

PARAVALVULAR LEAK CLOSURE UNDER INTRACARDIAC ECHOCARDIOGRAPHIC GUIDANCE

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BACKGROUND

PVL following surgical valve replacement occurs in 2-15% of patients. Frequently PVL is mild and noted incidentally at routine follow-up with no clinical sequelae. However, some patients progress and develop congestive heart failure, symptomatic haemolysis or a combination of both. The presence of moderate to severe PVL is an independent risk factor for mortality.

Percutaneous treatment is an accepted management strategy in patients deemed to be too high risk for redo surgery. This is most commonly performed with transoesophageal (TOE) guidance requiring general anaesthesia that both potentially further increase the risk of intervention. ICE can be used to guide intervention, facilitating procedures to be performed under local anaesthesia without oesophageal intubation potentially making procedures shorter and safer. Further, this approach may enable the treatment of certain patients that may have been turned down for intervention.

OBJECTIVE

The objective of this study was to determine the safety and efficacy of intracardiac echocardiography (ICE) to guide percutaneous paravalvular leak (PVL) closure.

METHODS

All patients that underwent ICE-guided percutaneous transcatheter PVL closure between 2006 and 2016 at the John Radcliffe Hospital, Oxford, United Kingdom were retrospectively analysed. All patients were evaluated post-procedure clinically and with transthoracic echocardiography (TTE) prior to discharge. All patients were reviewed regularly by clinic visits.

RESULTS

Twenty-one procedures were performed in 18 patients during the study period. Eleven (61.1%) patients were male, 11 (61.1%) patients presented with aortic PVL and 7 (38.9%) of patients with mitral PVL. The mean age was 73.4±7.6 years and the mean Logistic EuroSCORE was 23.6±12.3%. Fourteen patients (77.8%) underwent successful ICE guided PVL closure, 2 patients returned for successful TOE guided leak closure, one patient required emergency surgery for device embolization and made an uncomplicated recovery and the final patient was managed conservatively. There were no ICE-related complications.

Median follow-up was 1,025 days (interquartile range:129-1640 days). At 30-day follow up one patient died who developed cardiogenic cause of unclear aetiology following successful mitral PVL closure. Post-mortem demonstrated a normal appearance of the mitral valve prosthesis and repair with no evidence of device embolization. Eleven patients (78.6%) reported symptomatic improvement of at least one New York Heart Association (NYHA) Class and the remaining 3 patients no change. No

patient demonstrated objective evidence of persistent haemolysis following successful closure. 1 year survival was 71.4%.

CONCLUSION

Percutaneous paravalvular leak closure guided by intracardiac echocardiography without the requirement of general anaesthesia is feasible, safe and associated with acceptable procedural success rates. If unsuccessful it does not preclude higher risk alternatives such as TOE guided closure under GA, or open repair.