed the presence of a large pericardial effusion with collapse of the Right Ventricle and Right Atrium. Pericardiocentesis was attempted using a Seldinger technique, with difficult catheter insertion succeeding after several passes. 750 ml of hemorrhagic effluent were drained, with immediate improvement in cardiovascular status, and a sample sent for cytology and virology. Post-procedural echocardiogram showed a small residual effusion. The catheter was kept in-situ and the patient was transferred to the Cardiothoracic Surgery Unit.

An echocardiogram repeated at day two showed re-accumulation of fluid around the posterolateral aspect of the Left Ventricle and a further 200mls of blood were aspirated. By day four, the catheter was no longer draining freely. Another echocardiogram revealed re-collection of a residual effusion loculated around the anterolateral aspect of the Left ventricle and a further 400mls of straw colored fluid were manually evacuated before the catheter was removed. Viral screens and cytology from the initial aspirate were negative. On day seven, a small collection of fluid was noted on the final echocardiogram with no evidence of diastolic collapse of the Right Atrium or Left Ventricle. The patient was discharged to out-patient follow-up and General Practitioner care on day nine. In total, 1350mls were aspirated. The gentleman made an uneventful recovery, returning to active duty as a police officer.

### DISCUSSION

The reported incidence of late cardiac tamponade post CABG is 0.1%-2.1%.<sup>1, 3, 4</sup> Post cardiac-surgery tamponade may present with atypical clinical and hemodynamic features.<sup>5, 6, 7</sup> Presentation of lesser degrees of tamponade can be dangerously insidious and vague.<sup>7</sup> The clinical signs may include respiratory (exertional dyspnoea<sup>8</sup>, chest pain), gastrointestinal (anorexia, vomiting) and central nervous (mental confusion, even coma) systems. Pallor with a drop in hematocrit in patients on anticoagulant therapy suggests occult bleeding.<sup>5</sup> Massive tamponade classically presents with Beck's Triad. There may be muffled heart sounds, Kussmaul sign, Pulsus Paradoxus, also strongly suggestive, but difficult signs to elicit in a busy and noisy A&E department. Pulseless Electrical Activity in the absence of the other 3 T's (Advanced Life Support algorithm<sup>11</sup>) also suggests Tamponade.

Postoperative prolonged heart failure, anticoagulants<sup>3, 6, 9</sup> blood in the pericardium left undrained<sup>10</sup>, antiplatelet therapy

<sup>11</sup> and an exacerbated form of the post-pericardiotomy syndrome<sup>5</sup> may play a role in its pathogenesis. It may thus mimic other disorders, and the diagnosis of tamponade should be considered when hemodynamic deterioration or signs of low output failure occur in the post-cardiotomy patient.<sup>7</sup>

A literature search for relevant articles was performed on Medline using the MeSH ID terms D001026 AND D002305 (D 001026 coronary AND artery AND bypass); D002305 (cardiac AND tamponade).

Time from ambulance call log to onset of visible drainage of pericardial blood was approximately 25 minutes. The favorable outcome achieved may in part be due to the short time from symptomatic onset to treatment. Initial administration of intravenous fluid may raise venous pressure and transiently improved cardiac output while preparing for pericardiocentesis, thus borrowing time, as is recommended in the Advanced Trauma Life Support Handbook<sup>12</sup>, but this elevated pressure may increase seepage of blood into the pericardial sac.

The above is to our knowledge the latest-occurring case reported after surgery and illustrates the need for a high index of suspicion to this rare and rapidly lethal complication even months after surgery, the importance of rapid patient-transfer time to A&E; rapid diagnosis in A&E by staff trained in ATLS® and ALS® , capable of performing a Focused assessment sonogram in an A&E Department Setting, and well versed in Seldinger Catheter Placement.

### CORRESPONDENCE TO

Ernest A. Azzopardi MD  
B&P Unit. Welsh Center for Burns and Plastic Surgery  
Morriston Hospital NHS Trust Swansea SA6 6LZ, West Glamorgan UK

### References

1. Surgical drainage of late cardiac tamponade following open heart surgery  
Aksoyek A, Tutun U, Ulus T et al Thorac. Cardiovasc. Surg. 2005 Oct; 53(5):285-90
2. Late posterior cardiac tamponade after heart surgery  
Yilmaz AT, Arslan M, Demirklic U, et al J. Cardiovasc Surg 1996 Dec;37(6):615-20
3. Postoperative cardiac tamponade in the modern surgical era.  
Kuvini JT, Harati NA, Pandian NG, et al Ann Thorac Surg. 2002 Oct; 74(4):1148-53
4. Pericardial effusion after cardiac surgery: incidence, site, size, and haemodynamic consequences. Pepi M, Muratori M, Barbier P, et al Scand J Thorac Cardiovasc Surg. 1991;25

(1):63-8

5. Late tamponade after heart surgery: a dreadful diagnostic pitfall. Glock YF, Herreros J, Tejeira FJ Kyobu Geka. 1994 Feb;47(2):128-31.

6. Incidence, clinical aspects and therapy of late pericardial tamponade following heart Surgery. Wilhelm M, Carrel T, Jenni R, et al Swiss Surg. 1996; (3):92-6

7. Atypical presentations and echocardiographic findings in patients with cardiac tamponade occurring early and late after cardiac surgery Russo AM, O'Connor WH, Waxman, HL, Chest. 1993 Jul; 104(1):71-8.

8. Late pericardial effusion after open-heart surgery: usefulness of Pericardiocentesis under echocardiographic guidance Suehiro S, Kimura E, Shibata T, et al Kyobu Geka. 1996 Feb; 49(2):105-10

9. Evolution of the postoperative pericardial effusion after day 15: the problem of the late tamponade. Meurin P, Weber H, Renaud N, et al Chest. 2004 Jun;125(6):2182-7

10. Late cardiac tamponade after open heart surgery Terada Y., Saitoh T, Shimoyama Y, Takayama T, et al Swiss Surg. 1996; (3):92-6

11. Late postoperative tamponade following coronary artery bypass grafting in patients on antiplatelet therapy Breyer RH, Rousou JA, Engelman RM, et al Ann Thorac Surg. 1985 Jan;39(1):27-9.

12. Advanced Trauma Life Support Student Course Manual 7th edition. American College of Surgeons, 2004

13. Advanced Life Support 5th Ed. Resuscitation Council UK 2006

**Author Information**

**Ernest Azzopardi, MD**

Welsh Regional Center for Burns and Plastic Surgery NHS , (University of Wales )

**Patrick Farrugia, MRCS(A&E)**

St. Luke's Hospital

**Mark Sammut, MRCP**

St. Luke's Hospital

**Mario Cachia, FRCPCachia**

St. Luke's Hospital