



**PATIENT PRESENTING CLINICAL SIGNS**

Juni Donovan

History: Grade 4/6 heart murmur. Assess prior to anesthesia.

**SPECIES**

Canine

**BREED**

French Bulldog

**SEX**

Female

**ECHOCARDIOGRAM FINDINGS**

2D, m-mode, color flow and doppler imaging is available. The anterior leaflet of the mitral valve is mildly thickened with no obvious prolapse into the left atrial lumen. Mild eccentric mitral regurgitation with mild left atrial dilation. Normal MR velocity. Mild to moderate LV dilation with adequate myocardial function. Normal LV wall thickness. A perimembranous VSD is suspected based upon color flow and spectral doppler (not seen on 2D imaging). The shunt is left to right (5.5m/s). The tricuspid valve appears normal in form and function. No TR. Normal right atrial and ventricular diameter and morphology indicating no overt evidence of pulmonary arterial hypertension. The pulmonic valve is normal in morphology and mobility. Normal pulmonic outflow velocities. No obvious PDA is seen; however, the deep pulmonary branches are not extensively interrogated. Normal aortic outflow velocities; laminar flow. The LVOT is unable to be visualized; however, velocity through the region is normal. Mild aortic insufficiency. No PI. No pericardial or pleural effusion noted. No obvious additional shunts or cardiac tumors.

**CARDIAC CHART**

**AGE**

9 months

**WEIGHT**

14lbs

**INTERPRETED BY**

Maggie Machen  
Lamy, DVM, DACVIM  
(Cardiology)

**IMAGING PERFORMED BY**

Rebekah Jakum, CVT  
ARDMS/RVT

**HOSPITAL NAME**

Littlestown VH

**REFERRING VET**

Dr. Kubala

**INVOICE**

29531

**DATE**

3/10/23

CANINE CARDIAC PARAMETERS	MR VMAX (m/s)	TR VMAX (m/s)	LA/AO (Boon method)	LA/AO (Heart Base; Swe)	FS (%)	EF (%)	EPSS (cm)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	<1.6	28-40	40-100	<0.6
PATIENT	5.2	NA	NM	1.4	28	55	0.4
CANINE CARDIAC PARAMETERS	HR (BP M)	AV VMAX (m/s)	PV MAX (m/s)	BODY WEIGHT (kg)	LA 2D short axis Base view (cm)	LVIDd Avg; 2D and m-mode short axis (cm)	LVIDs Avg; 2D and m-mode short axis (cm)
NORMAL PARAMETER	50-100	0.7-1.7	0.7-1.6	BELOW	BELOW	BELOW	BELOW
PATIENT	120	1.8	1.3	6.4	2.3	3.7	2.7
*Normal chamber parameters expressed as a mean value				3	1.27	2.46	1.36
BODY WEIGHT DEPENDENT PARAMETERS				5	1.40	2.74	1.60
*Note: All measurements based upon multi-modal images and methods. An average value is reported.				10	1.50	3.27	2.06
				15	1.83	3.71	2.43
				20	2.02	4.14	2.80
				25	2.18	4.48	3.10
				30	2.33	4.83	3.39
				35	2.48	5.17	3.69
				40	2.62	5.48	3.96
				50	2.88	6.07	4.46

**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

The cause of the murmur is suspected to be a restrictive perimembranous ventricular septal defect (VSD). The defect appears hemodynamically significant, with left to right flow. The diagnosis is suspect as the actual shunt is unable to be visualized; however, color flow/Doppler are suggestive. A mild leak in the aortic valve is also noted, which may further volume overload the left heart over time. There is evidence of mild left heart volume overload at this time (mild LA/LV dilation), indicating a relatively low risk for imminent complications. That being said, the patient is quite young, and this may progress going forward. Additionally, the mitral valve is mildly thickened with mild MR, likely suggesting a mild valve dysplasia. No obvious additional issues are identified.



**PATIENT**

Juni Donovan

Assessment of progression in the future will help predict long term prognosis, which is guarded at this stage. Referral to a local Cardiologist is reasonable for any patient with congenital disease for lifelong monitoring and advanced evaluation.

**SPECIES**

Canine

Treatment of an asymptomatic patient with a VSD is of unknown benefit. My main concern in this case is the young age of the patient, with evidence of volume overload already. No medications are recommended at this time; however, monitoring is certainly recommended. Patient will be at risk lifelong for progression to left-sided congestive heart failure, development of arrhythmias, and/or sudden death. Monitor closely for any development of associated clinical signs, including changes in RR/RE, cough, syncope or significant exercise intolerance.

**BREED**

French Bulldog

Anesthetic risk is considered mildly elevated. Cardiac protective drug choices (opioid/benzodiazepine premedication, propofol or alfaxalone induction, isoflurane gas) are recommended. Pre-oxygenate for 5-10 minutes prior to induction. Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary. Mild IV fluid restriction is recommended to avoid fluid overload. Avoid heart rate stimulating drugs such as atropine unless clinically indicated.

**SEX**

Female

**AGE**

9 months

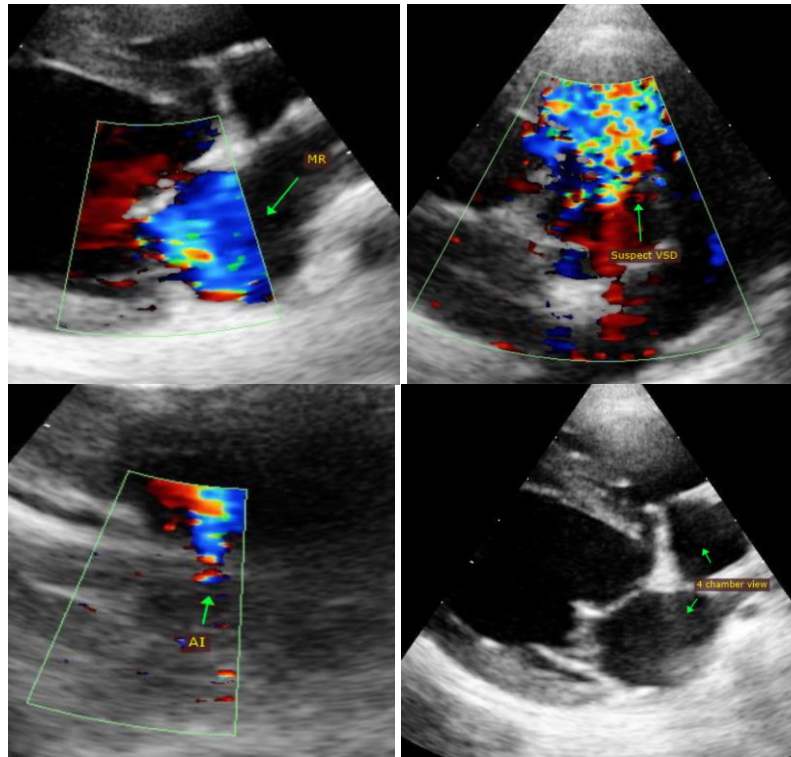
**PLAN**

Consider referral in any congenital case. If declined, recommend conservative monitoring with a recheck echocardiogram in 6-12 months to screen rate of progression, sooner if any development of clinical signs.

**WEIGHT**

14lbs

**IMAGES**



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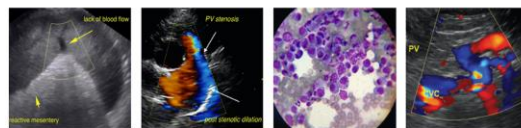
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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

Thank you for this referral. If the clinical or image interpretation does not parallel your findings or if I can be of any further assistance, please contact me.



**PATIENT**

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