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Double Valve Replacement and
Coronary Artery Bypass in a
Patient with Chronic Osteomyelitis
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Implantation of a prosthetic heart valve is generally contra-
indicated in the presence of infection. A 68-year-old man
with chronic osteomyelitis underwent successful double
valve replacement, combined with coronary artery bypass,
after his draining osteomyelitic fistula was controlled with
antibiotics. During the 39 months since surgery, he has
shown no sign of paravalvular leakage or infectious compi-
lcations.

Combined valve replacement and myocardial re-
vascularization has been the subject of several recent
articles,1-8 which report various results. Although combined
procedures continue to be a source of controversy, they are
not, in themselves, regarded as extraordinary. The place-
ment of prosthetic valves is generally contraindicated in the
presence of infection, but such treatment can be undertaken
before a complete bacterial cure has been achieved if
significant hemodynamic compromise exists and if appropri-
ate antibiotic therapy has been instituted for several days.
The following case was unusual in that the patient underwent
combined aortic valve replacement, mitral valve replace-
ment, and aortocoronary bypass grafting in the presence of
chronic osteomyelitis.

Case Report
A 68-year-old man was admitted for evaluation of aortic and mitral
valve disease, as well as coronary artery disease. During the month
before admission, he had experienced decreasing exercise tolerance,
which caused him to be limited to remaining at home, and secondary
symptoms of congestive heart failure. He had two-pillow orthopnea,
nighturnal paroxysmal dyspnea, and episodes of angina pectoris that
manifested as precordial heaviness radiating to the left arm. The pain
occurred with exertion and was relieved by rest. Thirty-five years
earlier, a cardiac murmur had been noted. There was no history of
diabetes, hypertension, hypercholesterolemia, gout, or rheumatic
fever. The patient also had chronic osteomyelitis of the left femur,
which apparently started with a fall when he was four years old.
Drainage had been present for over ten years.

Upon admission, physical examination revealed blood pressure of
150/40 mm Hg, a regular pulse rate of 80/min, and respirations of
18/min. Examination of the heart disclosed the point of maximum
impulse at the anterior axillary line. There was no left sternal border
heave. The first heart sound was of normal intensity, but the second
heart sound had a reduced aortic component. A grade 3/6 holo-
systolic murmur at the apex radiated to the axilla. There was also a
grade 3/6 ejection systolic murmur at the apex, radiating along the
sternal border into the aortic area and the neck. A grade 3/6 diastolic
blow extended through diastole; a ventricular gallop was also heard
at the apex. Electrocardiography indicated left atrial enlargement
and left ventricular hypertrophy, whereas a chest x-ray film showed
left ventricular dilatation and findings compatible with congestive
heart failure.

The results of cardiac catheterization and coronary angiography
performed elsewhere revealed severe calcific aortic stenosis, severe
mitral regurgitation, and 95 percent stenosis of the left anterior
descending coronary artery.

Because a chronic draining sinus was present in the left hip, an
infectious disease consultation was obtained. Osteomyelitis with a
chronic fistula was diagnosed, and both a culture specimen of the
draining sinus and a Craig needle biopsy of the femur revealed
Staphylococcus aureus. Owing to the patient’s allergy to penicillin,
he was treated with intravenous cefuroxine (1.5 g, q8h) and oral
rifampin (600 mg, qd) for 14 days before clearance for surgery was
obtained.

On the 15th day, the patient underwent mitral valve replacement
(with a No. 3 St. Jude valve), aortic valve replacement (with a No. 25
St. Jude valve), and saphenous vein bypass grafting from the
ascending aorta to the left anterior descending coronary artery
without incident. Total cardiopulmonary bypass, moderate systemic
hypothermia (25°C), and cardioplegic arrest (4°C) were used. Patho-
logic examination revealed fibrosis, fusion, and heavy calcification of
the aortic valve, as well as thickening of the mitral valve leaflets and
fusion of the chordae tendineae.

The patient was treated postoperatively with intravenous cefuroxine
(1.5 g, q8h) and intravenous vancomycin (500 mg, q8h) for 14
days. His postoperative course was uneventful, and he was dis-
charged from the hospital two weeks after surgery on a regimen of
cephalexin (Keftlex) (500 mg, po qid for 30 days), to suppress the
infection at the site of osteomyelitis in the left femur; he was also
placed on a regimen of digoxin (0.25 mg, po daily); furosemide
(Lasix) (40 mg, po daily); spironolactone (Aldactone) (50 mg, po bid);
diposyramide (Norpace) CR (150 mg, po bid); diprydamole (Persan-
tine) (75 mg, po bid); and warfarin (Coumadin) (10 mg, po daily), as
well as a 2-g/day sodium diet and progressive ambulation.

The patient’s fistula closed one month after surgery, and his
chronic osteomyelitis has remained localized. From a cardiac stand-
point, he has done quite well. Approximately nine months after
surgery, M-mode and two-dimensional echocardiography revealed
paradoxic septic motion with a suggestion of right ventricular
enlargement at 3.3 cm, prosthetic aortic and mitral valves with
apparent normal openings, and good left ventricular contraction.
Treadmill stress test result was normal. At his most recent checkup,
39 months after surgery, the M-mode and two-dimensional echocar-
diographic findings and the treadmill stress test remained the same.
No paravalvular leak has been detected, and, except for standard
prophylactic treatment before dental work or invasive procedures,
routine antibiotics are not required.

Discussion
Thirty to 50 percent of patients who require aortic or
mitral valve replacement also have coexisting coronary arter-
osclerosis.2 If the valvular disorder alone is corrected, the
remaining coronary artery disease often undermines the
effect of the successful valve repair. Combined double valve
replacement and coronary artery bypass is relatively rare.
Our case was unusual in that these procedures

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were performed in a 68-year-old patient who had had chronic osteomyelitis of the left femur since the age of four years. Upon admission, the patient had a draining fistula that revealed *Staphylococcus aureus*, as confirmed by a bone biopsy. Because implantation of a prosthetic valve would generally be considered contraindicated in the presence of infection, intensive antibiotic treatment was necessary, both before and after surgery.

The central issue in this case concerned the safety of undertaking valve replacement surgery in a patient with a chronic active bacterial infection. A survey of the literature reveals no previous report of valve replacement in patients with osteomyelitis. Although there are numerous articles concerning valve replacement in the presence of bacterial endocarditis, the duration of antibiotic therapy, the timing of surgery, and the risk of postoperative infection are not necessarily the same for bacterial endocarditis as for chronic extracardiac infections. In this case, a mechanical prosthesis was chosen because it involved less tissue that might become infected by residual organisms. That valve replacement can be accomplished without fear of long-term infectious complications is proved by the fact that our patient has continued to do well for more than three years postoperatively.

Most authors agree that correcting coronary artery disease and valvular disease during the same operation need not necessarily entail an increased risk if: (1) the procedure is performed by an operative team experienced in a number of approaches; (2) the myocardium is protected with hypothermic cardioplegia; (3) circulatory arrest is limited to as short a time as possible, and (4) bypass grafting is performed before valve reconstruction. Risk factors for hospital mortality include severe mitral regurgitation, diminished ejection fraction, high NYHA classification, and extensive coronary artery disease.

In cases such as ours, a well-thought-out plan, using the appropriate consultants, is indispensable in order to obtain optimal results.

**REFERENCES**


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**Silent Aortic Dissection with Hemopericardium**

**Diagnosis by Computerized Tomography**

Bhupinder Khurana, M.D.;† Paul Goorahoo, M.D.;‡ and Sanford A. Friedman, M.D.§

An asymptomatic woman was evaluated because of a chest x-ray examination suggesting an aortic aneurysm. CT scan revealed proximal aortic dissection, which had apparently leaked into the pericardium. Increased use of CT scanning is expanding our knowledge of the clinical spectrum of aortic dissection.

Dissection of the proximal aorta is generally a catastrophic event with a high mortality rate. Rupture into the pericardium is almost uniformly fatal. The patient reported herein had a painless dissection and remained asymptomatic even in the presence of a pericardial effusion.

**CASE REPORT**

An asymptomatic 76-year-old woman was evaluated because of mediastinal widening on chest x-ray film, which had been present for at least a year. She had a long history of hypertension and well-compensated congestive heart failure. A positive VDRL test had turned negative after penicillin therapy. The patient gave no history of chest pain, dizziness, syncope, paresthesias or limb weakness. Examination revealed blood pressure of 160/90 mm Hg, pulse rate of 85/min, and respiratory rate of 18/min. The lungs were clear. Cardiac examination revealed an apical lift, loud aortic second sound and [Figure 1. Contrast CT scan of the ascending aorta shows double lumen with a partially clotted false channel.](image-url)

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