

## 10. Hybrid aortic surgery our early experience

Zahid Khan, James Kuo, Jonathan Unswort-White

We report our early experience of hybrid aortic arch and descending thoracic aortic surgery with/without concomitant cardiac procedures.

Between December 2010 and October 2012, 7 patients underwent hybrid aortic surgery with 4 patients requiring concomitant cardiac procedures (AVR-1, CABG-2 and ascending aortic replacement + CABG-1). There were 6 males :1 female patient. The operations were performed electively in 5 patients, and as an emergency in 2 patients. All patients underwent relocation of innominate and right carotid arteries to the proximal ascending aorta using a 4 side armed Dacron graft, either as a patch or a tube graft. The left subclavian artery was closed in all cases either surgically or percutaneously with an amplatzer vascular occlusion device. Following relocation of the head and neck vessels, the aortic arch and descending thoracic aorta were stented with either a Medtronic Thoracic Valiant Aortic Stent (4 cases) or the Jotec Open E Vita Stent (3 cases). The procedures were carried out as a one stage operation in 6 cases and as a 2 stage operation in 1 case. Morbidities include acute renal failure (1 patient) and left hemiplegia (1 patient). None developed paraplegia. 1 patient died 2 weeks postoperatively from perforated duodenal ulcers.

This technique enables endovascular stenting of the aortic arch and descending thoracic aneurysms with concomitant cardiac procedures. The relocation of the carotid arteries prior to endovascular stenting of the arch may protect against cerebral embolisation from atheroma dislodged during antegrade deployment of the endovascular stent. This technique also allows antegrade cerebral and coronary perfusion during circulatory arrest.

Hybrid aortic surgery is a feasible alternative treatment for patients with extensive aortic arch and descending thoracic aneurysms with concomitant cardiac pathologies.

<http://dx.doi:10.1016/j.jsha.2015.05.191>

## 11. Damus–Kaye–Stansel operation versus bulboventricular foramen enlargement for the management of univentricular heart with systemic outflow obstruction: 17 years experience, a retrospective study

Nabil Albahlooli, Nabil Albahlooli, Sami Alahdal, Yahya Alfaraidi, Howaida Alqethamy, Abdullaouf Alsaeedi, Ahmed Elwy, Khaled Alnajashi, Roberto Di Donato

*Background:* Subaortic stenosis in a single ventricle morphology can be managed by a Damus–Kaye–Stansel

procedure or by direct bulboventricular foramen (BVF) resection. We report our results with both techniques in our center emphasizing pros and cons of either technique.

*Methods:* 34 cases with univentricular heart and BVF obstruction undergoing surgery for subaortic stenosis during the period between April 1997 and June 2014 were retrospectively reviewed. Group A ( $n = 15$ ), receiving a Damus–Kaye–Stansel procedure and Group B ( $n = 19$ ), receiving BVF enlargement.

*Results:* Median age and median weight at surgery were 34 months (range 7–84 months) and 11 kilograms (range 4–22 kilograms) respectively. There were two early deaths in Group A (13.3%) and one in Group B (5.3%). No patient had heart block in the Group A, while two patients had heart block in Group B (10.5%). One patient had residual left ventricular outflow obstruction after BVF enlargement that needed early re-intervention. New atrio-ventricular valve regurgitation (AVVR) occurred in one patient of Group A (moderate) and in 8 patients of Group B (mild  $n = 1$ , moderate  $n = 5$ , severe  $n = 2$ ). The median length of hospital stay in Group A and Group B were 12.5 and 15 days, respectively. The mean follow up period was  $72 \pm 56$  months (range 1–199 months). Fontan completion was achieved in 13 patients. No surgical intervention for residual systemic ventricular outflow obstruction was needed in the follow up period in either group.

*Conclusion:* Although both procedures effectively relieve the obstruction in the systemic outlet chamber, direct BVF enlargement carries higher risk of heart block and new AVVR than the Damus–Kaye–Stansel procedure.

<http://dx.doi:10.1016/j.jsha.2015.05.192>

## 12. Percutaneous balloon angioplasty for critical aortic coarctation in newborns and infants: Is it still a valid option?

Shehla Jadoon, Milad El-Segaier, Tarek S. Momenah, M.O. Galal

*Background:* Coarctation of aorta may present as severe heart failure in infants and may lead to myocardial dysfunction. Current evidence supports surgical management of neonatal coarctation. However, it can be precarious in critically sick infants.

*Aim and objective:* To investigate the safety, efficacy, immediate and mid-term outcome of percutaneous balloon angioplasty (BAP) for infantile aortic coarctation in critically sick patients.

*Methods and patients:* Data of all patients under age of 6 months who underwent balloon angioplasty for coarctation were reviewed.

*Results:* Between January 2008 and April 2014, 15 infants were identified with coarctation with a mean weight of 3.4 kg (1.4–5 kg) and median age of 54 days (4–142 days).

All patients were critically sick, needed admission in intensive care unit for inotropic or ventilatory support. All underwent successful percutaneous balloon angioplasty with no major complications. The clinical condition and left ventricular function improved leading to discontinuation of prostaglandin and weaning from inotrope and ventilator support. Seven patients underwent elective surgical repair after a mean time of one month, three needed re-dilation and five continued without any further intervention.

**Conclusions:** Surgical repair for native neonatal and infantile coarctation is a preferred choice of treatment but it can be challenging in critically sick patients. However, balloon dilation remains a safe and effective temporary palliation for the critically sick patients. Despite of high incidence of restenosis, some patients do not need for mid-term further intervention.

<http://dx.doi:10.1016/j.jsha.2015.05.193>

### 13. Immediate Effect of percutaneous transvenous mitral commissurotomy on atrial electromechanical delay and left atrial mechanical functions in patients with rheumatic mitral stenosis

Nisar A. Trambo, Jahangir Rashid Beig, Hilal A. Rather, Imran Hafiz

**Background:** Rheumatic mitral stenosis (MS) is associated with prolonged inter and intra-atrial electromechanical delays and impaired left atrial (LA) mechanical functions, which are considered to be markers of atrial fibrillation (AF) risk. This study was conducted to assess the immediate effect of successful percutaneous transvenous mitral commissurotomy (PTMC) on these parameters.

**Methods:** This observational study included 25 patients with symptomatic, severe MS (aged  $34.1 \pm 7.1$  years, with mean mitral valve area (MVA) of  $0.74 \pm 0.13$  cm<sup>2</sup>), in normal sinus rhythm, who underwent successful PTMC at our hospital. Inter-atrial (AEMD), left intra-atrial (L-IAEMD) and right intra-atrial (R-IAEMD) electromechanical delays were measured on tissue Doppler imaging. Phasic LA volumes ( $V_{max}$ : maximal LA volume,  $V_{min}$ : minimal LA volume and  $V_p$ : LA volume at P-wave onset) were measured by modified Simpson's method. Parameters of LA reservoir function i.e. LA total emptying fraction (LATEF) and LA expansion index (LAEI); conduit function i.e. LA passive emptying fraction (LAPEF); and pump function i.e. LA active emptying fraction (LAAEF) were calculated from the phasic LA volumes. PTMC was performed using the standard Inoue Balloon technique. All these parameters were evaluated and compared before and 24–48 h after PTMC.

**Results:** Successful PTMC led to significant reduction in AEMD ( $p < 0.001$ ), L-IAEMD ( $p < 0.001$ ), R-IAEMD ( $p < 0.001$ ),  $V_{max}$  ( $p < 0.001$ ),  $V_{min}$  ( $p < 0.001$ ) and  $V_p$  ( $p < 0.001$ ).

There were significant increments in LATEF ( $p = 0.001$ ), LAEI ( $p = 0.002$ ) and LAPEF ( $p = 0.05$ ), while there was no significant change in LAAEF ( $p = 0.127$ ) after PTMC.

**Conclusions:** Successful PTMC has a favorable early impact on left atrial mechanical functions and other novel parameters of atrial electromechanical remodeling in MS patients. Large scale prospective studies are required to confirm whether improvement in these markers translates into reduced long term AF risk in these patients.

<http://dx.doi:10.1016/j.jsha.2015.05.194>

### 14. Prince Sultan Cardiac Center experience on mitral clip (What is new?)

Hatim Khieralla Osman, Sondos Ahmad Samargandy

**Demographics:**

- Total number of patients: 33
- 22 males (63.6%) + 12 females (36.6%)
- Age (min 43 & max 92 with mean 66.82 – SD 12.5)
- **Etiology:**
- Functional ischemic = 13 (39.3%)
- Degenerative = 4 (12.12%)
- Flail AML/ISCHEMIC = 1 (3%)
- Functional non ischemic = 15 (45.45%)

**Summary:**

1. EF-have increased after the intervention in all periods of monitoring time, however it was only statistically significant at 6th month using *t*-test with  $p$ -value = 0.024. Moreover, assuming that the distribution is not normal, using Wilcoxon Signed Ranked Test, out of 10 people in sixth month, 5 have positively increased EF and the other 5 remains the same with a  $z$ -value =  $-2.121$ ,  $p$ -value = 0.034.
2. PASP – Due to the attrition rate, only comparisons up to sixth months can be fairly interpreted. The results shows that on the sixth month monitoring, PASP all decreased at a certain level but only statistically significant at the first day using Paired *t*-test, with  $p$ -value = 0.015. Again assuming that the distribution is not Gaussian, Wilcoxon Signed Ranked test shows that out of 22 patients, 14 (63.64%) had decreased PASP, 4 (18.18%) have increased and 4 (18.18%) remains the same with  $z$ -value =  $-2.379$ ,  $p$ -value = 0.017
3. MR improvement:
  - No change (remained sever) = 6 patients (2 degenerative, 3 functional, 1 ischemic) 18.18%
  - One degree improvement (severe to mod) = 18 (54.5%)
  - Two degrees improvement (sever to mild) = 5 (15.15%)
  - Three degrees (sever to non/residual) = 1(3%)