Successful transplantation of a donor heart with multiple traumatic defects

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A 52-year-old male suffered multiple injuries in a car accident, including bilateral lung contusion. He was diagnosed brain-dead, and therefore became an organ donor. Transthoracic echocardiography and cardiac catheterization revealed normal findings. The inspection of the heart did not reveal any signs of contusion so that it was accepted for transplantation. The heart was excised in the standard manner and during harvest, a contained rupture of the posterior wall of the pulmonary trunk, just underneath the bifurcation, became apparent. The pulmonary trunk was cut off leaving the injury back in the donor. Additionally, a horizontal cleft was found in the left cusp of the pulmonary valve, 4 mm above the annulus (Panel A, black arrow points to the cleft). Despite these multiple defects, an interdisciplinary decision was taken to proceed with transplantation. Prior to transplantation, the pulmonary cusp was repaired using an extracellular matrix patch (CorMatrix ECM®; CorMatrix Cardiovascular, Inc., Roswell, GA, USA). When the heart was prepared for the left atrial anastomosis, an additional tear was found in the interatrial septum (Panel B, black arrow points to the tear), which was repaired with a 4-0 continuous polypropylene suture. Thereafter, the heart was transplanted in standard fashion. Following reperfusion after an ischaemia time of 197 min, the heart regained normal function.

The patient was extubated 6 h and discharged 5 weeks after transplantation. Eleven months after transplantation the patient is doing well and transthoracic echocardiography shows normal function of the pulmonary valve with a slight thickening of the left cusp and only mild insufficiency (see Supplementary material online, Video S1) and no indication for an interatrial shunt (see Supplementary material online, Video S2).

We report the rare case of successful transplantation of a donor heart with multiple traumatic defects including a rupture of the pulmonary trunk, a cusp-cleft of the pulmonary valve, and an atrial septal defect.

In general, trauma patients constitute a large portion of the donor pool, accounting for ~45% of organ donors. In most instances, the heart is not affected, and is accepted for transplantation, if echocardiography and cardiac catheterization do not reveal injuries. However, this case highlights the importance of thorough echocardiographic studies in the donor including search for valve defects and intracardiac shunts. The case reported here may encourage other institutions not to decline hearts with multiple traumatic defects, but to evaluate seriously their potential for transplantation.

Supplementary material is available at European Heart Journal online.

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