Redo Pulmonary Valve Replacement (PVR) following Tetralogy of Fallot Repair Through Upper Mini Sternotomy/Mini Left Thoracotomy

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Background

- TOF Surgical correction has evolved from BT Shunt to Total Correction
- Success is however, limited by Chronic Hemodynamic overload to RV by PR[1,2]
- PVR achieves reduction of symptoms, RV volumes and function[3]
- Transcutaneous techniques are limited by only bio-prosthesis , and in the presence of additional procedures and endocarditis[4]
- Minimally invasive techniques like left anterolateral thoracotomy and left mini thoracotomy offer advantages over percutaneous techniques, however, are limited in presence of inter-atrial communication and associated tricuspid valve or other pathologies[4,5]

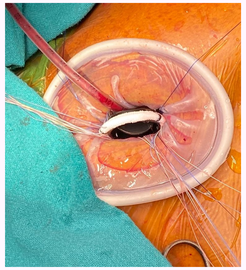
Material and Methods

- **Aim** – To assess conduct of redo PVR done by minimally invasive technique.
- **Primary objective** – To assess for safety and efficacy of minimally invasive technique for PVR after TOF repair
- **Design of study** – Prospective
- **Surgical approach** – Upper mini sternotomy or Left mini thoracotomy

Results

- Intraoperative Trans-oesophageal echocardiography employed in all
- All cases were done on beating heart in normothermia
- Femoral access for Cardiopulmonary Bypass was used
- No neurological complications and no mortality
- Minimal post-operative pain and scarring with no wound infection
- Follow up – 3 years, no mortality, normal functioning prosthetic valves

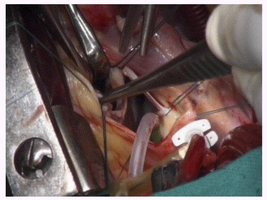
S No.	Criteria	
1	Number of Patients	8 males, 7 females
2	Age	24.6 ± 3.81 years
3	Approach Upper mini sternotomy Left mini thoracotomy	 13 2
4	Duration of CPB	96.33 ± 12.77 minutes
5	Valves Bio-prosthetic Mechanical	 13 2
6	Duration of - ICU Stay Hospital Stay	Median (Interquartile range) 2 days (1-3) 5 days (3-5)



Conduct of Mechanical PVR via Left mini thoracotomy based on CT guidance pre-operatively assessing space



Left Mini Thoracotomy Incision



RVOT resection in addition to PVR in Upper mini sternotomy



Pitfall – Left thoracotomy converted to Upper mini thoracotomy for tackling residual RVOT obstruction

Conclusion

- **PVR through mini invasive techniques is a reproducible technique without affecting the safety and exposure which avoids redo dissection**
- **Mechanical PVR can be implanted**
- **Use of CT as a roadmap is mandatory for efficient planning**
- **Evaluation of Tricuspid, other valvular lesions, intra-cardiac shunts, peripheral artery Doppler is must for success.**

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