Patient flow

HM3 LVAD implant (n=50)

7 patients excluded (death before discharge)

Aspirin+warfarin (n=43)

No bleeding on Aspirin+warfarin 
Continued aspirin+warfarin (n=3)

No bleeding on Aspirin+warfarin Conversion to warfarin only (n=32)

Bleeding on Aspirin+warfarin Conversion to warfarin only (n=8)
Supplementary material

Follow-up protocol

LVAD implant

1 week post-discharge review
- Device/Wound review
- Driveline site review
- Blood pressure
- Bloods

Follow-up protocol
- Attached chart

6-month in-patient review
- ECG
- Echocardiogram
- Cardiopulmonary exercise test
- Right heart catheter study
- CT aorta + angiogram
- Transplant MDT/ listing

3-monthly clinic after at 9 and 12 months

4-monthly clinic review after year 1
- Bloods (PRA)
- RHC/ECG/Echo at 12 months*
- ECG/echocardiogram at month 16 and 24

6-monthly clinic review after year 2
- Yearly RHC/ECG/echocardiogram*

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Routine clinic review:
- Symptoms
- Device/ Driveline management
- Blood pressure, venous pressure
- Anticoagulation/drug therapy
- ICD check (6-monthly with ICD clinic)

*yearly RHC for patients on WL for transplant only
Case 1 – intracerebral bleed

A 60-year-old man with a previous myocardial infarction and coronary bypass graft surgery underwent implantation of a Heartmate 3 LVAD as a bridge to candidacy due to severe pulmonary hypertension and INTERMACS 2 heart failure. Echocardiogram at discharge demonstrated a closed aortic valve with no regurgitation and normal right ventricular function at 5700 RPM. He was readmitted with a homonymous hemianopia at 3 months on warfarin (INR 3.2 at admission) and aspirin (75mg). Doppler blood pressure was 90mmHg. CT head showed intracerebral haemorrhage at the right occipital region [FIGURE 1]. Analysis of LVAD parameters demonstrated no abnormal events. Lactate dehydrogenase (LDH) was 318 IU/L compared to 268 IU/L 4 weeks earlier. Both warfarin and aspirin were withheld for 30 days to minimize the risk of hematoma expansion. Warfarin was reinitiated when subsequent scans showed contraction of the haematoma and oedema. Warfarin but not aspirin was reintroduced with INR 1.5-1.9 for a further 2 weeks. Echocardiogram was unchanged throughout (satisfactory LV unloading). INR was then maintained at 2.0-3.0 and LDH remained stable at 3-month follow-up.

Case 2 – fatal retroperitoneal bleed

A 63-year-old man with a prior surgery for congenital ventricular septal defect and severe LV dysfunction underwent implantation of HM3 LVAD due to progressive deterioration on the waiting list for heart transplantation (bridge-to-transplantation). The HM3 LVAD was implanted via lateral thoracotomy. He recovered well but started to suffer from a recurrence of heart failure. Echocardiogram confirmed progressive deterioration in aortic regurgitation, which led to aortic valve replacement surgery on day 146 post-implant. The surgery was uncomplicated and he was re-established on warfarin and aspirin (75mg).
following aortic valve replacement. He developed severe back and abdominal pain on day 21 post-aortic valve surgery with no preceding trauma. CT scan confirmed severe retroperitoneal bleeding [FIGURE 2]. Following extensive discussions with surgeons and interventional radiology, he was treated with repeated embolization but without success.
FIGURE 1: Intracerebral bleed on CT head
FIGURE 2: Severe retroperitoneal bleed