- 15 Soonswang J, Adatia I, Newman C, *et al*. Mortality in potential arterial switch candidates with transposition of the great arteries. *J Am Coll Cardiol* 1998;**32**:753-7.
- 16 Perry SB, Lang P, Keane JF, *et al*. Creation and maintenance of adequate intra atrial communication in left atrioventricular valve atresia and stenosis. *Am J Cardiol* 1986;**58**:622-6.
- 17 Mahle WT, Clancy RR, McGaurn SP, *et al*. Impact of prenatal diagnosis on survival and early neurologic morbidity in neonates with hypoplastic left heart syndrome. *Pediatrics* 2001;**107**:1277-82.
- 18 Andrews R, Tulloh R, Sharland G, *et al*. Outcome of staged reconstructive surgery for hypoplastic left heart syndrome following antenatal diagnosis. *Arch Dis Child* 2001;**85**:474-7.
- 19 Gibbs JL, Monro JL, Cunningham D, *et al*. Survival after surgery or therapeutic catheterisation for congenital heart disease in children in the UK. *BMJ* 2004;**328**:611-6.
- 20 Clancy RR, McGaurn SA, Wernovsky G, *et al*. Preoperative risk-of-death prediction model in heart surgery with deep hypothermic circulatory arrest in the neonate. *J Thorac Cardiovasc Surg* 2000;**119**:347-57.
- 21 Jenkins KJ, Gauvreau K, Newburger JW, *et al*. Consensus-based method for risk adjustment for surgery for congenital heart disease. *J Thorac Cardiovasc Surg* 2002;**123**:111-8.
- 22 Shann F, Pearson G, Slater A, *et al*. Paediatric risk of mortality (PIM): a mortality prediction model for children in intensive care. *Intensive Care Med* 1997;**23**:201-7.

IMAGES IN CARDIOLOGY

doi: 10.1136/hrt.2005.083584

Real time three dimensional imaging of zone of ischaemia derived from surface 12 lead ECG during percutaneous coronary revascularisation

A 71-year-old man presented with accelerated angina over a two week period. He had no significant ECG ischaemia on presentation and troponin T was detectable at 0.04 µg/l. He was also diagnosed with new onset type 2 diabetes during his admission. His diagnostic angiogram revealed moderate atheroma in the left anterior descending and left circumflex coronary arteries with no significant stenosis. The right coronary artery (RCA) was dominant and had two critical stenoses in the proximal and mid segments of the vessel. He underwent uncomplicated percutaneous coronary intervention to the two RCA lesions; two drug eluting stents were implanted, a 2.75 × 13 mm Cypher proximally and a 2.75 × 18 mm Cypher stent in the mid segment. ECG before stent implantation was normal. Stent implantation induced ST segment elevation in leads II, III, aVF, and V1-V3. The ECG signals were converted into a real time three dimensional interactive image of the zone of ischaemia induced by balloon inflation.

Right panel shows 12 lead ECG taken before stent deployment in the proximal right coronary artery (RCA). Left panel shows real time three dimensional image of the heart with the right ventricular chamber in blue and the left ventricular chamber in red derived directly from the 12 lead ECG.

N T Mulvihill
J T Ryan
C Bell
mulvihn@tcd.ie

Right panel shows 12 lead ECG taken after 60 seconds of balloon inflation during stent deployment in the proximal RCA. This ECG demonstrated balloon induced ST segment elevation in leads II, III, aVF, and V1-V3. Left panel shows real time three dimensional image of the heart with the right ventricular chamber in green, the left ventricular chamber in red, and the zone of transient balloon induced ischaemia in green.