

Case Presentation & Basic Porcine Anesthesia

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Getting to know me.



- Originally from Georgia.
- I have lived and worked in Auburn for 10 years now.
- My first job was working with animals at a large kennel. My feet hurt so bad after my first week.
- Over the years I have had many opportunities to work with a variety of animals.



Lions, tigers, no bears!



Getting to know me

- Hobbies – Music
- Call of Duty – I'm not that great but it is my escape.
- Love riding around with the top off my jeep.
- Enjoy the simple things in life.
Like being at home 😊
- In vet med 20 plus years. At AUCVM for 10 years.



Case Presentation and General Anesthesia, Porcine

- Signalment
- History
- Presented For
- Perioperative preparation
- Induction
- Summary of Anesthesia Record
- Intraoperative procedures
- Perioperative procedures



Signalment

- Sweet Pea is a 6.45kg, 7-month-old, male entire miniature pig who presented to AUCVM for castration after the RDVM determined a retained testicle.
- On physical exam Sweet Pea was bright, alert, and responsive. Ocular discharge present from the left eye. Oral Cavity- attempted to bite on exam. (aborted mission!)
- Integumentary: flaky skin. (I mean it's a pig)
- Musculoskeletal and Orthopedic: ambulatory x 4, lameness 0-4
- Cardiovascular, normal rate and rhythm
- Reproductive: abdominally retained testicles.



Signalment

- Rectal exam was not performed
- Urinary : normal urination observed.
- Neurologic: normal mentation. Full neurologic examination not performed.
- Lymph nodes: Palpated normally
- T: 97.8 F.
- P:136 beats/min
- R: 68 breaths/min
- Body weight: 6.45 kg



Perioperative Preparations and Premedication's.

- Diagnostics – Abdominal ultrasound was performed on 3/21/2024
- Bilateral cryptorchid castration scheduled for 3/22/2024
- Remove water after 6am 3/22
- NPO after 9pm for 9am surgery 3/22
- Antibiotics – Exceed for swine 5mg/kg IM
- Analgesic- Meloxicam 0.4mg/kg PO 24 hours x 3 days. (last dose 3/22)



Swine Reference Values

Young Pig	Temperature 102°F – 104°F	Pulse b/m 100-130	Respiratory Rate b/pm 20-40
Adult Pig	Temperature 101.6°F – 103.6°F	Pulse b/m 70-120	Respiratory Rate b/pm 32-58 <i>(zukureview, 2006-2024)</i>

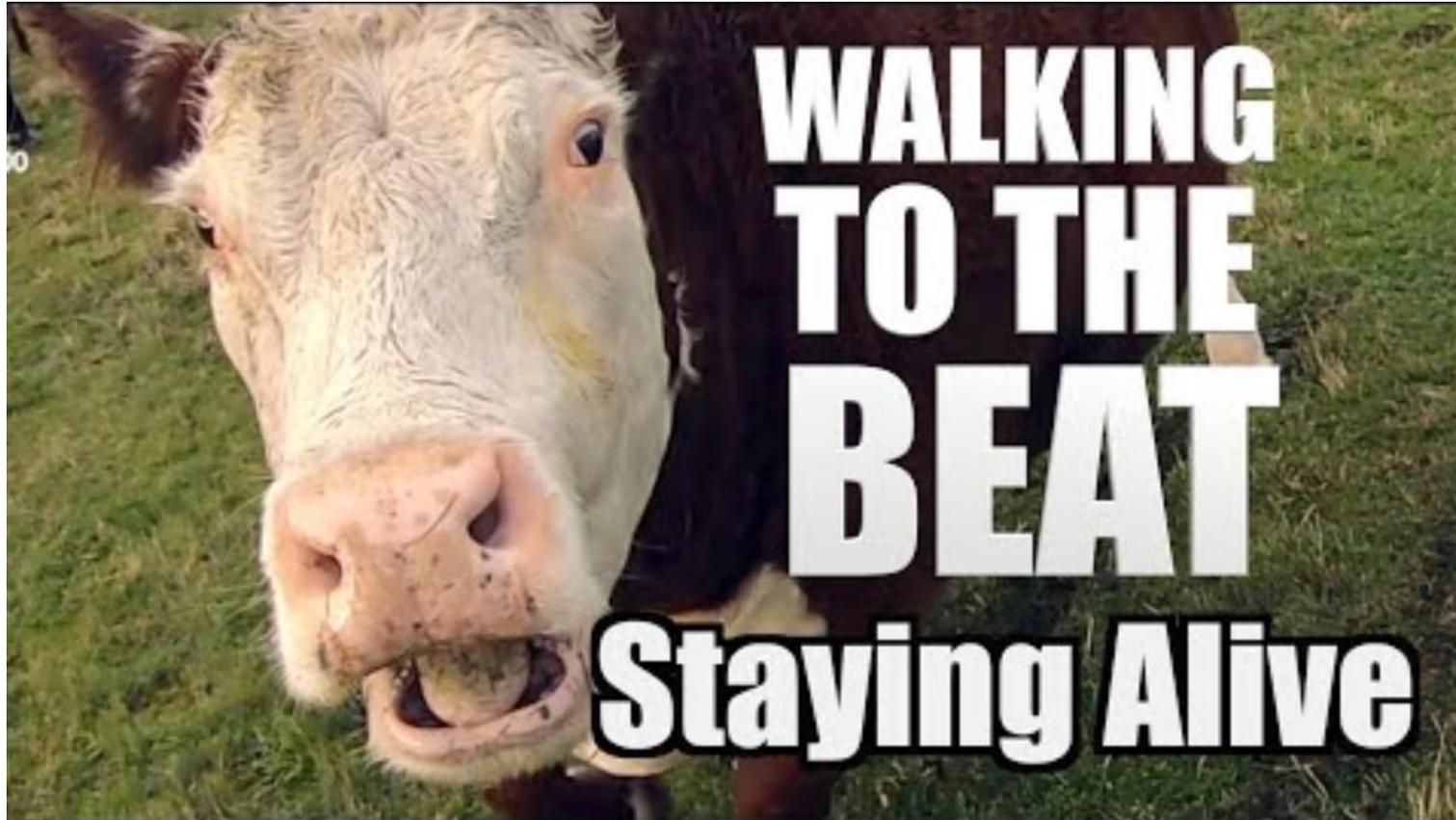
Figure 1.1



Anesthesia Equipment



How I Would Like Our patients to Arrive to Anesthesia



THIS IS THE FUN PART FOR ME!

General Attitude: nervous
(he's on to us)



- Patient presented to anesthesia for cryptorchid castration. Fasted for 12 hours.
- Pulse rate: 104
- Respiratory: 16
- Temperature: Elected to take after induction to reduce patient stress.



Drug Plan

- Dexmedetomidine
65mcg IM, 0.1mcg/kg
- Ketamine 65mg IM,
10mg/mL
- Midazolam 2.6mg IM,
0.4mg/kg
- Morphine 2.6mg IM,
0.4mg/kg
- Sevoflurane +/- mask
for intubation



Injection site

- If you can hold your finger on the injection site after removing the needle.
- Due to their thick skin drugs can seep out after removing the needle.
- No heroics. Safety first.



Let's check to see if our patient is ready to move forward.





Let your patient marinate. (kidding, just letting the drugs kick in.

- 10-15 minutes after our drug plan was administered.
- Time to move forward with our patient.



Intubation

- Can be difficult in pigs.
- Always select at least 3 different sizes of endotracheal tubes.
- Laryngoscope and at least two different blade sizes.
- stylet polypropylene urinary catheter.
- Lidocaine 2%
- Lube
- Tape, or preferred method of securing the endotracheal tube.



Swine Oropharyngeal Anatomy

- A. TONGUE
- B. SOFT PALATE
- C. EPIGLOTTIS
- D. VOCAL CORD
- E. LATERAL VENTRICLE
- F. TRACHEA
- G. ESOPHAGUS
- H. PHARYNGEAL DIVERTICULUM(Chum & Pacharinsak, 2012)

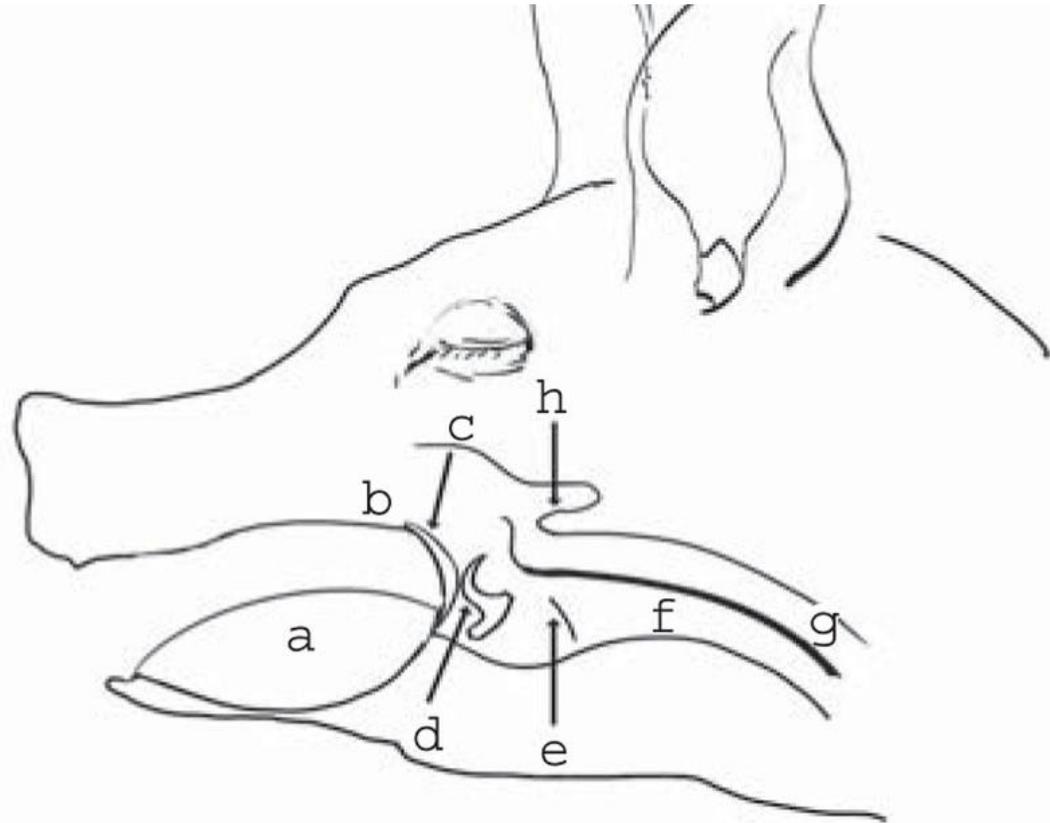


Figure 1.2



Complications

- laryngeal trauma.
- esophageal intubation -small or no movement of the reservoir bag.
No end-tidal CO₂
- endobronchial intubation –light plane of anesthesia, cyanosis, hypoxemia. To correct it, deflate the cuff, retract slowly to correct the tube placement. Use your Co₂ waveform to confirm. Color should improve. Saturation on your SP0₂ should improve.



After Sedation is on board.

- Sevoflurane via mask.
- Start anesthetic gas on a low setting to let them get used to the smell.
- Increase anesthetic gas as needed.



Measure Your Endotracheal Tube

- Tip of the nostrils to the level of its shoulders.
- You can intubate in dorsal, lateral, or sternal recumbency.



Apply 0.5mL of Lidocaine to the arytenoids. Wait 30 seconds.



Intubation



- Prior to intubation apply Lidocaine 2% to prevent laryngeal spasms. Apply oxygen for 5 mins via mask.
- For this patient we did need to mask with Sevoflurane for proper sedation to intubate.
- Once you visualize, advance your stylet between the arytenoid cartilages.
- Make sure you can visualize your stylet between the arytenoid, remove your laryngoscope, advance your endotracheal tube over the stylet.
- Carefully advance the endotracheal tube gently rotate clockwise to advance.



Connect your monitoring.
ECG, SpO₂, ETCO₂, NIBP.
Attempt intravenous
catheter placement.



Porcine Miniature Pig
 Male, Entire 08/01/2023 (Y: 0, M: 7)

WT: 6.45 kg Surgeon: Stackler
 Procedures: 1. Cryptorchid castration
 2.
 3.
 Drug History: Meloxicam
 Pre Anesthetic Assessment: BAR
 ASA Status: 2 3 4 5 E Machine# Credit ET Tube Size Position Sponge #
 02 3 4 5 E Reserve Record 7 dorsal 1 OK
 Other Labs:
 Anesthetic Complications: Hypotension
 Catheter: (60) J Multiple

Temp	PR	RR	Pain (0-25)	MMCRT	PCV	TP	Glu	BUN
	104	10						

Time	Premed/Agent/Dose/Route	Effect (Circle)	Intervention/Agent/Dose/Route	Time
9:24 AM	Demmed 65mg IM	None	Mar 2.6g IM	9:28 AM
9:24 AM	Ketor 65mg IM	Moderate	Sevo most induction	9:30 AM
9:24 AM	Morlon 2.6g IM	Profound Dysphoric		

9:35 50% 12:05 2% 2:20 3% 3:30 3% 11:05 2% 2:25

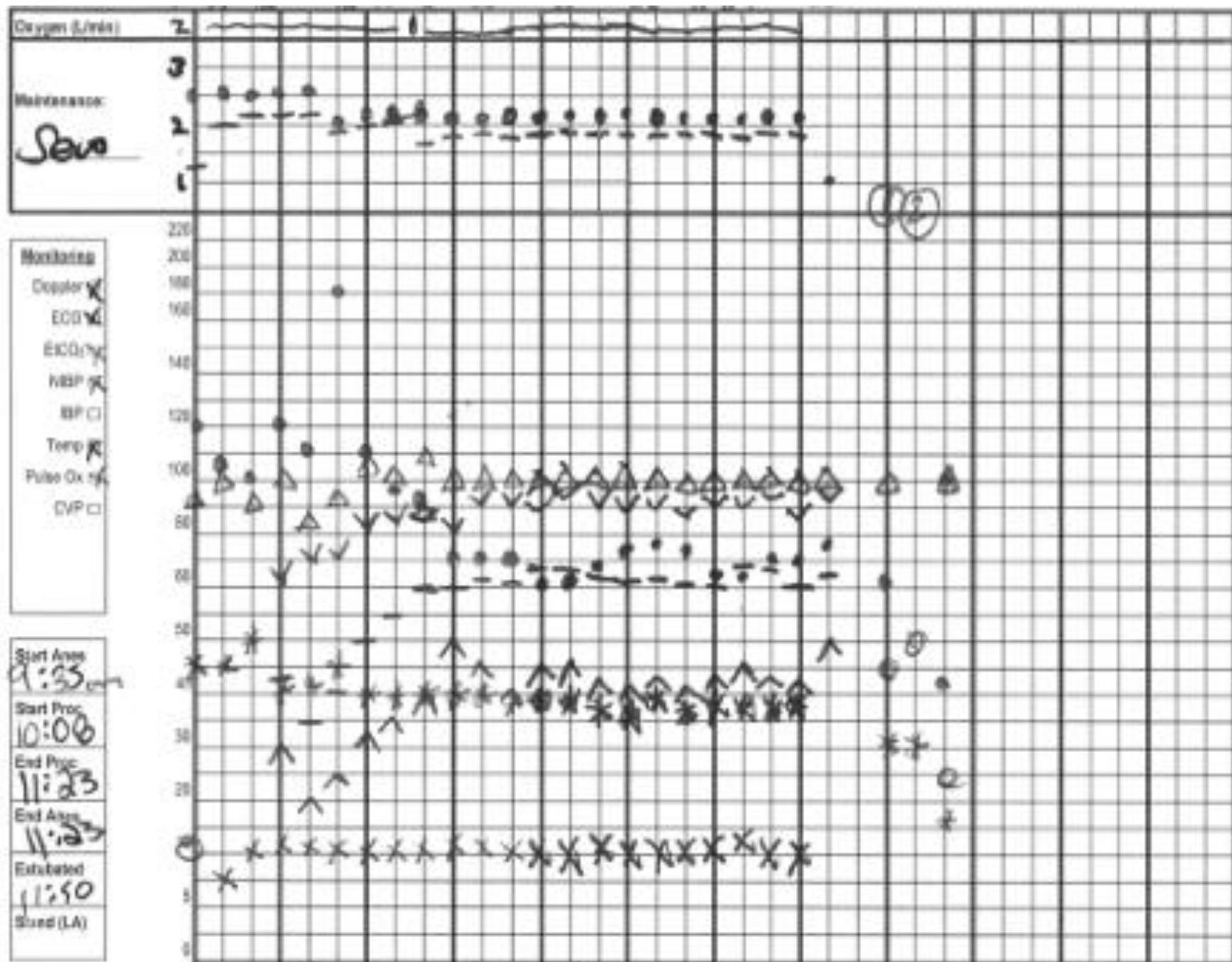
Notes:
 0.01mg Fluminazol IV 11
 0.1mg Atropine IM 11:40 AM
 used
 Ketor 65mg
 Morlon 2.6g
 Mar 2.6g
 wasted
 Morlon 2.6g
 Morphine 9mg
 T: 106
 P: 100
 R: 68
 Total Fluids 50 ml
 Total Blood Loss missing
 Record Checked [Signature]

Fluid/Crte	Temp	98.1	97.5	98.1	98.4	99.1	99.7	100.1	100.4
1. ptillyte									
2.									
3.									
4.									

Time	FI _O ₂	Var/Vol	pH	pCO ₂	pO ₂	HCO ₃	BE	Glu	Na ⁺	K ⁺	Ca ⁺⁺	Cl ⁻	Lac

CODE: ● Pulse ▲ SpO₂ ○ CVP
 V Systolic BP - Mean BP A Diastolic BP
 * P_{CO} a Spontaneous BP ✓ Controlled BP

ANESTHESIOLOGY/PAIN MANAGEMENT
 Top Copy: Record; Yellow Copy: Anesthesia Service



Recovery

- Similar to brachycephalic breeds.
- Continue oxygen after anesthetic gas has been turned off.
- Monitor SpO₂
- Once the patient has more palpebral responses you may take the patient off oxygen providing it is saturating within normal limits.
- Once the patient is swallowing, gently remove the endotracheal tube.
- Swine salivate a lot, keeping the tube inflated removes the saliva collected in the mouth.
- Monitor your patient and temperature until stable.



Questions, or comments?



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References

Chum, H., & Pacharinsak, C. (2012). Endotracheal intubation in swine. *Lab Animal*, 41(11), 309–311. <https://doi.org/10.1038/lablan.158>, *Figure 1.2*

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