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Retrospective Comparative Study of Total Repair of Partial Atrioventricular Canal Before and After Two Year Old Age

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Abstract

Background: The spectrum of atrioventricular septal defects account for about 7-17% of congenital heart disease, and 25% of them are partial atrioventricular canal defects (2). The repair of partial atrioventricular canal are preferred to be performed when diagnosed and before an operation might interfere with school. According to the long-term follow-up results of other centers, surgical outcomes were excellent. There were many reports about the surgery outcomes of patients in young age. The aim of this retrospective study is to review the results of treating infants with partial atrioventricular canal patients in our center. The mortality rate, reoperation rate, surgery procedures and valve regurgitation associated data were described.

Aim of Study: To evaluate the outcomes of patients undergoing surgical repair of partial atrioventricular septal defect (AVSD) and analyzed the effect of age on outcome. Objective is to assess the best time of repair in this congenital cardiac anomaly and to study different postoperative clinical pathways.

Patients and Methods: This study is a Retrospective cohort study. This retrospective cohort study was carried out on 75 patients with successfully surgical PAVC repair patients were recruited from cardiothoracic department, Ain shams and affiliated Hospitals. From October 2022 to March 2023 and the operation done for these patients two years ago and collected data eight months. After undergoing ECHO which is the standard for such patients for follow-up during the study period (6 months). All patients were given informed consent. The study protocol was approved by the ethical committee, Faculty of Medicine, Ain Shams University Hospitals, Cardiothoracic Department.

Results: Regarding the baseline characteristic between in children 24 months among study groups, we found that age ranged 4-190 months (>24m 61.3% –<24m 38.7%). Sex male 57.3% more affected than female 42.7%. Weight range 4-60 Kg. NICU admission 8%. Other congenital anomalies 4%. Thrombocytopenia 1.3%. ASD size 4-26mm. Pulmonary HTN 56%. LV dilation 1.3%. RA dilation 41.3%. EF range 55-82. Regarding the comparison of demographic characteristic between in children with age more and less than 24 months among study groups, we found that there was statistically difference between more and less than 24 months in age, weight (p-value 0.001, >0.001 respectively).

Conclusion: Age ranged 4-190 months (>24m 61.3% - <24m 38.7%). Sex male 57.3% more affected than female 42.7%. Weight range 4-60Kg. NICU admission 8%. Other congenital anomalies 4%. Thrombocytopenia 1.3%. ASD size 4-26mm. Pulmonary HTN 56%.LV dilation 1.3%. RA dilation 41.3%. EF range 55-82. Mitral regurge mild, moderate and severe (14.7%, 33.3%, 52%). Tricuspid regurge mild, moderate and severe (24%, 42.7%, 33.3%). There was statistically difference between more and less than 24 months in age, weight (p-value 0.001, >0.001 respectively). There was statistically difference between more and less than 24 months in pulmonary hypertension and EF (p-value 0.043, 0.003 respectively).

Key Words: *Partial Atrioventricular Canal.*

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Introduction

THE spectrum of atrioventricular septal defects account for about 7-17% of congenital heart disease **[1]**, and 25% of them are partial atrioventricular canal defects **[2]**. The repair of partial atrioventricular canal are preferred to be performed when diagnosed and before an operation might interfere with school **[3-5]**.

According to the long-term follow-up results of other centers, surgical outcomes were excellent. There were many reports about the surgery outcomes of patients in young age. The aim of this retrospective study is to review the results of treating infants with partial atrioventricular canal patients in our center. The mortality rate, reoperation rate, surgery procedures and valve regurgitation associated data were described **[3,6]**.

Aim of the work:

To evaluate the outcomes of patients undergoing surgical repair of partial atrioventricular septal defect (AVSD) and analyzed the effect of age on outcome. Objective is to assess the best time of repair in this congenital cardiac anomaly and to study different postoperative clinical pathways.

Patients and Methods

Type of study: This study is a Retrospective cohort study. This retrospective cohort study was carried out on 75 patients with successfully surgical PAVC repair patients were recruited from cardiothoracic department, Ain Shams and affiliated Hospitals. From October 2022 to March 2023 and the operation done for these patients two years ago and collected data eight months. After undergoing ECHO which is the standard for such patients for follow-up during the study period (6 months). All patients were given informed consent. The study protocol was approved by the ethical committee, Faculty of Medicine, Ain Shams University Hospitals, Cardiothoracic Department.

Study setting: Ain Shams University Hospitals, Cardiothoracic Department.

Study population:

Inclusion criteria: Any Patient need partial atrioventricular canal repair.

Exclusion criteria: Any patient with syndrome. o Patient with associated congenital anomaly. Any associated congenital heart anomaly. Redo patients.

Sampling method:

Retrospective, cohort, non-randomized sample.

Sample size:

Using PASS1 1 program for sample size calculation setting confidence level at 95% and margin of error at 5% it is estimated that sample size of 75 patients will be needed to detect an expected rate of left venticular outlet obstruction of 5% [7].

Ethical considerations:

Participants are freely giving fully informed consent to participate. These informed consents in this study are written consent. Participants' confidentiality and data security are guaranteed. Participants should be able to withdraw their data from the research process at any time. We will describe any expected benefits for the research participants, also any possible risks to them. Also this study will take the acceptance of the ethical committee in Faculty of Medicine, Ain Shams University.

Study procedures:

Date has been collected from medical reports.

Preoperative preparations:

History taking:

Detailed history has been taken, as regards the age, sex, body weight, race, mothers' related pregnancy disorders, any NICU.

Clinical examination:

A complete clinical general and local cardiological examination has been performed.

Pre-operative measurements:

Laboratory: Complete blood count (CBC), liver function tests, prothrombin time and concentration, INR, kidney function tests, fasting blood sugar, serum electrolytes, electrocardiogram (ECG).

Radiological:

Plain chest X-ray P-A view in the erect position, echocardiography.

Post-operative measurements: Electrocardiogram after surgery to detect any electrocardiogram Changes.ICU stay (in days) and hospital stay.

Laboratory:

Cardiac enzymes, complete blood count (CBC), liver function tests, prothrombin time and concentration, INR, kidney function test, serum electrolytes.

Radiological: Plain chest X-ray,

Echocardiography:

It was done by expert cardiologist for patients pre and one weak post and althow 6 month post-surgical repair of PAVC This was performed using a commercially available General electric vivid 7 (Norway) & Siemens Acuson NC 1000 (Germany) machines equipped with tissue Doppler imaging (TDI) mode and using 2-2.5 MHZ transthoracic transducers. Echocardiogram was recorded while the patient in the left lateral decubitus or supine position. Conventional 2D, M-mode and Doppler studies were carried out, with standard views done for every patient; by independent expert operator who was blinded to all other patients data. Left Ventricular end diastolic diameter (LVEDD), Left Ventricular end systolic diameter (LVESD) and Left ventricular ejection fraction were calculated mitral and tricuspid valve degree of residual regurgitation. ASD residual, pulmonary hypertention, rt ventricular and rtatriaumdimentions before discharging the patient from hospital and 6 months postoperative to detect post-operative left venticular outlet obstruction, ejection fraction, Lt atrioventricular valve regurgitation or stenosis, residual atrial septal defect, heart block.

Follow-up:

Patients were then followed-up in hospital regarding mortality & Major Adverse Cardiac Events.

Surgical technique:

After median sternotomy, pericardial patch was harvested and kept wet for later use. Standard cardiopulmonary bypass was established after cannulating ascending aorta and venae cavae. Patient ductusarteriosus was dissected and ligated in one patient. Antegrade cold blood cardioplegia was used for cardiac arrest. Moderate hypothermia was achieved for myocardial protection. After right atriotomy, left venticular was vented through inter atrial septum. Careful inspection was done to identify if any ventricular septal defect was also present. We used pledgeted interrupted mattress Prolene 5/0 sutures to sew the pericardial patch with left superior and inferior leaflets to partition between right and left atrioventricular valves. Cold saline was injected into left ventricle to assess left atrioventricular valve. Left AV valve cleft was obliterated starting at the base of ventricular septum using interrupted simple and mattress sutures to achieve coaptation of left superior Master Degree Thesis/MFA/ISRO/Faculty of Medicine/ASU Page 5 and inferior leaflets. After assuring competent valve, continuous Prolene stitches were used to close the remaining inter atrial septum. While proceeding inferiorly, stiches were best placed superficially near the coronary sinus to avoid nodal injury. A Left sided Patch is performed.

Statistical methods:

Statistical analysis was done using IBM© SPSS© Statistics version 24 (IBM© Corp. Armonk, NY) and MedCalc© version 20.218 (MedCalc® Statistical Software version 20.218 (MedCalc Software Ltd, Ostend, Belgium; https://www.medcalc.org; 2023). Numerical data are presented as median and interquartile range and intergroup differences are compared using the Mann-Whitney U-test. Categorical data are presented as counts and percentages and differences are compared using the Pearson chi-squared test or Fisher's exact test. Ordinal datat are compared using linear by linear association. Time to event (survival) analysis is done using the Kaplan-Meier method. Kaplan-Meier curves are compared with the Log-rank chi-squared test. Two-tailed *p*-values <.05 are considered statistically significant.

Results

The study included 75 patients, 32 (42.7%) females and 43 (57.3%) females, with a median (IQR) age of 23 (15 to 48) months (range, 4 to 190 months). Forty-six (61.3%) patients were 24 months and 29 (38.7%) patients were >24 months of age.

Table (1) shows summary of the baseline characteristics of the study cohort. Six (8.0%) patients had history of NICU admission and none had history of complicated pregnancy. Three (4.0%) patients had history of other congenital anomalies.

A single (1.3%) patient had thrombocytopenia prior to surgery. All other biochemical and hematological tests were normal in all patients. Preoperative ECG and CXR were normal in all patients.

The size of ASD ranged from 4.0 to 26.0mm (median, 12.0mm; IQR, 10.0 to 15mm).

Table (1): Baseline characteristics of the study cohort.

Variable	Value
Age (months), median (IQR)	23 (15 to 48); range, 4 to 190
Age category, n (%):	
Age 24 months	46 (61.3%)
Age >24 months	29 (38.7%)
Sex, n (%):	
Female	32 (42.7%)
Male	43 (57.3%)
Weight (kg), median (IQR)	9.0 (7.0 to 15); range, 4.0 to 60.0
History of NICU admission, n (%)	6 (8.0%)
History of complicated pregnancy, n (%)	0 (0.0%)
Other congenital anomalies, n (%)	3 (4.0%)
Thrombocytopenia, n (%)	1 (1.3%)
Abnormal LFTs, n (%)	0 (0.0%)
Abnormal KFTs, n (%)	0 (0.0%)
Prolonged INR, n (%)	0 (0.0%)
Abnormal ECG, n (%)	0 (0.0%)
Abnormal CXR, n (%)	0 (0.0%)
ASD size (mm), median (IQR)	12.0 (10.0 to 15.0); range, 4.0 to 26.0
Mitral regurgitation, n (%):	
Mild	11 (14.7%)
Moderate	25 (33.3%)
Severe	39 (52.0%)
LV dilatation, n (%)	1 (1.3%)
LVOT obstruction, n (%)	0 (0.0%)
EF (%), median (IQR)	72 (68 to 75); range, 55 to 82
RA dilatation, n (%)	31 (41.3%)
Tricuspid regurgitation, n (%):	
Mild	18 (24.0%)
Moderate	32 (42.7%)
Severe	25 (33.3%)
Pulmonary hypertension, n (%)	42 (56.0%)

- Data are number (N) and percentage (%) or median and interqurtile range (IQR).

Eleven (14.7%) patients had mild mitral regurgitation, 25 (33.3%) had moderate mitral regurgitation and 39 (52.0%) had severe mitral regurgitation. The prevalence of mild, moderate or severe tricuspid regurgitation was 24.0% (18 patients), 42.7% (32 patients) and 33.3% (25 patients), respectively.

Thirty-one patients (41.3%) had RA dilatation and 42 (56.0%) patients had pulmonary hypertension. A single patient (1.3%) had LV dilatation but none had LVOT obstruction. Median (IQR) EF was 72% (68% to 75%), range, 55% to 82%.

Table (2) shows comparison of the demographic characteristics of children 24 months or >24 months of age, except for weight (p<0.001). There was no statistically significant difference between both groups regarding the male/female proportion (p=0.106), history of NICU admission (p>0.999) or history of other congenital anomalies (p=0.555).

Table (2): Demographic characteristics of children 24 months or >24 months of age.

Variable	Age 24 months (N=46)	Age >24 months (N=^{2}9)	*p*-Value
Age (months), median (IQR)	18 (11-23)	48 (36-72)	<0.001 †
Weight (kg), median (IQR)	7.0 (6.5 -9.0)	17.0 (12.0-22.0)	<0.001 †
Male sex, N (%)	23 (50.0%)	20 (69.0%)	0.106‡
History of NICU admission, N (%)	4 (8.7%)	2 (6.9%)	>0.999§
History of complicated pregnancy, N (%)	0 (0.0%)	0 (0.0%)	NA
Other congenital anomalies, N (%)	1 (2.2%)	2 (6.9%)	0.555§

- Data are number (N) and percentage (%) or median and interqurtile range (IQR).
NA = Test not applicable. †: Mann-Whitney test.
‡: Pearson chi-squared test. §: Fisher's exact test.

One patient (3.4%) in the older age group had preoperative thrombocytopenia compared with none in the younger age group. This difference was not statistically significant (p=0.387). None of the patients in either group had other hematological or biochemical abnormalities (Table 3).

Table (3): Results of preoperative work up in children 24 months or >24 months of age.

Variable	Age 24 months (N=46)	Age >24 months (N=^{2}9)	*p*-Value
Thrombocytopenia, n (%)	0 (0.0%)	1 (3.4%)	0.387† f
Abnormal LFTs, n (%)	0 (0.0%)	0 (0.0%)	NA
Abnormal KFTs, n (%)	0 (0.0%)	0 (0.0%)	NA
Prolonged INR, n (%)	0 (0.0%)	0 (0.0%)	NA
Abnormal ECG, n (%)	0 (0.0%)	0 (0.0%)	NA
Abnormal CXR, n (%)	0 (0.0%)	0 (0.0%)	NA

- Data are number (N) and percentage (%).
NA = test not applicable. †: Fisher's exact test.

Table (4) shows the results of preoperative echocardiographic findings in either group. Both groups were comparable as regards the size of ASD (p=0.311), severity of mitral or tricuspid regurgitation (p=0.513 and 0.685, respectively), prevalence of RA dilatation (p=0.635).

Table (4): Preoperative echocardiographic findings in children 24 months or >24 months of age.

Variable	Age 24 months (N=46)	Age >24 months (N=29)	*p*-Value
Mitral regurgitation, n (%):			
Mild	8 (17.4%)	3 (10.3%)	0.176†
Moderate	17 (37.0%)	8 (27.6%)	
Severe	21 (45.7%)	18 (62.1%)	
Mitral regurgitation, n (%):			
Mild	8 (17.4%)	3 (10.3%)	0.513‡
Moderate to severe	38 (82.6%)	26 (89.7%)	
Tricuspid regurgitation, n (%):			
Mild	11 (23.9%)	7 (24.1%)	0.685†
Moderate	21 (45.7%)	11 (37.9%)	
Severe	14 (30.4%)	11 (37.9%)	
Tricuspid regurgitation, n (%):			
Mild	11 (23.9%)	7 (24.1%)	0.982§
Moderate to severe	35 (76.1%)	22 (75.9%)	
LVOT obstruction, n (%)	0 (0.0%)	0 (0.0%)	NA
LV dilatation, n (%)	0 (0.0%)	1 (3.4%)	0.387‡
RA dilatation, n (%)	20 (43.5%)	11 (37.9%)	0.635§
Pulmonary hypertension, n (%)	30 (65.2%)	12 (41.4%)	0.043§
ASD size, median (IQR) (mm)	12.0 (10.0-14.0)	14.0 (9.0-17.0)	0.311#
EF, median (IQR) (%)	75 (70-75)	70 (65-73)	0.003#

- Data are number (N) and percentage (%) or median and interqurtile range (IQR)
NA = test not applicable.
†. Linear by linear association.
‡. Fisher's exact test.
§. Pearson chi-squared test.
#. Mann-Whitney test.

The proportion of patients with pulmonary hypertension was significantly higher in the younger age group (65.2% versus 41.4%, respectively, p=0.043). On the other hand the EF was significantly higher in this age group (median (IQR= 75% (70% - 75%) versus 70 (65-73), respectively, p=0.003).

Table (5) shows operative and early postoperative outcomes in either age group. Four (8.7%) patients in the younger age group suffered intraoperative mortality compared with 2 (6.9%) patients in the older group. However, this difference was not statistically significant (p>0.999).

None of the patients in either group had abnormal CBC, INR, LFTs or KFTs after surgery.

Table (5): Operative and early postoperative outcomes in children 24 months or >24 months of age.

Variable	Age 24 months (N=46)	Age >24 months (N=29)	*p*-Value
Intra-operative mortality, n (%)	4 (8.7%)	2 (6.9%)	>0.999†
Abnormal CBC after surgery, n (%)	0 (0.0%)	0 (0.0%)	NA
Abnormal LFT after surgery, n (%)	0 (0.0%)	0 (0.0%)	NA
Abnormal KFT after surgery, n (%)	0 (0.0%)	0 (0.0%)	NA
Prolonged INR after surgery, n (%)	0 (0.0%)	0 (0.0%)	NA

- Data are number (N) and percentage (%) or median and interqurtile range (IQR).
NA = Test not applicable. †: Mann-Whitney test.

Table (6) show postoperative outcomes in either age group at 1 week after surgery. A single (2.4%) patient in the younger age group had persistent ASD versus 3 (11.1%) patients in the older group. This difference was not statistically significant (p=0.292).

Table (6): Outcomes at 1 week after surgery in children 24 months or >24 months of age.

Variable	Age 24 months (N=42)	Age >24 months (N=27)	*p*-Value
Heart block, n (%)	0 (0.0%)	1 (3.7%)	0.391†
Abnormal CXR, n (%)	0 (0.0%)	0 (0.0%)	NA
Mitral regurgitation, n (%):			
Trivial	6 (14.3%)	8 (29.6%)	0.454‡
Mild	27 (64.3%)	13 (48.1%)	
Moderate	8 (19.0%)	5 (18.5%)	
Severe	1 (2.4%)	1 (3.7%)	
Mitral regurgitation, n (%):			
Trivial to mild	33 (78.6%)	21 (77.8%)	0.938§
Moderate to severe	9 (21.4%)	6 (22.2%)	
Tricuspid regurgitation, n (%):			
Nil	1 (2.4%)	0 (0.0%)	0.801 ‡
Trivial	19 (45.2%)	13 (48.1%)	
Mild	19 (45.2%)	10 (37.0%)	
Moderate	1 (2.4%)	4 (14.8%)	
Severe	2 (4.8%)	0 (0.0%)	
Tricuspid regurgitation, n (%):			
Nil to mild	39 (92.9%)	23 (85.2%)	0.420†
Moderate to severe	3 (7.1%)	4 (14.8%)	
LVOTO, n (%)	0 (0.0%)	0 (0.0%)	NA
RA dilatation, n (%)	4 (9.5%)	4 (14.8%)	0.702†
RV dilatation, n (%)	8 (19.0%)	3 (11.1%)	0.508†
Pulmonary hypertension, n (%)	9 (21.4%)	3 (11.1%)	0.342†
ASD size (mm), median (IQR)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.129#
Persistent ASD	1 (2.4%)	3 (11.1%)	0.292†
EF (%), median (IQR)	75 (70-75)	70 (65-75)	0.124#

- Data are number (N) and percentage (%) or median and interqurtile range (IQR).
NA = test not applicable.
†. Fisher's exact test.
‡. Linear by linear association.
§. Pearson chi-squared test.
#. Mann-Whitney test.

There was no statistically significant difference between both group as regards the size of ASD (0.129) and the EF (p=0.124).

The incidence of heart block (p=0.391), RA dilatation (p=0.702), RV dilatation (p=0.508) and pulmonary hypertension (p=0.342) was comparable in both groups. Similarly, the severity of mitral regurgitation (p=0.454) and tricuspid regurgitation (p=0.801) was not significantly different.

Table (7) show postoperative outcomes in either age group at 6 months after surgery. A single (3.7%) patient in the older age group had persistent ASD versus none in the younger group. This difference was not statistically significant (p=0.391).

Table (7): Outcomes at 6 months after surgery in children 24 months or >24 months of age.

Variable	Age 24 months (N=42)	Age >24 months (N=27)	*p*-Value
Mitral regurgitation, n (%):			
Trivial	5 (11.9%)	8 (29.6%)	0.207†
Mild	29 (69.0%)	14 (51.9%)	
Moderate	4 (9.5%)	4 (14.8%)	
Severe	4 (9.5%)	1 (3.7%)	
Mitral regurgitation, n (%):			
Trivial to mild	34 (81.0%)	22 (81.5%)	0.956‡
Moderate to severe	8 (19.0%)	5 (18.5%)	
Tricuspid regurgitation, n (%):			
Nil	1 (2.4%)	0 (0.0%)	0.840†
Trivial	18 (42.9%)	13 (48.1%)	
Mild	21 (50.0%)	11 (40.7%)	
Moderate	1 (2.4%)	3 (11.1%)	
Severe	1 (2.4%)	0 (0.0%)	
Tricuspid regurgitation, n (%):			
Nil to mild	40 (95.2%)	24 (88.9%)	0.373§
Moderate to severe	2 (4.8 %)	3 (11.1%)	
LVOTO, n (%)	1 (2.4%)	0 (0.0%)	>0.999§
RA dilatation, n (%)	3 (7.1%)	1 (3.7%)	>0.999§
RV dilatation, n (%)	7 (16.7%)	3 (11.1%)	0.729§
Pulmonary hypertension, n (%)	7 (16.7%)	3 (11.1%)	0.729§
ASD size (mm)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.212#
Persistent ASD, n (%)	0 (0.0%)	1 (3.7%)	0.391 §
EF (%)	75 (70-75)	73 (68-75)	0.105#

- Data are number (N) and percentage (%) or median and interqurtile range (IQR).
NA = test not applicable. †: Fisher's exact test.
‡: Linear by linear association. §: Pearson chi-squared test.
#: Mann-Whitney test.

There was no statistically significant difference between both group as regards the size of ASD (0.212) and the EF (p=0.105).

The incidence of RA dilatation (p>0.999), RV dilatation (p=0.729) and pulmonary hypertension (p=0.729) was comparable in both groups. Similarly, the severity of mitral regurgitation (p=0.207) and tricuspid regurgitation (p=0.840) was not significantly different.

Repeated measures analysis of variance was conducted to examine the effect of age at surgery on the change in ASD size. The assumption of sphericity was not met (Mauchly's W=0.283, p<0.001, Greenhouse- Geis s er ε=0.582, Huynh-Feldt ε=0.586), so, the Greenhouse-Geisser correction was applied to adjust the degrees of freedom.

Tests of Within-Subjects Effects showed a statistically significant effect of time (F=467.85, df =1.16, 78.04, p<0.001) with no statistically significant interaction between Time and age (F=2.68, df=1.16, 78.04, p=0.100).

However, there was statistically significant Between-Subject Effects (F=5.52, df=1, 67, p=0.022) with a mean (SE) difference of –1.08 (0.46) mm between the older and younger groups.

Similarly, repeated measures analysis of variance was conducted to examine the effect of age at surgery on the change in EF. The assumption of sphericity was not met (Mauchly's W=0.620, p<0.001, Greenhouse- Geis s er ε=0.725, Huynh-Feldt ε=0.737); so, the Greenhouse-Geisser correction was applied to adjust the degrees of freedom.

Tests of Within-Subjects Effects showed a statistically significant effect of time (F=10.93, df=1.45, 97.13, p<0.001) with a statistically significant interaction between Time and age (F=3.99, df=1.45, 97.13, p=0.034).

However, there was statistically significant Between-Subject Effects (F=4.86, df=1, 67, p=0.031) with a mean (SE) difference of 2.41 (1.10) % between the older and younger groups.

There was no statistically significant difference between both groups as regards ICU or in-patient stay after surgery (p=0.500 and 0.949, respectively). The median (IQR) total postoperative hospital stay was 8 (5-8) days versus 7 (6-8) days in patients aged 24 months or >24 months, respectively (p=0.641) (Table 8).

Table (8): Postoperative ICU and hospital stay in children 24 months or >24 months of age.

Variable	Age 24 months (N=42)	Age >24 months (N=27)	p-Value
Postoperative ICU stay (days), median (IQR)	3 (2-3)	2 (2-4)	0.500
Postoperative inpatient stay (days), median (IQR)	5 (3-5)	5 (3-5)	0.949
Total postoperative hospital stay (days), median (IQR)	8.0 (5.0-8.0)	7.0 (6.0-8.0)	0.641

- Data are median and interqurtile range (IQR).
†. Mann-Whitney test.

Discussion

The spectrum of atrioventricularseptal defects account for about 7-17% of congenital heart disease [7] and 25% of them are partial atrioventricular canal defects.

The repair of partial atrioventricular canal are preferred to be performed when diagnosed and before an operation might interfere with school [8].

According to the long-term follow-up results of other centers, surgical outcomes were excellent. There were many reports about the surgery outcomes of patients in young age. The aim of this retrospective study is to review the results of treating infants with partial atrioventricular canal patients in our center. The mortality rate, reoperation rate, surgery procedures and valve regurgitation associated data were described [9].

Partial atrioventricularseptal defect (pAVSD) is usually repaired between 2 and 4 years of age with excellent results. Repair during infancy has been associated with poorer outcomes. However, most infants in reported series had heart failure or significant left atrioventricular valve (LAVV) regurgitation [10].

The reader will understand the pathology and clinical presentation of atrial septal defects (ASDs), ventricular septal defects (VSDs), atrioventricularseptal defects (AVSDs) and patent arterial duct. Echocardiography is the mainstay in diagnosis and follow-up assessment of patients with congenital heart disease [11].

The Aim of this work to evaluate the outcomes of patients undergoing surgical repair of partial atrioventricular septal defect (AVSD) and analyzed the effect of age on outcome. Objective is to assess the best time of repair in this congenital cardiac anomaly and to study different postoperative clinical pathways.

This Retrospective cohort study was carried out on 75 Patients with partial atrioventricular canal repair At Ain Shams University Hospitals, Cardiothoracic Department.

The main results of this study were as follows: Regarding thebaseline characteristic between in children 24 months among study groups, we found that age ranged 4-190 months (>24m 61.3% -<24m 38.7%). Sex male 57.3% more affected than female 42.7%. Weight range 4-60Kg. NICU admission 8%.other congenital anomalies 4%. Thrombocytopenia 1.3%. ASD size 4-26mm. Pulmonary HTN

56%. LV dilation 1.3%. RA dilation 41.3%. EF range 55-82.

Mitral regurge mild, moderate and severe (14.7%, 33.3%, 52%).

Tricuspid regurge mild, moderate and severe (24%, 42.7%, 33.3%).

Our results were supported by the study of [12] as they reported that During the study period, 86 patients underwent partial AVSD repair at a median age of 1.5 years.

Our results were supported by the study of [13] as they reported that All 105 patients with partial AVSD who had surgery during this period were evaluated. The median age at surgery was 7.9 years.

Our results were supported by the study of [14] as they reported that The simultaneous occurrence of an atrioventricular canal defect (AVCD) and Ebstein's anomaly is extremely rare, occurring in less than 0.5% of all patients with AVCD. Only 22 cases are described in the literature. This patient's antenatal diagnosis of both Ebstein's anomaly and partial AVCD was made at 25 weeks of gestation. The delivery was organized in a tertiary center. The initial neonatal course was difficult but with adequate treatment, a rapid improvement allowed for a gap of almost 2 years before a complete surgical repair including a cone tricuspid plasty. To our knowledge, this is the first case of antenatal diagnosis, with carefully tailored delivery, neonatal care and subsequent follow-up before indication for successful surgery.

Our results were supported by the study of [15] as they reported that Overall, 265 patients underwent partial atrioventricular septal defects repair [partial: 177 (67%)]. Median age was 2 years. The cohort included 73 infants (28%), 85 toddlers (32%), 94 children (35%).

Our results were supported by the study of [16] as they reported that A total of 29 (56.8%) of patients were male and mean age at operation was 3.32 years. Mean weight was 13.2kg. Trisomy 21 was present in 29 (56.8%).

Our results were supported by the study of [10] as they reported that pAVSD repair was performed on 430 children, 17.4% (75/430) were infants. Infants (mean age 0.5±0.3 years) had higher rates of LAVV regurgitation, heart failure and additional cardiac malformations than older children (mean age 4.7±3.5 years).

Our results were supported by the study of [17] as they reported that in our cohort, 124 partial (68%) and 59 transitional (32%) AVSDs underwent repair. Median age was 1.5 years (interquartile range (IQR): 0.6 to 3.8 years), median weight was 9.7kg (IQR: 6.6 to 14.1kg).

Our results were supported by the study of [18] as they reported that The population consisted of 129 (64%) patients with complete AVSD (cAVSD) and 73 (36%) patients with partial AVSD (pAVSD), corrected at a median age of 3.9 (interquartile range 3.4) months and 29.0 (interquartile range 90.4) months, respectively. Within a median follow-up period of 5.9 (interquartile range 12.6) years, 27 (13.4%) patients required reoperation for LAVV failure, respectively, in 17 (13.2%) patients with cAVSD and 10 (13.9%) patients with pAVSD.

Our results were supported by the study of [19] as they reported that Between June 2004 and April 2014, all eligible patients were those with a common congenital heart defect corrected via an approach through a right subaxillary thoracotomy. There were 836 patients (male 417, female 419; median age, 3.5 years; median weight 13.6kg) with ventricular septal defect (VSD) closure (523 patients), atrial septal defect (ASD).

Regarding the comparison of demographic characteristic between in children with age more and less than 24 months among study groups, we found that there was statistically difference between more and less than 24 months in age, weight (p-value 0.001, >0.001 respectively).

There was no statistically difference between more and less than 24 months in sex males, history of NICU admission and other congenital anomalies.

Regarding thecomparison of preoperative results workup between in children with age more and less than 24 months among study groups, we found that there was no statistically difference between more and less than 24 months in thrombocytopenia.

Our results were supported by the study of [15] as they reported that older age compared with infants (toddlers: HR, 0.35; children: HR, 0.25) were protective for any reoperation.

Our results were supported by the study of [10] as they reported that At 30 years, survival for infants was 82.1% (95% CI 70.1% to 89.6%) compared with 95.7% (95% CI 91.3% to 97.9%) in older children (p<0.001). Propensity score matching yielded 52 well-matched pairs. Survival at 30 years was 87.9% (95% CI 75.0% to 94.4%) for infants compared with 98.1% (95% CI 87.1% to 99.7%) for older children (*p*=0.04). There was no significant difference in freedom from reoperation between the groups.

Our results were supported by the study of **[19]** as they reported that Despite a substantial reoperation rate, only 43% of patients older than 18 years of age were seen by a cardiologist within the most recent 2 years of the study period, compared with 80% of those younger than 18 years (*p*<0.001).

Regarding thecomparison of preoperative Echo findings between in children with age more and less than 24 months among study groups, we found that there was statistically difference between more and less than 24 months in pulmonary hypertension and EF (*p*-value 0.043,0.003 respectively) but EF still within normal range.

There was no statistically difference between more and less than 24 months in mitral regurge, tricuspid regurge, LV dilation, RA dilation and ASD size.

Our results were supported by the study of **[20]** as they reported that Medical records of patients under 2 years of age who underwent complete AV canal repair from January 2004 to December 2014 were retrospectively reviewed. 140 patients. The median (IQR) age at the time of surgery was 5.4 (3.9-8.2) months. There was a significant association between preoperative pulmonary hypertension and the development of pulmonary hypertension in the postoperative period (*p*=.04). Thirty-three patients needed reoperation.

Our results were supported by the study of **[21]** as they reported that From June 2006 to June 2018, 81 children with atrioventricular septal defect were submitted to surgical repair at our institution. Data from all patients was retrospectively collected and evaluated. The average age was 6.9±13.7 months. Eighty percent were symptomatic. No more that mild left atrioventricular valve insufficiency was found in 84% and 89% of the patients, at discharge and follow-up, respectively. Small residual septal defects were present in 27% at discharge; during follow-up, 41% of these closed spontaneously. Pulmonary hypertension at discharge and follow-up appeared in 3.7% and 1.3%, respectively due to repeated respiratory infections. Left ventricle outflow tract obstruction was found in 3 patients and 2 needed surgical correction due to operations passed successfully. At follow-up (40±38 months), 90% of the patients presented NYHA functional class I. No significant differences in the main repair outcomes were found between techniques, with the exception of small residual septal defects, although the groups were unmatched.

Our results were supported by the study of **[13]** as they reported that The discrepancy with the Pediatric Heart Network data may be due to the later age of operation for patients in our cohort suggesting that elective repair of partial AVSD should be deferred until children are somewhat older (ages 5 to 8 years). Neither patient age (*p*=0.11) nor severity of preoperative LAVVR (*p*=0.16) were identified as statistically significant risk factors. In conclusion, there is less morbidity and mortality after surgical repair for partial AVSD.

Our results were supported by the study of **[22]** as they reported that Transplant-free survival was 89% at 5 years and 88% at 10 years. Stratified by age, group 1 had poorer outcome in comparison with other groups (log-rank test *p*=0.105). Both univariate and multivariate analyses showed that age <1 year was a significant risk factor for death or transplant (*p*=0.044). Age <1 year was associated with increased risk of reoperation (aHR=3.38, *p*=0.009), while the presence of genetic syndrome (aHR=0.22) and preoperative EF% (aHR=0.97) were protective factors for reoperation.

Our results were supported by the study of **[23]** as they reported that Cox regression analysis showed that pre-operative severe pulmonary hypertension (*p*=0.006) and severe LAVV regurgitation within 24 hours after the first surgery (*p*=0.023) were independent risk factors for mortality. 0 Moderate LAVV regurgitation within the first 24 hours after surgery (*p*=0.014) was an independent risk factor for LAVV re-operation.

Regarding the comparison of preoperative and early postoperative outcomes between in children with age more and less than 24 months among study groups, we found that there was no statistically difference between more and less than 24 months in intra operative mortality rate.

Our results were supported by the study of **[12]** as they reported that During the study period, 86 patients underwent partial AVSD repair at a median age of 1.5 years. There were no operative deaths and 2 late deaths (unknown cause and trauma).

Our results were supported by the study of **[13]** as they reported that Perioperative mortality was 0.8%. Complete heart block did not develop in any patients. Ten-year survival and freedom from reoperation were 98% and 81%, respectively.

Our results were supported by the study of [14] as they reported that There were no early mortalities.

Our results were supported by the study of [24] as they reported that The early mortality rate was 2.5% (1/40). The survival rate was 90% (95% CI: 76-96) at 10 years and 83% (95% CI: 60-94) at 20 years. The rate of freedom from further reoperation was 66% (95% CI: 46-80) at 10- and 20-year follow-up.

Our results were supported by the study of [25] as they reported that There was no mortality or need for approach conversion (mean age 4.3 years, range 0.17-17, mean weight 18.6kg, range 4.8-74.4) in 118 repairs for atrial septal defect, ventricular septal defect.

Regarding thecomparison of postoperative ICU and hospital stays between in children with age more and less than 24 months among study groups, we found that there was no statistically difference between more and less than 24 months in postoperative ICU stay, hospital stay and inpatient stays.

Our results were supported by the study of [15] as they reported that The length of hospital stay was 9±5 days. Median follow-up was 6.06 years (IQR, 1.65-10.2 years).

Our results were supported by the study of [15] as they reported that Twenty patients (1 1 %) required reintervention after discharge. On multivariable modeling, patients with TPS class 3 spent more days in the ICU (hazard ratio (HR) 0.33, 95% confidence interval (CI): 0.19 to 0.58, p<0.001) and hospital (HR 0.33, 95% CI: 0.19 to 0.57, p<0.001) and had shorter time to reintervention after discharge (HR 8.76, 95% CI: 1.03 to 74.7, p=0.047).

Our results were supported by the study of [25] as they reported that Protocol included on-table extubation, achieved in 97 children, with 23 outliers leading to 0.7 average hours of mechanical ventilation (range 0-66 hours), indwelling chest drain time of 2.6 days (range 1-9 days), intensive care stay of 1.8 days (range 1-10 days), and hospital stay of 3.9 days (range 2-18 days). Late revisions were required in one patient after scimitar repair for scimitar vein stenosis at 2 weeks, and in another for repair of superior caval vein stenosis after a Warden operation at 2 months; reoperations (5/116 =4.3%) were successfully performed through the same mini right axillary incision.

Regarding thecomparison of outcome at one week and at 6 months after surgery between in children with age more and less than 24 months among study groups, we found that there was no statistically difference between more and less than 24 months in heart block, mitral regurge, tricuspid regurge, RA dilation, RV dilation, pulmonary HTN, ASD size, persist ASD,EF and LVOTO.

Our results were supported by the study of [25] as they reported that One hundred and fifty-seven patients with a mean age at surgery of 125±56.9 days were included in the study. Mean body weight at surgery was 5.6±6.3kg. Repair of AV canal defects. Perioperative intensive care treatment was used throughout the study. Demographic data as well as intraoperative and perioperative Intensive Care Unit (ICU) data, such as length of stay in ICU, total duration of ventilation including reintubations, and total length of stay in hospital and in hospital mortality, were collected from the clinical information system. Pulmonary hypertension was noted in 60% of patients.

Our results were supported by the study of [26] as they reported that No perioperative or late deaths occurred, but there were no differences in the surgical outcome between the two groups. Moreover, no differences occurred concerning residual VSD, or tricuspid regurgitation at discharge. Echocardiograms at follow-up were available for 134 patients (95%) with a median of 5.3 years (range, 0.5 to 9.3 years), and the degree moderate to severe of tricuspid regurgitation did not differ between groups.

Our results were supported by the study of [26] as they reported that Median age was 6.7 months; median weight was 5.3Kg; At the time of preoperative evaluation, there were 26 cases with moderate or severe left atrioventricular valve regurgitation (49.1 %). Abnormalities on the left atrioventricular valve were found in 11.3%; annuloplasty was performed in 34% of the patients. At the time of postoperative evaluation, there were 21 cases with moderate or severe left atrioventricular valve regurgitation (39.6%). After performing a multivariate analysis, the only significant factor associated with moderate or severe left atrioventricular valve regurgitation.

Our results were supported by the study of [27] as they reported that There were 58 of 156 patients below 2 years (37%) with significant (moderate or severe) early postoperative LAVVR, and 30 of 93 (32%) had significant LAVVR after 6 or more months. One-third of patients with significant late

LAVVR had no significant early postoperative regurgitation.

Our results were supported by the study of [13] as they reported that Medical records of patients under 2 years of age who underwent complete AV canal repair from January 2004 to December 2014 were retrospectively reviewed. 140 patients. The median (IQR) age at the time of surgery was 5.4 (3.9-8.2) months. There was a significant association between preoperative pulmonary hypertension and the development of pulmonary hypertension in the postoperative period (p=.04). Thirty-three patients needed reoperation.

Our results were supported by the study of [29] as they reported that forty consecutive patients operated for partial atrioventricularseptal defect repair from September 2011 to October 2016 were included. Mean age was 14.67±7.96 years. There was no mortality, reoperation, residual atrial shunt or left ventricular outflow tract obstruction due to operations passed successfully.

Our results were supported by the study of [30] as they reported that From June 2006 to June 2018, 81 children with atrioventricular septal defect were submitted to surgical repair at our institution. Data from all patients was retrospectively collected and evaluated. The average age was 6.9±13.7 months. Eighty percent were symptomatic. No more that mild left atrioventricular valve insufficiency was found in 84% and 89% of the patients, at discharge and follow-up, respectively. Small residual septal defects were present in 27% at discharge; during follow-up, 41% of these closed spontaneously. Pulmonary hypertension at discharge and follow-up appeared in 3.7% and 1.3%, respectively due to repeated respiratoy infections. Left ventricle outflow tract obstruction was found in 3 patients and 2 needed surgical correction only due to operation passed successfully. At follow-up (40±38 months), 90% of the patients presented NYHA functional class I. No significant differences in the main repair outcomes were found between techniques, with the exception of small residual septal defects, although the groups were unmatched.

Our results were supported by the study of [31,32] as they reported that given its complex pathologic anatomy, recurrent left atrioventricular valve regurgitation after partial atrioventricular septal defect repair remains a challenge for surgical correction. Here, we introduce a modified bridging technique by shortening the anteroposterior leaflet distance in selected patients with inadequate coaptation to compensate for the short leaflet height, specifically that of the anterior leaflet.

Our results were supported by the study of [33] as they reported that Fifty-one patients underwent AVSD repair at a median age of 4 months (range, 1 to 9 months). Indexed LVOT diameter was not different in the two groups (26.1±5.2 vs 28.5±7.1 mm/m^2, p=0.22). Five patients underwent reoperation after single-patch repair (3 with residual ventricular septal defect (VSD) and LAVV regurgitation, 1 with residual VSD. After the two-patch repair, 1 patient required reoperation for a residual VSD and right atrioventricular valve regurgitation (p=0.22).

Our results were supported by the study of [31] as they reported that there were no statistically significant differences in the most common complications-LVOTO, LAVVR, and AV heart block-between the 4 age quartiles. Median follow-up was 7.1 years (interquartile range (IQR), 0.8-11.4 years). On echocardiography, 72 patients (84%) had less than or equal to mild LAVVR, 8 (9%) patients had mild to moderate LAVVR, 5 (6%) patients had moderate LAVVR, and 1 (1%) patient had severe LAVVR. Age at repair had no significant association with degree of late AV valve insufficiency.

Our results were supported by the study of [32] as they reported that Surgical repair of partial atrioventricularseptal defects (AVSD) has been successful for more than 60 years. However, recent data from the Pediatric Heart Network show that 31% of patients have moderate or severe left atrioventricular valve regurgitation (LAVVR) at follow-up. Previously, our institution found that only 9% of patients had more than moderate LAVVR at the last follow-up. The overall survival rate at 1 year was 97%. Median follow-up was 5.3 years (interquartile range 1.7 to 11.1). At 3 years, the survival rate free from reoperation was 89%. Thirteen patients required reoperations with the most common reason being LAVVR. A total of 10 patients developed more than moderate LAVVR with a cumulative incidence of 8% by 2 years. The discrepancy with the Pediatric Heart Network data may be due to the later age of operation for patients in our cohort suggesting that elective repair of partial AVSD should be deferred until children are somewhat older (ages 5 to 8 years). Neither patient age (p=0.11) nor severity of preoperative LAVVR (p=0.16) were identified as statistically significant risk factors. In conclusion, there is less morbidity and mortality after surgical repair for partial AVSD.

Our results were supported by the study of [27] as they reported that One patient was managed with suture atrial septal defect (ASD) closure, the remainder with patch repair of ASD and mitral cleft closure. One patient died 1 year following surgery (1.9%). One patient required reoperation at an interval of 2 years for severe mitral regurgitation (1.9%).

Our results were supported by the study of [34] as they reported that Long-term survival rate of patients operated for partial atrioventricular (AV) canal is lower than that of the general population, and late complications are relatively significant: between 10 and 30% of operated patients present with left AV valve regurgitation, and up to 25% have to be reoperated for valve repair or replacement, left ventricular outflow tract obstruction or residual atrial septal defect. Because the left AV valve regurgitation is the most common complication following surgery, technical details in the surgical management of the mitral valve are the most important aspects of this procedure; for example, the decision to close the cleft and to perform an annuloplasty. The presence of mitral valve anomalies in 7-28% of the cases complicates further the surgical management of these valves.

Our results were supported by the study of [18] as they reported that At 30 years, survival for infants was 82.1 % (95% CI 70.1 % to 89.6%) compared with 95.7% (95% CI 91.3% to 97.9%) in older children (p<0.001).Propensity score matching yielded 52 well-matched pairs. Survival at 30 years was 87.9% (95% CI 75.0% to 94.4%) for infants compared with 98.1% (95% CI 87.1% to 99.7%) for older children (p=0.04). There was no significant difference in freedom from reoperation between the groups.

Our results were supported by the study of [35] as they reported that the mean time to reoperation was 5.4±5.8 years. The most common reoperations were left atrioventricular valve (LAVV) surgery (78%, 31/40) and resection of left ventricular outflow tract obstruction (20%, 8/40). The most common cause for LAVV surgery was regurgitation through the cleft (58%, 18/31), followed by central regurgitation (29%, 9/31). Most cases of LAVV regurgitation were treated by repair (77%, 24/31), rather than replacement (23%, 7/31). Since the introduction of a patch augmentation technique for LAVV repair in 1998, the rate of repair has increased from 54 to 94% (p=0.012). The early mortality rate was 2.5% (1/40). The survival rate was 90% (95% CI: 76-96) at 10 years and 83% (95% CI: 60-94) at 20 years. The rate of freedom from further reoperation was 66% (95% CI: 46-80) at 10- and 20-year follow-up.

Our results were supported by the study of [36] as they reported that Median age at definitive surgery was 179 (range 0-357) days. Sixteen patients (31 %) had unfavourable anatomy of the left atrioventricular valve: Dysplastic (n=7), double orifice (n=3), severely deficient valve leaflets (n=1), hypoplastic left atrioventricular orifice and/or mural leaflet (n=3), short/poorly defined chords (n=2). There were three inhospital deaths (5.9%) after primary repair. Eleven patients (22%) were reoperated at a median interval of 40 days (4 days to 5.1 years) for severe left atrioventricular valve regurgitation and/or stenosis. One patient required mechanical replacement of the left atrioventricular valve. After median follow-up of 3.8 years (0.1-11.4 years), all patients were in New York Heart Association (NYHA) class I. In multivariable analysis, unfavourable anatomy of the left atrioventricular valve was the only risk factor associated with left atrioventricular valve reoperation.

Our results were supported by the study of (36)as they reported that Median age at repair was 4.0 (0.1-17.0) years, with 17 patients being infants (age 1 year; 16.3%). All but eight patients (92.3%) underwent left atrioventricular valve cleft closure. After initial repair, there were 18 cases of moderate-to-severe left atrioventricular valve regurgitation (17.3%). Three in-hospital deaths (2.9%) and four late deaths (3.8%) occurred. At follow-up (median 14.3 years), actuarial survival was 95.1% and 93.0% at 1 and 20 years, respectively, and 16 patients (15.4%) had undergone a total of 19 left atrioventricular valve reoperations. Initial repair performed during infancy was associated with significantly higher mortality than a repair performed after infancy (35.3% vs 1.5%, p<.01, hazard ratio=26.4). On multivariable analysis, repair during infancy was associated with mortality (p<.01, hazard ratio = 27.4, 95% confidence interval=2.7-283). Partial or no cleft closure of left atrioventricular valve (p=.03, hazard ratio=4.7, 95% confidence interval=1.2-18.8) and moderate-to-severe left atrioventricular valve regurgitation after repair (p<.01, hazard ratio=9.9, 95% confidence interval =3.0-32.2) were associated with left atrioventricular valve reoperation.

Conclusion:

Age ranged 4-190 months (> =24m 61.3% - <24 =m 38.7%). Sex male 57.3% more affected than female 42.7%. Weight range 4-60Kg. NICU admission 8%. Other congenital anomalies 4%. Thrombocytopenia 1.3%. ASD size 4-26mm. Pulmonary HTN 56%. LV dilation 1.3%. RA dilation 41.3%. EF range 55-82. Mitral regurge mild, moderate and severe (14.7%, 33.3%, 52%). Tricuspid regurge mild, moderate and severe (24%, 42.7%, 33.3%). There was statistically difference between more and less than 24 months in age, weight (*p*-value 0.001, >0.001 respectively). There was statistically difference between more and less than 24 months in pulmonary hypertension and EF (*p*-value 0.043, 0.003 respectively).

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دراسة مقارنة بأثر رجعى للإصلاح الكامل للقناة الأذينية البطينية الجزئية قبل وبعد عامين من العمر

الخلفية : طيف عيوب الحاجز الأذينى البطينى حوالى ٧–١٧٪ من أمراض القلب الخلقية، و ٢٥٪ منها عيوب القناة الأذينية البطينية الجزئية (٢). يفُضل إجراء إصلاح القناة الأذينية البطينية الجزئية عند التشخيص وقبل أن تتداخل العملية الجراحية مع المدرسة. وفقاً لنتائج المتابعة طويلة الأمد للمراكز الأخرى، كانت النتائج الجراحية ممتازة كانت هناك العديد من التقارير حول نتائج الجراحة للمرضى فى سن مبكرة. الهدف من هذه الدراسة بأثر رجعى هو مراجعة نتائج علاج الأطفال المصابين بالقناة الأذينية البطينية الجزئية فى مركزنا. تم وصف معدل الوفيات ومعدل إعادة الجراحة وإجراءات الجراحة والبيانات المرتبطة بقلس الصمام.

هدف العمل : لتقييم نتائج المرضى الذين يخضعون للإصلاح الجراحى لعيب الحاجز الأذينى البطينى الجزئى (AVSD) وتحليل تأثير العمر على النتيجة. الهدف هو تقييم أفضل وقت للإصلاح فى هذا الشذوذ القلبى الخلقى ودراسة المسارات السريرية المختلفة بعد الجراحة.

المرضى والطرق : هذه الدراسة هى دراسة أترابية بأثر رجعى. تم إجراء هذه الدراسة الاسترجاعية على ٧٥ مريضاً مع مرضى إصلاح جراحى لـ PAVC تم تجنيدهم من قسم القلب والصدر، مستشفيات جامعة عين شمس بعد خضوعهم لـ ECHO وهو المعيار للمتابعة لهؤلاء المرضى خلال فترة الدراسة (٦ أشهر). تم إعطاء موافقة مستنيرة لجميع المرضى. تمت الموافقة على بروتوكول الدراسة من قبل اللجنة الأخلاقية بكلية الطب ومستشفيات جامعة عين شمس قسم القلب والصدر.

النتائج : فيما يتعلق بالخاصية الأساسية بين الأطفال ٢٤ شهراً بين مجموعات الدراسة، وجدنا أن العمر تراوح بين ٤–١٩٠ شهراً (>٢٤ شهراً ٦١.٣٪–<٢٤ شهراً ٣٨.٧٪). الجنس الذكور ٥٧.٣٪ أكثر تأثراً من الإناث ٤٢.٧٪. نطاق الوزن ٤–٦٠ كجم. دخول ٨٪ NICU عيوب خلقية أخرى ٤٪. قلة الصفيحات ١.٣٪. حجم ASD 4-26mm HTN الرئوى ٥٦٪ تمدد LV %1.3. تمدد RA %41.3 نطاق EF 55-82 فيما يتعلق بمقارنة الخصائص الديموغرافية بين الأطفال الذين تزيد أعمارهم عن ٢٤ شهراً بين مجموعات الدراسة، وجدنا أن هناك فرقاً إحصائياً بين أكثر و أقل من ٢٤ شهراً فى العمر والوزن (قيمة 0.001 p , 0.001> على التوالى).

الخلاصة : العمر تراوح بين ٤–١٩٠ شهراً (>٢٤ شهراً و ٦١.٣٪–<٢٤ شهراً و ٣٨.٧٪)/ الجنس الذكور ٥٧.٣٪ أكثر تأثراً من الإناث ٤٢.٧٪. نطاق الوزن ٤–٦٠ كجم.دخول ٨٪ NICU عيوب خلقية أخرى قلة الصفيحات ١.٣٪. حجم ASD 4-26mm HTN الرئوى ٥٦٪ تمدد LV %1.3. تمدد RA %41.3 نطاق EF 55-82 قلس التاجى خفيف، معتدل وشديد (١٤.٧٪، ٣٣.٣٪، ٥٢٪). قلس ثلاثى الشرفات خفيف، معتدل وشديد (٢٤٪، ٤٢.٧٪، ٣٣.٣٪). كان هناك فرق إحصائى بين أكثر وأقل من ٢٤ شهراً فى العمر والوزن (قيمة 0.001 p , 0.001> على التوالى). كان هناك فرق إحصائى بين أكثر وأقل من ٢٤ شهراً فى ارتفاع ضغط الدم الرئوى و EF قيمة 0.043 p , 0.043 على التوالى).