

## An Unexpected Clue

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A 64-year-old man requires elective repair of an enlarging abdominal aortic aneurysm. As part of his preoperative work-up the ECG shown is obtained (Figure 1)



Figure 1. ECG on presentation.

**1. What can we deduce about his cardiac status from the ECG?**

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## This Month's ECG Diagnosis

- The ECG shows sinus rhythm with a left bundle branch block (LBBB) pattern. The QRS axis is deviated leftwards in the frontal plane to approximately  $-45^\circ$ . A single ventricular extrasystole, with a right bundle branch block (RBBB) morphology, has been recorded in precordial leads V1 to V3.



Figure 2. Follow-up ECG


LBBB is an uncommon finding in healthy individuals without structural heart disease. It occurs more commonly with increasing age and is often associated with hypertensive and coronary heart disease. The QRS axis in common, or uncomplicated, LBBB is usually normal or only slightly leftwards. More marked left axis deviation suggests a higher likelihood of myocardial disease. The most important clue to the presence of associated cardiac disease in this patient can be found in the unlikeliest of places—the ventricular extrasystole. Ventricular extrasystoles are common in patients with and without

structural heart disease and although their presence, particularly if frequent, may be associated

with an adverse long-term prognosis, they generally do not have useful predictive value. But the extrasystole shown here is extremely informative, because of its RBBB morphology. It has most likely originated in the left ventricle (hence the RBBB morphology) and shows a qR pattern with symmetric T wave inversion. In the presence of RBBB morphology these Q waves are pathologic and indicate the presence of a prior anteroseptal MI. Plans for this patient's aneurysm surgery were deferred pending further cardiac assessment. A follow-up ECG several days later (Figure 2) showed the development of abnormal ischemic T wave inversion throughout the precordial leads. These T wave changes are in the same direction as (concordant with) the main QRS direction and have the same significance as if the LBBB was not present. Because of concern about the possibility of a recent ischemic event a decision was made to postpone surgery pending further evaluation of the patient's cardiac status.



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