Introduction: An intraoperative echocardiographic diagnosis of a mobile mass on a cloth-covered Starr-Edwards prosthetic mitral valve is presented, and the possible diagnosis of cloth tear and its clinical implications are discussed.

Methods: Consent for disclosure was obtained from the patient.

Results: A 49-year-old man presented with severe symptomatic aortic stenosis, as evidenced by a mean gradient of 42 mm Hg and an estimated valve area of 0.6 cm2. Past medical history was relevant for rheumatic mitral stenosis requiring mitral valve replacement with a #6320 cloth-covered Starr-Edwards (CCSE) prosthetic valve, remote transient ischemic attacks TIAs), atrial fibrillation, systemic hypertension, and smoking. While planning for his aortic valve replacement, the mean gradient across his CCSE mitral valve was measured to be high at 10 mm Hg. Although such a high gradient is not uncommon for this type of prosthetic valve in the mitral position, it was decided that he should undergo concomitant mitral valve replacement with a prosthesis that would offer a better hemodynamic profile. Pre-cardiopulmonary bypass (CPB) transesophageal echocardiography (TEE) revealed a previously undiagnosed mobile mass – 10mm x 3 mm, and moderately echogenic –attached to the cage of the CCSE mitral valve prosthesis. Given the type of valve, and the appearance of the mass, the possibility of cloth tear was entertained. Surgical exploration and subsequent analysis by pathology, however, revealed the mobile mass to be thrombus. The patient underwent successful combined aortic valve replacement (mechanical bileaflet) and mitral valve replacement (also mechanical bileaflet).

Discussion: Caged-ball Starr-Edwards prosthetic mechanical valves have been used since 1961 (1). Despite their long track record of success in improving hemodynamics, these valves are highly thrombogenic. For this reason, cloth-covered Starr-Edwards (CCSE) valves were developed in the early 1970s (2). Unfortunately, despite a double layer cover of Teflon and polypropylene, these CCSE valves remained thrombogenic (3). In addition, the cloth cover was found to tear over time, leading to TIAs, myocardial infarction, hemolytic anemia, and new valve regurgitation (4). Historically, cloth tears were discovered either during surgery or at autopsy (5). But, since the advent of echocardiography, TEE has been shown to be the superior diagnostic modality for diagnosing CCSE valve cloth tears (5).

The differential diagnosis of a mobile mass attached to a prosthetic valve includes a thrombus, fibrin strand, and vegetation (3). With a CCSE valve, however, the clinician must entertain the additional diagnosis of a cloth tear, in order to initiate prompt, appropriate clinical management. Echocardiographic features suggestive of a cloth tear include a very echogenic and elongated appearance of the mass, and its location being on the ‘downstream’ side of the valves, as opposed to vegetations which are more frequently located on the ‘upstream’ side of the valve (3). The diagnosis of cloth tear is even more likely in an anticoagulated patient without clinical signs of endocarditis (3).

3. Am Heart J 1997;134:665-71