



**PATIENT**

Henry Goode

**PRESENTING CLINICAL SIGNS**

History: Grade 3/6 heart murmur. Elevated ProBNP: 9.8. Assess prior to anesthesia.

**SPECIES**

Canine

**BREED**

Pitbull

**SEX**

Male

**AGE**

10 months

**WEIGHT**

65lbs

**INTERPRETED BY**

Maggie Machen Lamy,  
DVM, DACVIM  
(Cardiology)

**IMAGING PERFORMED BY**

Potomac Mobile  
Veterinary Ultrasound

**HOSPITAL NAME**

Banfield Pet Hospital  
Winchester

**REFERRING VET**

Dr. Jarrett

**INVOICE**

26506

**DATE**

9/22/22

**ECHOCARDIOGRAM FINDINGS**

2D, m-mode, color flow and doppler imaging is available. Normal mitral valve leaflets with no obvious prolapse into the left atrial lumen. Trivial mitral regurgitation. Normal left atrial dimension. Normal LV diameter with normal myocardial function. The LV wall is normal. The tricuspid valve appears normal with trace tricuspid regurgitation present. Moderate right atrial dilation. Mild right ventricular hypertrophy and remodeling indicative of pressure overload. Mild right ventricular dilation. Mild elevation of pulmonic outflow velocities at the level of the valve. The PV leaflets are elongated and tethered. Mild post-stenotic dilation of the main pulmonary artery. Mild pulmonic insufficiency. The aortic valve appears to have normal morphology and mobility. No AI. No obvious cardiac shunts are visualized. No pericardial or pleural effusion noted.

**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	NA	NA	1.2	1.3	30	57	0.4
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	1.4	2.8	29.5	3.0	4.1	2.9
*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)
Adapted from June Boon, Veterinary Echocardiography, 1998				25	2.18 (2.4)	4.48 (2.9)	3.10 (2.5)
Rishniw M and Hollis NE, J Vet Intern Med 2000; 14:429-435				30	2.33 (3.3)	4.83 (3.9)	3.39 (3.4)
Hansson et al, Vet Rad and Ultrasound 2002				35	2.48 (4.3)	5.17 (5.0)	3.69 (4.5)
Bonagura et al. Echocardiography: principles of interpretation, Vet Clin North Am 15:1177, 1995				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)

**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

The cause of the murmur is elevated flow velocity through the pulmonary artery consistent with pulmonic stenosis. No sub or supravalvular components were identified at this time, making a purely valvular stenosis most likely. The degree of obstruction is likely moderate based upon secondary right heart enlargement. The velocity through the region is suspected to be underestimated, as mild PS rarely causes this degree of right-sided enlargement. Trace tricuspid regurgitation is also noted, likely secondary to pressure overload of the right heart (valve appears normal). No other congenital abnormalities were visualized, however small abnormalities are easily missed in congenital cases.



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Moderate PS cases fall within a grey zone. There are many patients that will not experience clinical signs (syncope, right-sided congestive heart failure) throughout their lifetime, however risk for progression to clinical signs will always remain. A diagnostic angiogram and potentially balloon valvuloplasty can be considered (particularly in the event of development of clinical signs) as the gold standard therapeutic option for this condition and may improve long term outcome. **If the client is interested, referral for evaluation and discussion with a local Cardiologist should be considered.** Whether or not referral/surgery is elected, medical management with atenolol is recommended going forward to decrease heart rate and lessen the obstruction.

Monitor for development of associated clinical signs (collapse, abdominal distention, cough, labored breathing). **Mild exercise restriction is advised.** Omega fatty acid supplementation may have some long-term benefit, given these cases are predisposed to development of arrhythmias going forward.

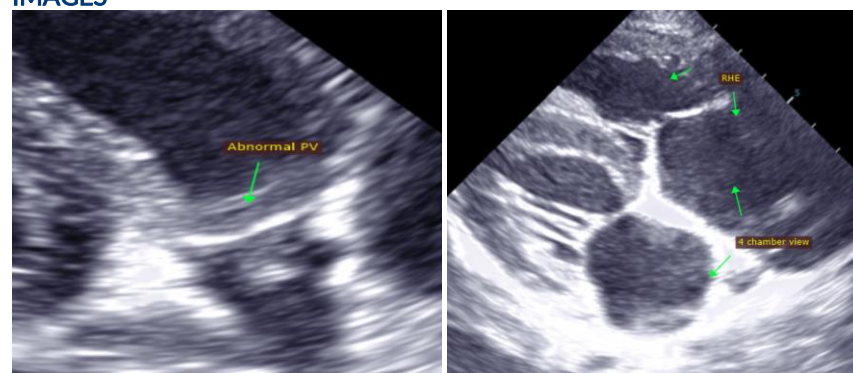
**Breeding this animal is not advised due to the genetic link of this disease.**

Anesthetic risk is mild to moderate at this time. **Avoid heart rate stimulating drugs such as atropine or glycopyrrolate unless absolutely necessary.** Avoid vasodilators such as acepromazine. Mild IV fluid restriction is advised. Cardiac protective drug choices (opioid/benzodiazepine premedication, propofol or alfaxalone induction, isoflurane gas) are recommended. Pre-oxygenate for 5-10 minutes prior to induction and recover in O<sub>2</sub> if possible. Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary.

Plan: Consider referral for evaluation/surgical consultation. Institute atenolol 25mg tabs, give ½ tab PO q12. Recheck HR in 5-7 days; target is stressed in hospital rates not to exceed 130bpm.

Recommend recheck echocardiogram in 6-12 months to assess for progression, response to medication.

## IMAGES





**PATIENT**

Henry Goode

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**

Pitbull

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

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