



**PATIENT**

Pearl Forster

**PRESENTING CLINICAL SIGNS**

History: Grade 5/6 heart murmur. Asymptomatic.

**SPECIES**

Canine

**BREED**

English Bulldog

**SEX**

Female

**AGE**

6 months

**WEIGHT**

26lbs

**INTERPRETED BY**

Maggie Machen Lamy,  
DVM, DACVIM  
(Cardiology)

**IMAGING PERFORMED BY**

Kara Wallisch, DVM

**HOSPITAL NAME**

Sondel Family  
Veterinary Clinic

**REFERRING VET**

Dr. Wallisch

**ECHOCARDIOGRAM FINDINGS**

2D, m-mode, color flow and doppler imaging is available. The left ventricular wall is mildly hypertrophied (1.0cm globally). There is a diffusely hyperechoic endocardium consistent with fibrosis. Mild papillary muscle hypertrophy. The left atrium is mildly enlarged. The right atrium is normal in size. The right ventricle appears normal. The mitral valve is dysplastic, with an elongated and thickened anterior leaflet that prolapses into the LVOT in systole (see below). There is moderate mitral regurgitation associated with this abnormal motion. No obvious tricuspid regurgitation seen. Blood flow through the LVOT is increased on color flow, although not assessed on Spectral doppler. A mild subaortic ridge is suspected in some views, although this is inconclusive. The aortic valve appears normal without obvious stenosis. Trace aortic insufficiency. No obvious shunts. No evidence of cardiac tumors or metastatic lesions on this scan. No pleural or pericardial effusion seen.

**CARDIAC CHART**

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	NM	NA	NM	1.5	29	52	NM
CANINE CARDIAC PARAMETERS	HR (BPM)	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	NM	NM	1.0	11.8	2.7	3.1	2.2
*Normal chamber parameters expressed as a mean value (SD)				3	1.27 (5.3)	2.46 (2.46)	1.36 (5.5)
<b>BODY WEIGHT DEPENDENT PARAMETERS</b>				5	1.40 (4.5)	2.74 (5.2)	1.60 (4.7)
<i>*Note: All measurements based upon multi-modal images and methods. An average value is reported.</i>				10	1.50 (3.8)	3.27 (3.5)	2.06 (3.1)
				15	1.83 (2.0)	3.71 (2.4)	2.43 (2.1)
				20	2.02 (1.9)	4.14 (2.2)	2.80 (2.0)
				25	2.18 (2.4)	4.48 (2.9)	3.10 (2.5)
				30	2.33 (3.3)	4.83 (3.9)	3.39 (3.4)
				35	2.48 (4.3)	5.17 (5.0)	3.69 (4.5)
				40	2.62 (5.2)	5.48 (6.1)	3.96 (5.4)
				50	2.88 (7.1)	6.07 (8.3)	4.46 (7.4)

Adapted from June Boon, Veterinary Echocardiography, 1998  
Rishniw M and Hollis NE, J Vet Intern Med 2000; 14:429-435  
Hansson et al, Vet Rad and Ultrasound 2002  
Bonagura et al. Echocardiography: principles of interpretation, Vet Clin North Am 15:1177, 1995

**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

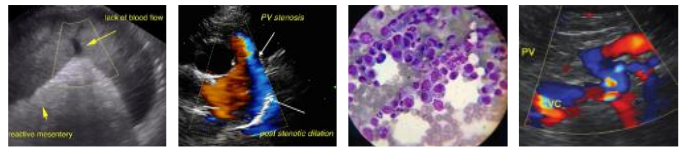
The cause of the murmur is increased flow velocity through the LVOT and aortic valve. Most significantly, there is mitral valve dysplasia with a secondary LVOT obstruction and mitral regurgitation present. This is similar to SAM in a cat, with hypertrophy of the LV secondary to pressure overload caused by obstruction to flow. This type of obstruction tends to be heart rate dependent, with a dynamic profile. There is also suspicion of a mild sub-aortic component, due to the appearance of the LVOT. There is mild LV hypertrophy present indicating pressure overload, with mild left atrial enlargement. No additional defects are seen; however, it should be

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mentioned that small defects/shunts are easily missed in congenital echocardiography. Highly recommend referral in this case for advanced imaging. Reasonable to recheck once heart rate is controlled and patient is of full stature (6-12 months) to ensure additional defects are not present. No evidence of volume overload or other secondary changes, however.

Lifelong heart rate control with atenolol is recommended, as the dynamic nature of the obstruction will be reduced at lower heart rates. No other medications are indicated at this juncture. Monitor for development of labored breathing, exercise intolerance or collapse episodes, as SAS/AS patients are more predisposed to development of arrhythmias than to CHF. Mild exercise restriction is advised lifelong. Prognosis is guarded, as many MVD cases will improve on atenolol however there is also a fixed obstruction in this patient.

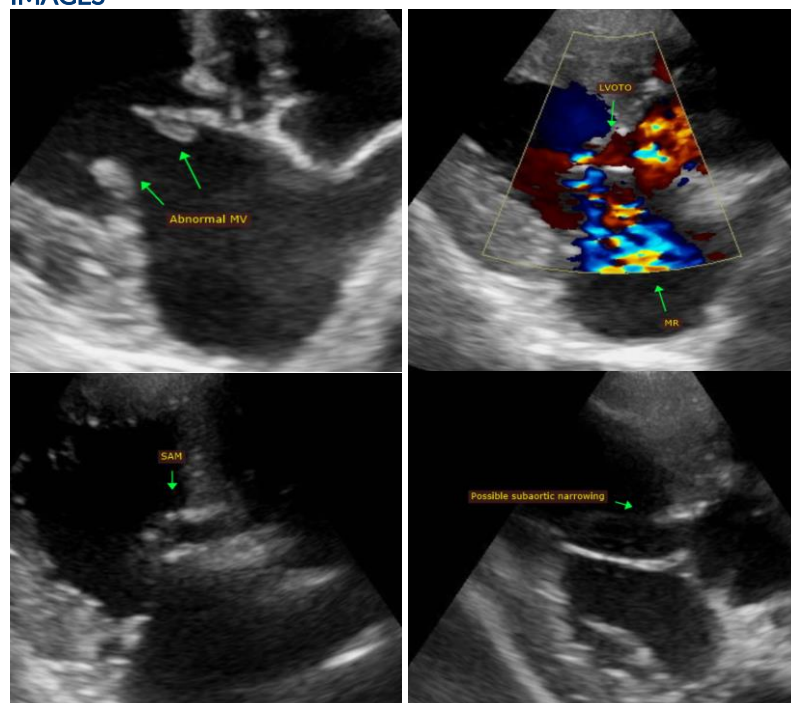
Once Atenolol is initiated, anesthetic risk is mild. Avoid heart rate stimulating drugs such as atropine or glycopyrrolate unless clinically indicated. Avoid ketamine and acepromazine due to systemic vascular effects. Mild IV fluid restriction is advised. Recommend prophylactic antibiotics for any orthopedic or dental procedure in the future given predisposition to endocarditis.

**PLAN**

Recommend referral for reassessment in the future. Administer titrating dose of atenolol: 25mg tablets; Give ¼ tab twice daily. Recheck heart rate in 1-2 weeks with target stressed rate of <140bpm, Increase as needed until target reached. Will need to up-titrate to desired effect as puppy grows.

Recommend recheck echocardiogram in 6-12 months to assess response to atenolol and screen for small concurrent defects, sooner if clinical issues arise.

**IMAGES**





**PATIENT**

Pearl Forster

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.

**SPECIES**

Canine

Thank you for this referral. This report was generated using transcription software, and minor dictation errors may be present. If the clinical or image interpretation does not parallel your findings or if I can be of any further assistance, please contact me.

**BREED**

English Bulldog

**Maggie Machen Lamy, DVM**  
Diplomate of the American College of Veterinary Internal Medicine (Cardiology)  
info@sonopath.com

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