more pronounced among young and male patients, and those in whom direct-stenting techniques were used. Future studies should focus on the mortality in high-quality, large-scale clinical trials with long-term follow-up.

Acknowledgments
We thank Dr Weike Tao for the assistance in editing the language and revising the manuscript, and Dr Dongxue Wang and Dr Shi Chen for their literature assistant.

Funding
This work was supported by the National Natural Science Foundation of China [grant number 81070098] and the Postgraduate Innovative Foundation of Peking Union Medical College [grant number 2011-1002-008].

Conflict of interest: none declared.

References
The list of references is available in the online version of this paper.

Massive bilateral pulmonary emboli, paradoxical embolus and the knot of life

David Platts1*, Kiran Shekar2, Ainslie Senz2, and Bruce Thomson3

1Department of Cardiology, The Prince Charles Hospital, Brisbane, QLD, Australia; 2Critical Care Unit, The Prince Charles Hospital, Brisbane, QLD, Australia; and 3Department of Cardiothoracic Surgery, The Prince Charles Hospital, Brisbane, QLD, Australia

* Corresponding author. Tel: +61 7 3139 4000, Fax: +61 3139 4426, Email: dgplatts@hotmail.com

This 57-year-old male presented to the emergency department with presyncope and a right hemianopia 1 month after knee surgery. A computerized tomographic pulmonary angiogram confirmed extensive bilateral pulmonary emboli with a suspicion of a paradoxical embolus (Panel A). Transthoracic echocardiography revealed a moderately dilated right ventricle with mild systolic dysfunction, pulmonary artery systolic pressure of 55 mmHg, and a large, mobile, linear mass extending from the right atrium, across the inter-atrial septum, through the left atrium and into the left ventricle (Panel B).

Transoesophageal echocardiography demonstrated a large paradoxical pulmonary embolus, with a serpiginous, highly mobile thrombus, extending to the left ventricular apex. The thrombus within the right atrium had a complex knotted morphology, which was preventing further passage through a patent foramen ovale (PFO) (Panels C–F). The patient was transferred to theatre for a pulmonary embolectomy. The operative findings confirmed a large paradoxical pulmonary embolus with a long venous cast (30 cm in length and 1.5 cm in diameter) extending from the right atrium, across the PFO (arrow, Panel G) through the mitral valve, and to the apex of the left ventricle (arrow, Panel H), and an almost total occlusion of the right and left main pulmonary arteries with propagation of the thrombus into all segmental pulmonary artery branches. Following removal of the thrombus from the left heart and right atrium, an extensive bilateral pulmonary thromboembolectomy was performed (Panel I). The patient made a full recovery and was discharged 2 weeks later on warfarin.

Supplementary material is available at European Heart Journal online.