

JCK Session

## Session 03 ( II-JCK03)

### Interventional Cardiology

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Sat. Jul 10, 2021 3:00 PM - 4:30 PM Track5 (Web開催会場)

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#### [II-JCK03-6]Efficacy of transcatheter pulmonary valve perforation by micro-guidewire and balloon dilation in neonates with pulmonary atresia with intact ventricular septum

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##### Objectives:

Pulmonary atresia with intact ventricular septum (PA/IVS) is a rare type of severe cyanotic congenital heart disease. Due to the different degrees of ventricular development, there is no uniform treatment plan. This study was designed to investigate the safety and efficacy of transcatheter perforation of pulmonary valve by micro-guidewire and balloon dilation in the treatment of neonatal PA/IVS.

##### Methods:

This is a retrospective study that containing 21 cases (14 male, 7 female) of neonates with PA/IVS who underwent transcatheter micro-guidewire pulmonary valve perforation and balloon dilation in XinHua hospital from January 2012 to December 2018. All patients underwent the pulmonary valve perforation by micro-guidewire through the Simmons catheter. Postoperative follow-up was done at 1 month, 3months, 6months, 1 year and every year thereafter mainly by echocardiography to evaluate the operative efficacy and the development of the right ventricle (RV). T-test test was used for the comparison between groups.

##### Results:

A total of 21 neonates with PA/IVS were enrolled, and 13 cases were diagnosed prenatally. The median age of surgery was 6 days, the average weight was  $(3.18 \pm 0.49)$  kg, and the minimum weight was 2.25 kg. The balloon/valve ratio was  $1.19 \pm 0.12$ , and the times of dilation was  $2.19 \pm 0.40$ . The preoperative blood oxygen saturation was  $(79.05 \pm 7.25)$  %, and the right ventricular pressure measured by catheter was  $(121.00 \pm 32.69)$  mmHg. The immediate postoperative pressure was  $(47.43 \pm 12.82)$  mmHg, and postoperative blood oxygen saturation was  $(90.71 \pm 4.36)$  %. The median follow-up time was 30 months, and the longest follow-up time was 53 months. All the cases enrolled achieved double ventricular circulation without death and serious complications. According to the last follow-up data including 16 cases which were followed up over 1 year, the pulmonary artery transvalvular pressure was  $(29.29 \pm 15.03)$  mmHg. Compared to the pre-operation data, the mean transverse diameter of RV was significantly higher  $[(0.86 \pm 0.10)$ 比 $(0.73 \pm 0.13)$ ,  $t = -2.96$ ,  $P = 0.006$ ]. The pulmonary valvular diameter z-scores was significantly higher  $[(-1.41 \pm 0.89)$ 比 $(-2.83 \pm 1.06)$ ,  $t = -3.65$ ,  $P = 0.001$ ] and the tricuspid valvular diameter z-scores was significantly higher  $[(-0.52 \pm 0.29)$ 比 $(-1.34 \pm 0.81)$ ,  $t = -3.55$ ,  $P = 0.001$ ] as well. 8 cases received re-intervention during the follow up, and the median time for re-intervention was

3.0 months.

Conclusion:

Transcatheter pulmonary valve perforation by micro-guidewire and balloon dilation are safe and effective first-stage treatment for neonatal PA/IVS. A significant development was obtained in the right ventricle after an early intervention according to the follow up.