Difficult issues in the management of valvular heart disease

Valve Disease & Heart Transplantation

Madalina Garbi MD MA FRCP

Consultant Cardiologist, Royal Papworth Hospital, Cambridge University Health Partners, Cambridge UK

The NICE Topic Adviser on Heart Valve Disease

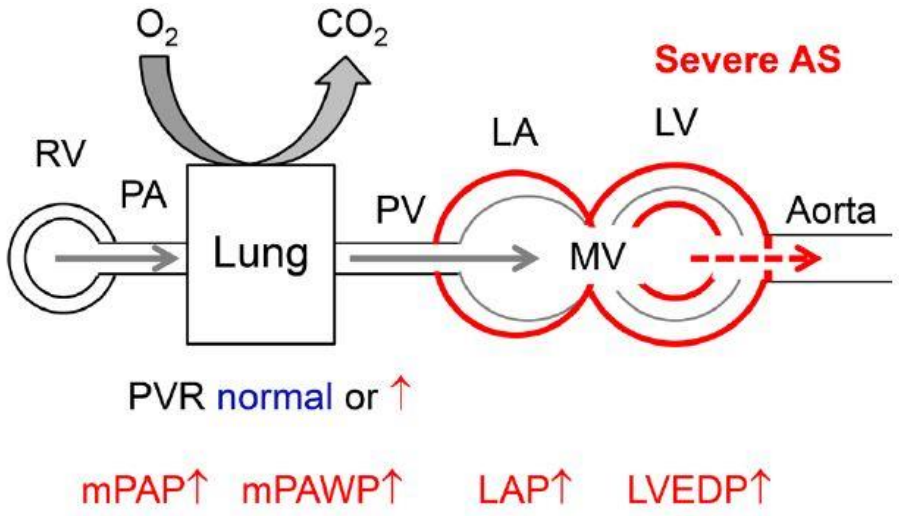
Contraindications to cardiac transplantation

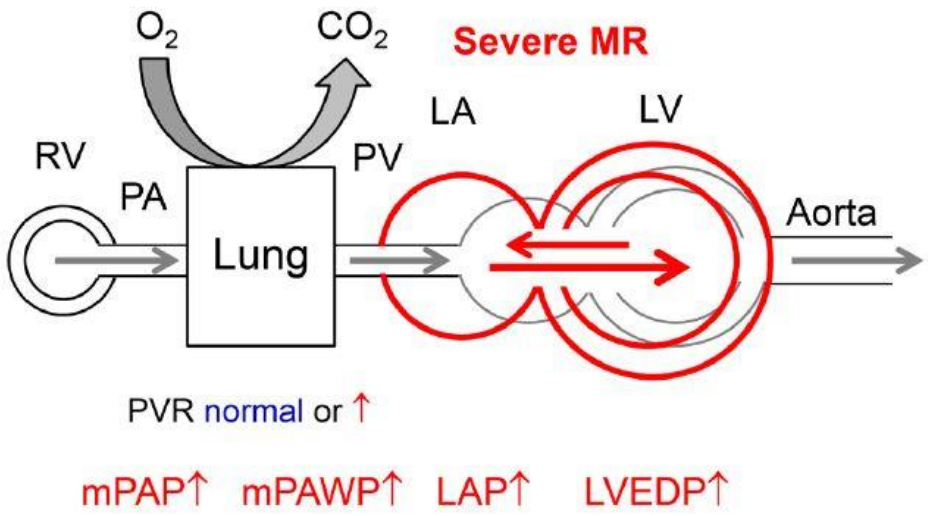
- Active infection (patients with chronic viral infection such as hepatitis B, hepatitis C and HIV may be considered if viral titres are undetectable on treatment/following treatment with no evidence of other organ damage).
- Symptomatic cerebral or peripheral vascular disease.
- Diabetes mellitus with end-organ damage, eg, nephropathy, neuropathy, proliferative retinopathy. Poorly controlled diabetes with glycosylated haemoglobin persistently >7.5% or 58 mmol/mol is a relative contraindication.
- Current or recent neoplasm: risk of recurrence should be discussed with the oncologist.
- Severe lung disease: FEV_1 and FVC <50% predicted or evidence of parenchymal lung disease.
- Irreversible renal dysfunction with estimated glomerular filtration rate <30 mL/ min/1.73 m^2.
- Irreversible liver dysfunction, eg, cirrhosis.
- Recent pulmonary thromboembolism (generally in the last 3 months).
- Pulmonary hypertension with pulmonary artery systolic pressure >60 mm Hg, transpulmonary gradient ≥15 mm Hg and/or pulmonary vascular resistance >5 Wood units. If irreversible with either pharmacological manipulation or mechanical unloading of the left ventricle, then this is an absolute contraindication to isolated heart transplantation.
- Psychosocial factors including history of non-compliance with medication, inadequate support, ongoing/recent drug or alcohol abuse, current smoker.
- Obesity (body mass index >35 kg/m^2 or weight >140% of ideal body weight).
- Other multisystem disease with poor long-term survival.

FEV_1, forced expiratory volume in one second; FVC, forced vital capacity.

Bhagra et al, Heart, 2018

PHT in VHD





PVR > 3WU usually when pre- and post-capillary PHT coexist

Maeder et al, Front Cardiovasc Med, 2018

Valve surgery more likely inappropriate in:

severe AS with severely impaired LV and no contractile reserve

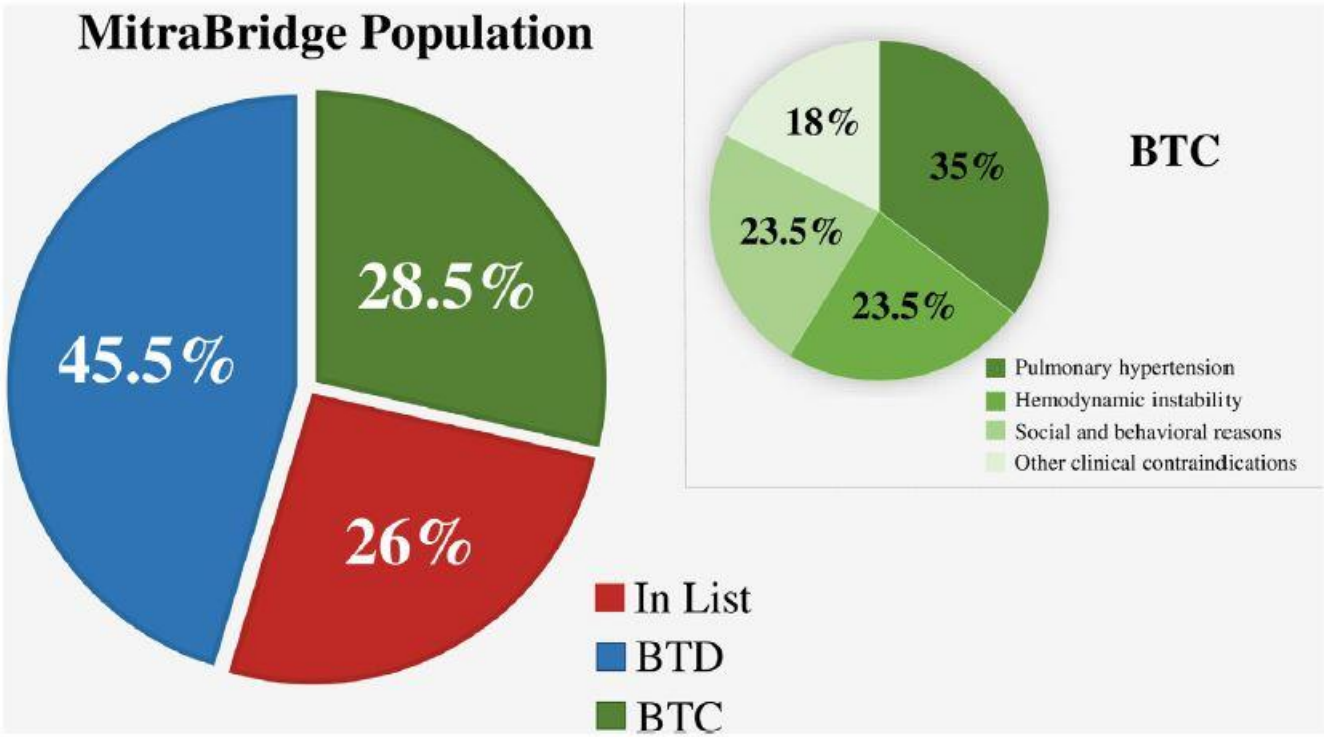
severe MR with severely impaired LV

Carabello, JACC, 2004

Edge to edge MR reduction as a bridge for transplantation

MitraBridge

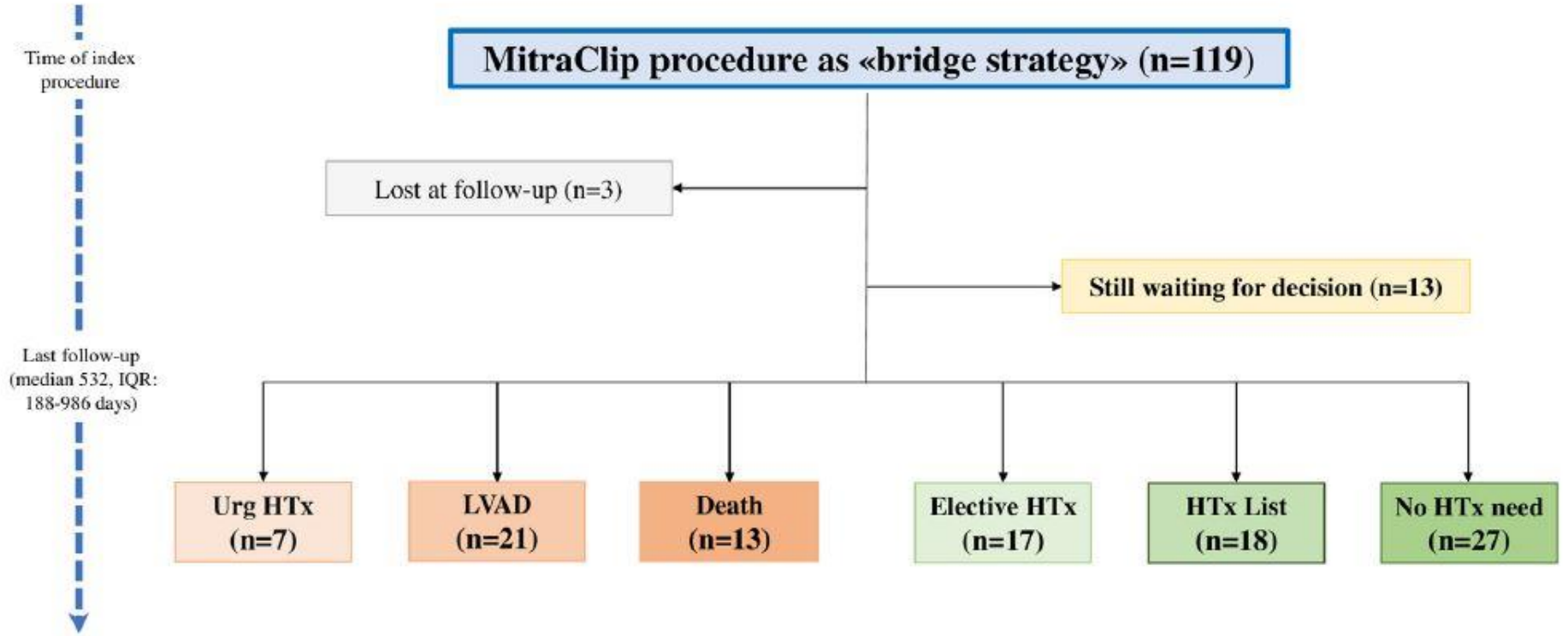
17 centres, 119 patients



Godino et al, J Heart Lung Transplant, 2020

MitraClip effect

no transplant need / accepted on transplant list / elective rather than urgent



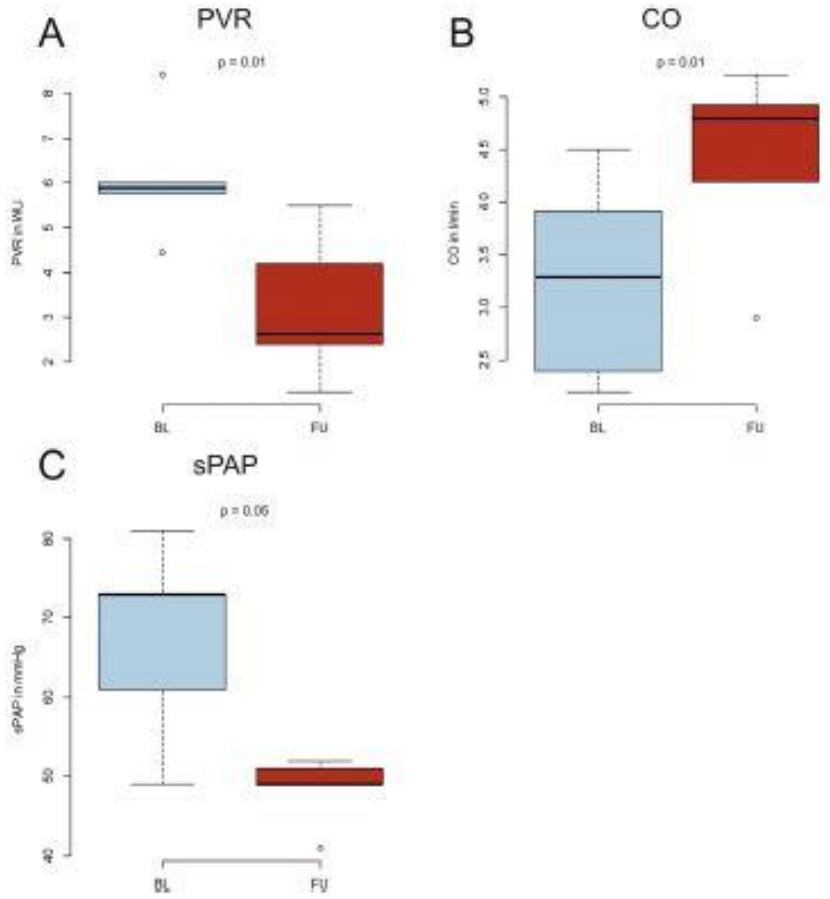
Baseline groups						
In List (%)	5 (16)	0 (0)	2 (6.5)	8 (26)	10 (32)	5 (16)
BTD (%)	1 (2)	16 (29.5)	8 (15)	5 (9)	4 (7.5)	12 (22)
BTC (%)	1 (3)	5 (15)	3 (9)	4 (12)	4 (12)	10 (29.5)

Godino et al, J Heart Lung Transplant, 2020

HFrEF (LV EF < 30%) & severe secondary MR despite OMT

MitraClip

RHC before and after to asses effect

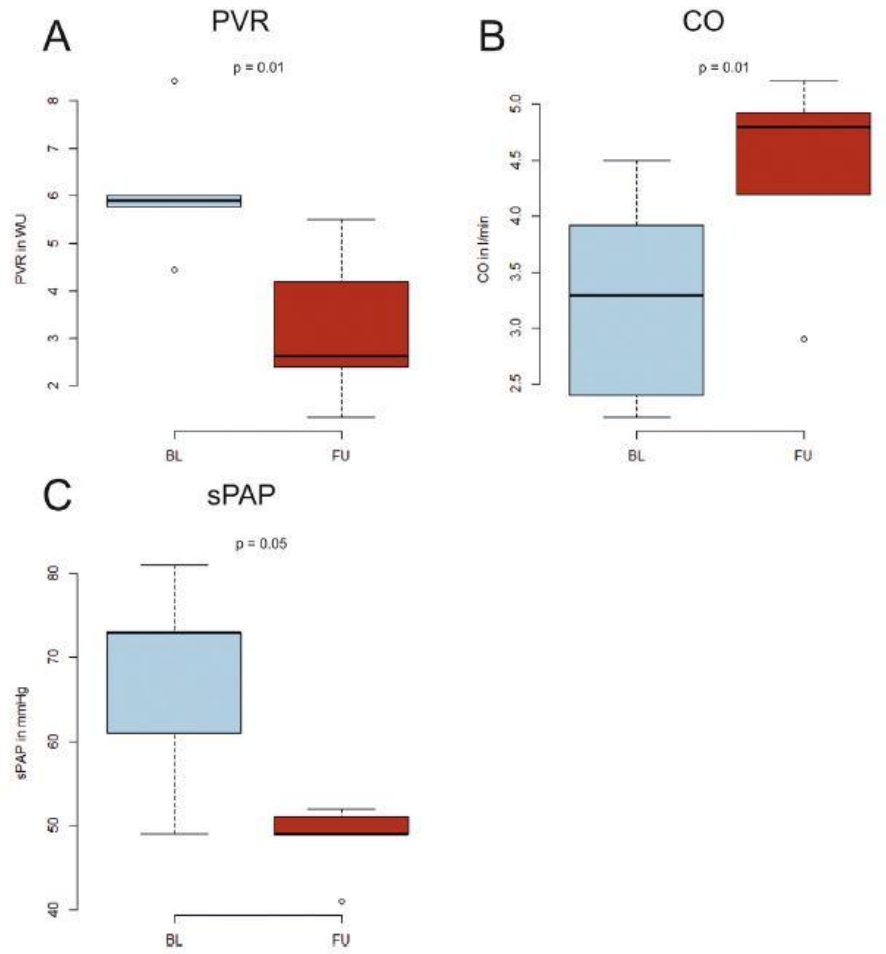


Doldi et al, IJC, May 2021

HFrEF (LV EF < 30%) & severe secondary MR despite OMT

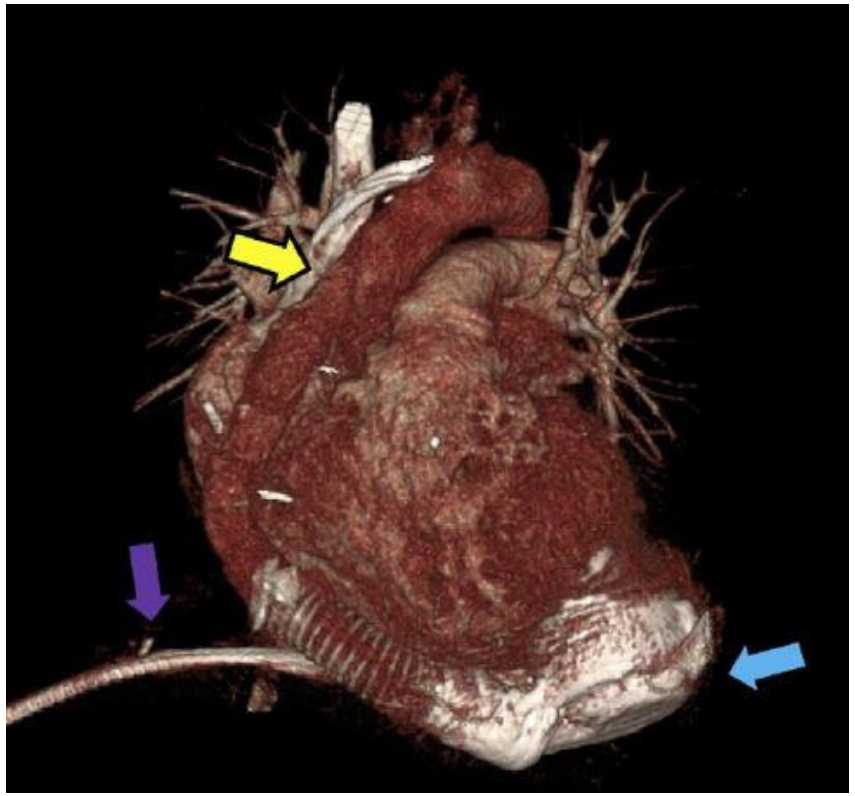
MitraClip

subgroup with PVR > 3.5WU



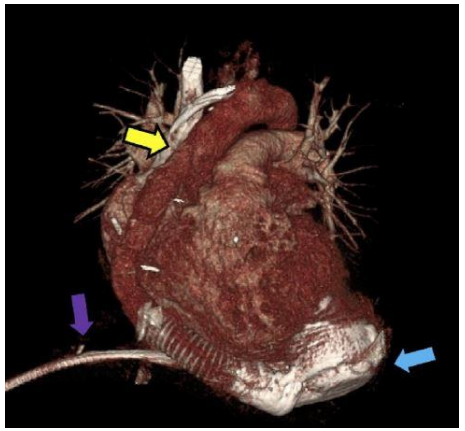
Doldi et al, IJC, May 2021

Valve disease & LVAD



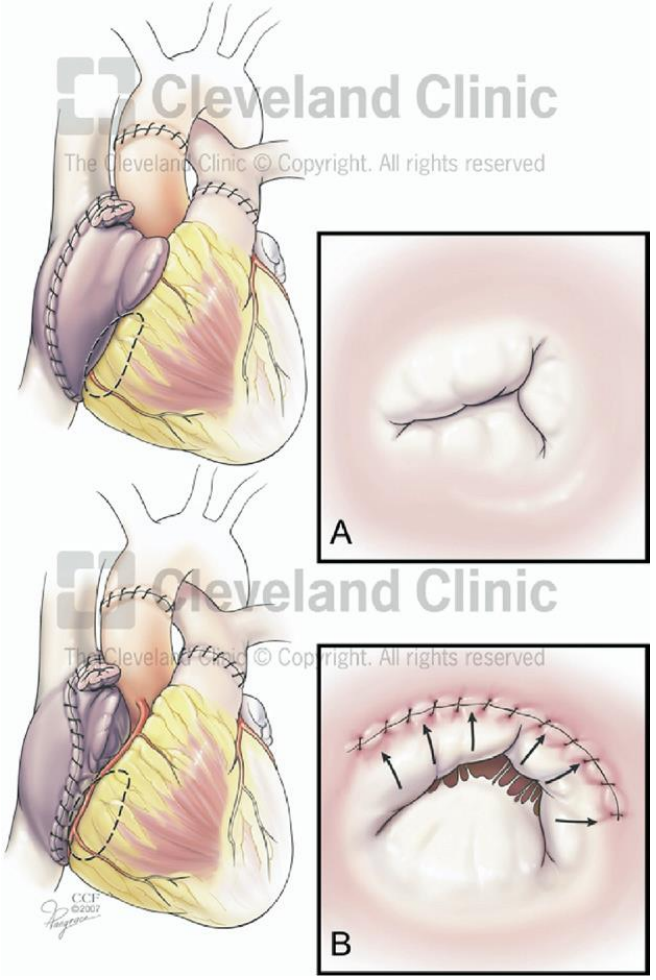
LVAD applications

1. Bridge to transplantation (patient on list)
2. Bridge to candidacy (to reverse contraindications
3. Destination therapy (improve & prolong life)



- **AR**
  - ↓ forward flow (“recirculation”) → >mild requires pre-LVAD AVR
  - LVAD-induced AR (low LV EDP / high Ao root pressure) → AV oversew or AVR
- **AS**
  - Mild to moderate = no impact / Severe = replace
  - Mild to moderate associated with AR → may facilitate pre-LVAD TAVI rather than sAVR
- **MS**
  - ↓ LVAD inflow → >moderate requires pre-LVAD MVR
- **MR**
  - MR severity ↓ with LVAD (LV offloading) → no need for pre-LVAD valve intervention
- **TR**
  - ↓RV forward flow → >moderate may require pre-LVAD repair
- **Mechanical AVR**
  - Tends to thrombose on LVAD → pre-LVAD replacement with bioprosthesis
- **Mechanical MVR**
  - Needs higher INR post LVAD

TR development in the transplanted heart



- Geometric distortion of AV junction / “TV annulus”
- Allograft rejection with RV failure
- Donor heart / recipient pericardial cavity size mismatch
- Torn leaflet or chord at time of endomyocardial biopsy

↓

TV surgical repair (including preventive)

Edge to edge TR reduction

Wong et al, J Heart Lung Transplant, 2008