



Pivoting system fracture in a bileaflet mechanical valve: A case report

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Résumé en anglais	<p>A leaflet escape occurred in a low profile bileaflet mechanical prosthesis manufactured by TRI-Technologies that had been implanted for 3 years in the mitral position of a 32 year old patient. The escaped leaflet had embolized and was subsequently located by an abdominal computerized axial tomography scan and ultrasound in the terminal portion of the aortic bifurcation. The embolized leaflet was removed 3 months after valve replacement surgery. In an attempt to determine the cause of the escape the retrieved embolized leaflet was investigated. Techniques employed included visual examination aided by stereo-microscopy, x-ray imaging and scanning electron microscopy. One of the ears had fractured and was missing from the leaflet. Chipping was observed at the leaflet ear position on both the inflow and outflow surfaces. Visual and SEM observations found fractographic river-lines that indicated an apparent origin at the inflow surface of the ear nearest to the straight 'B-datum' line or coaptation edge. The origin seemed to be in the radius between the leaflet ear and the leaflet body. SEM observation of the remaining intact ear showed wear marks on both the inflow and outflow sides of the leaflet ear that corresponded to the suspected origin of fracture. It is believed that the use of boron alloyed pyrolytic carbon material and the leaflet's homogeneous monolithic structural design were factors that contributed to this adverse event.</p>
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