

STS/EACTS Latin America Cardiovascular Surgery Conference

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BI-DIRECTIONAL GLENN IN RESOURCE LIMITED SETTINGS. HOW SAFE IS THE OFF-PUMP OPTION AND DOES IT REDUCE THE COST OF CARE?

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Disclosures

- Nothing to disclose

Background and Patients

- Bidirectional Glenn (BDG) is a stage within the single ventricle pathway which requires additional operations for completion.
- In Low and Middle-Income Countries (LMIC) cost for these multiple operations may be overwhelming for families.
- In 2006 we introduced the off-pump (OP) BDG as our preferred method.
 - January 1, 2006 – December 31, 2017 a total of 698 patients underwent BDG at AFIC/NIHD and the WNGCA.
 - 439/698 (62.9%) were male
 - Mean age was 4.5 ± 4.9 years
 - 418/698 (59.9%) underwent on-pump (P) BDG
 - 280/698 (40.1%) underwent off-pump (OP) BDG

Results:

Variables	Total cases (n=698)	On Pump (n=418)	Off Pump (n=280)	P-value
	Mean ± std (Range)	Mean ± std Median	Mean ± std Median	
Age (years)	4.46 ± 4.88 (0.17-32)	4.7 ± 5.12 Median = 2	4.13 ± 4.48 Median = 2.5	0.13
Weight (Kg)	14.53 ± 9.77(3-85)	15.02 ± 10.18 Median = 12	13.79 ± 9.09 Median = 11	0.09
Height (cm)	96.4 ± 27.1 (45-180)	97.28 ± 27.36 Median = 90	94.92 ± 26.6	0.28
Pre-Op Hb (gm/dl)	15.2 ± 3.1 (8-28)	12.30 ± 3.06 Median =12	15.33 ± 3.16 Median = 14.2	0.38
Pre-Op O ₂ Sats	75.2 ± 8.3 (19-98)	74.85 ± 8.69 Median = 77	75.72 ± 7.78 Median = 77	0.18
Post-Op O ₂ Sats	84.1 ± 3.3 (76-90)	84.18 ± 3.26 Median = 85	83.98 ± 3.38 Median = 84	0.56

Variables	Total cases (n=698)	On Pump (n=418)	Off Pump (n=280)	P v a l u e
	Mean ± std (Range)	Mean ± std Median	Mean ± std Median	
Inotropic score	22.1 ± 28.4 (0-135)	27.13 ± 33.65 Median = 12	15.11 ± 17.06 Median = 12	< 0.01
Inotropic Duration (hours)	56.19 ± 71.1 (0-520)	63.10 ± 83.80 Median = 48	46.11 ± 44.96 Median = 48	<0.01
Ventilation time (hours)	22.47 ± 58.7 (0-520)	28.74 ± 72.76 Median = 8	13.31 ± 24.77 Median = 8	<0.01
Post-Op PAP	13.9 ± 2.1 (9-19)	13.78 ± 2.06 Median = 85	14.06 ± 1.98	0.16
ICU stay (days)	4.3 ± 3,2 (2-21)	4.8.1 ± 3.85 Median = 3	3.53 ± 1.95 Median =3	<0.01
Pleural Drains (days)	4.1 ± 4.3 (2-28)	4.38 ± 4.7 Median = 3	3.61 ± 3.62 Median = 3	.05
Hospital Stay (days)	10.1 ± 4.7 (5-31)	10.65 ± 5.05 Median = 9	9.21 ± 4.00 Median = 8	<0.01

Results:

- 7/287 converted to OP group 2.4%
- OR costs were significantly higher in P (**p < 0.01**)
- Overall Mortality (30 day and/or hospital dc) 45/698 (6.4%)
- Mortality for P was 38/418 9.1% and 7/280 (2.5%) **p < 0.001**
- Risk Factors for performing P vs. OP
 - Previous procedure- P 148/418 (35.4%); OP 29/280 (10.4%) **p < 0.001**
 - Additional procedure- P 254/418 (60.8%); OP 48/280 (17.1%) **p < 0.001**
- Low Cardiac Output requiring peritoneal dialysis was OP 4/280 (1.4%) and P 16/418 (3.8%) **p = 0.02**
- Re-intubation rates were similar P 49/418 (11.7%) and OP 24/280 (8.6%)
- Neurological defects occurred in 2/418 P: 1/280 NS

Inferences

- Off-pump BDG can be performed in selected cases at lower mortality and morbidity.
- Off-pump BDG is less costly.
- Those cases with previous procedures or requiring additional procedures concomitantly are more likely to require on-pump BDG.
- When possible the off-pump BDG should be used to reduce expenses in LMIC.

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THANK YOU

