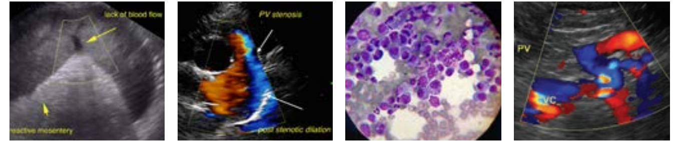
SonoPath

Clinical Sonography & Telecytology



EDUCATIONAL TELECONSULTATION SERVICES™

SonoPath.com™

1-800-838-4268 info@sonopath.com

PATIENT

Sugar Acevedo

SPECIES

Feline

BREED

DSH

SEX

Neutered Male

AGE

1 Year

WEIGHT

9 Pounds

INTERPRETED BY

Lisa Carioto, DVM, DVSc, Diplomate ACVIM

IMAGING PERFORMED BY

Kelly Vazquez

HOSPITAL NAME

North Jersey AH

REFERRING VET

Dr. Mark Reidel

INVOICE

38774

DATE

6/16/22

PRESENTING CLINICAL SIGNS

Patient presents for grade 3/6 heart murmur.

FELINE CARDIAC PARAMETERS	**BODY WEIGHT** (kg)	**HR** (BPM)	**IVSd** (cm)	**LVIDd** (cm) Short axis	**LVWd** (cm) Short axis	**FS** (%)	**EF** (%)
NORMAL PARAMETER	------	150-240	0.3-0.6	1.0-2.1	0.25-0.6	35-67	80-100
PATIENT	4.1	104	0.54	1.67	0.44	63	NM
FELINE CARDIAC PARAMETERS	**LA/AO** (Boon)	**LA/AO HEART BASE** (Sisson)	**LA** 2D 4-chamber long axis AS to FW (Sisson) (cm)		**LVOT VEL.** (m/s)	**RVOT VEL.** (m/s)	**IVRT** (m/)
NORMAL PARAMETER	<1.5	0.88-1.79	0.7-1.7		<1.6	<1.3	40-60
PATIENT	1.05	1.01	NM		turbulent 1.6	laminar 1.14	NM
Adapted from June Boon, Veterinary Echocardiography, 1998 Sisson D et al. JVIM 1991; 5: 232, Jacobs et al. Am J Vet Res 1985; 46:1705							

Echocardiographic findings

Mitral valve

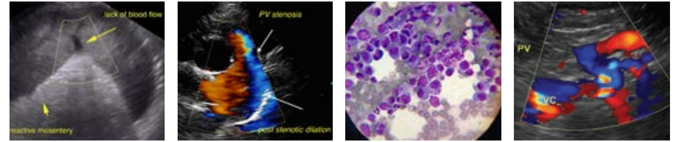
- Valve leaflets: The posterior leaflet is tethered by a chordae tendinae, which is affecting excursion of the leaflet. A short chordae tendinae located on the infundibulum of the interventricular septum, which has direct contact with a chord from the septal leaflet. Result: systolic anterior motion ("SAM") of the mitral valve, severely turbulent blood flow in the left ventricular outflow tract and mitral regurgitation.
- Mitral regurgitation (MR)
    - Moderate to marked (3.1 m/s)
    - Posterior jet
    - Hits the far wall of the left atrium
- Left atrium: No left atrial enlargement
- Left auricle: Not enlarged
- LA: Ao ratio: Within normal limits (WNL)
- Left ventricle: WNL
- "smoke": Absent

Tricuspid valve

- Valve leaflets: No abnormalities
- Tricuspid regurgitation: Trivial (0.5 m/s)
- Right atrium: Absent
- Right auricle: Absent
- Right ventricle: Absent

Aortic valve

- Valve leaflets: No abnormalities
- Aortic insufficiency: Absent



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- Turbulent blood flow in the left ventricular outflow tract: Marked

Pulmonic valve

- Valve leaflets: No abnormalities
- Pulmonary insufficiency: Absent
- Main pulmonary artery and bifurcations: No abnormalities
- Pulmonary artery: aortic ratio: Within normal limits

Other

- Pulmonary edema: Absent
- Pericardial and pleural effusion: Absent
- Pulmonary veins: No abnormalities
- Intracardiac mass: Absent
- Papillary muscles: Mild hyperechogenicity (right parasternal, short axis view)
- Endocardium: Mild to moderate hyperechogenicity of the papillary muscles
- Myocardium: Mild to moderate hyperechogenicity of the peripheral aspect of the papillary muscles
- Ventricular septal defect (VSD): left to right, small (1.05 mm)

ULTRASONOGRAPHIC FINDINGS

Cardiac

Mild mitral valve dysplasia causing secondary turbulent blood flow in the LVOT. There is no evidence of chamber enlargement and contractility is not affected. The dysplasia is mild and remodeling of the heart has not occurred thus far. However, it may in the future. The murmur is caused by a combination of the turbulent flow in the LVOT, MR and the VSD. A re-evaluation is recommended in 12 months, or sooner, if there is a change in the intensity of the murmur, or if there is an increase in Sugar's resting respiratory rate (see below).

A small *ventricular septal defect* (left to right) is present. Its presence should not cause clinical consequences.

Treatment for cardiac disease is not necessary.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Cardiac

An arterial blood pressure

Monitoring of the resting (sleeping) respiratory rate (RRR) is highly recommended twice a month. The RRR should NOT EXCEED 30 breaths per minute (bpm). If the respiratory rate is greater than 30 bpm, *or* if there is a gradual increase (over a day or two) toward 30 bpm, the patient should be evaluated immediately for congestive heart failure and the appropriate treatment initiated.

An echocardiogram is suggested in 12 months to ensure Sugar's parameters remain stable or sooner, if there is a change in the intensity of the murmur, or an increase in the RRR.

If general anesthesia is required in the future, for example, a dentistry, the following protocol, or one similar to it, is suggested.

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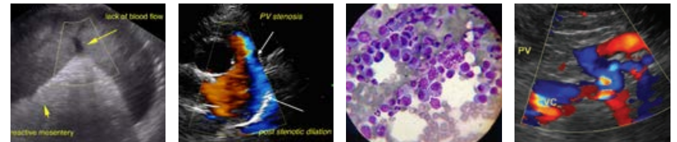

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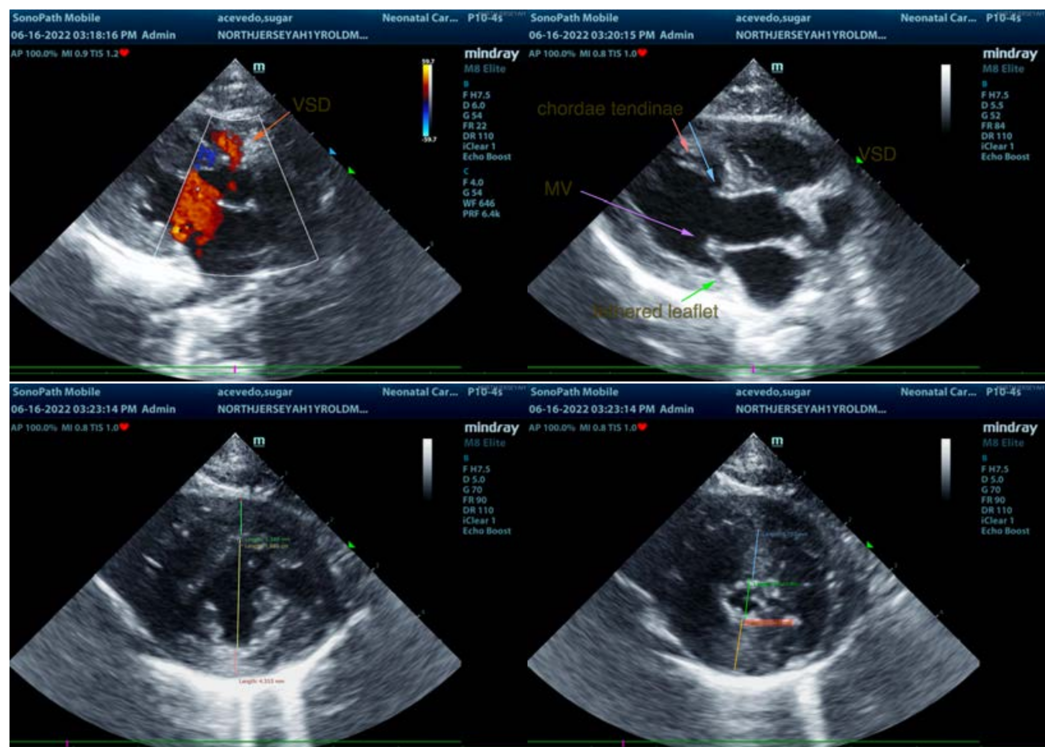
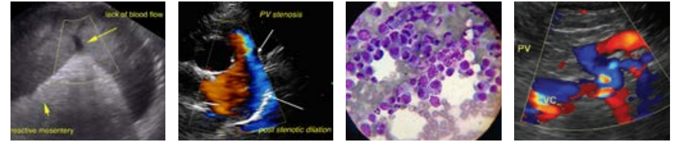
Example of general anesthesia protocol for a dentistry

- Premedication with an opioid, such as hydromorphone, butorphanol, or buprenorphine, +/- *low dose* of midazolam. Avoid dexmedetomidine (label indications).
- Avoid acepromazine, atropine and glycopyrrolate. The latter two drugs should only be considered if a patient becomes bradycardic during the procedure.
- Preoxygenation for 10-15 minutes (minimum 5 minutes).
- Induction with alfaxalone, or propofol, if alfaxalone is not available. Avoid ketamine, if possible.
- Monitor arterial blood pressure during the procedure. The mean blood pressure should be between 90 - 100 mm Hg. If the patient's blood pressure is decreased, small increases in fluid rate may be pursued, however, dobutamine is suggested, i.e. fluid boluses should *not* be administered to avoid volume overload and congestive heart failure.
- The intravenous fluid rate should be approximately ¼ of the DAILY maintenance requirements, or 1.75-2 ml/kg/hour to avoid fluid overload.
- Dental blocks are strongly recommended to decrease MAC and the amount of isofluorane necessary, as the latter tends to cause hypotension, particularly in cardiac patients.
- *Two shorter procedures are preferable to performing one long procedure, if the dentistry will take longer than originally expected.
- One could consider sending the patient home with *furosemide in case of an emergency*.
- Monitoring the patient's resting respiratory (breathing) rate twice a day for 4-6 weeks following general anesthesia is suggested to monitor for signs of decompensation of heart disease.





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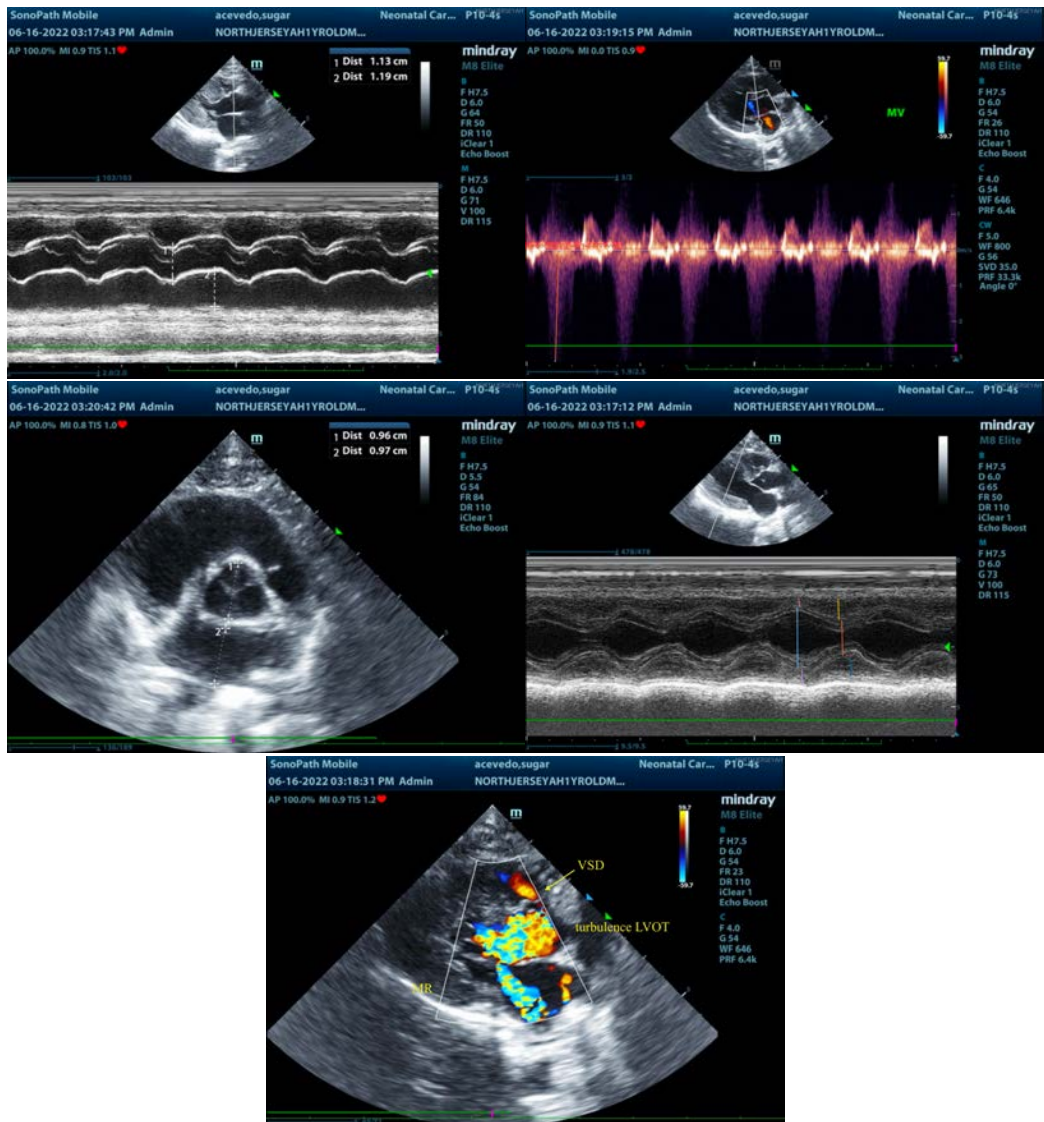

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

Lisa Carioto, DVM, DVSc, Diplomate ACVIM

Lisa.Carioto@sonopath.com