Muscle Biopsy Procedure

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Please contact the laboratory to book in your samples via email as we can only accept pre-booked samples. Samples must be pre-booked at least 48 hours before submitting, however we cannot guarantee to have spaces available within this short time frame. If this is the case we will offer alternative dates for submission.

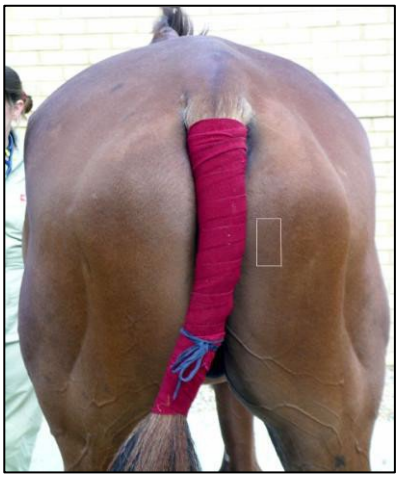
Indications / possible diagnoses

Exertional myopathies (RER/PSSM etc)
Equine Motor Neuron disease
Poor performance / elevated CK/AST
Unexplained muscle atrophy
Inflammatory / immune myositis
Myotonic dystrophy
Mitochondrial myopathy
Atypical myoglobinuria

Materials required

Drugs for sedation
Lignocaine 2% injection
Sterile gloves
Scalpel
Forcep
Small Gelpi retractor
Needle holders
Suture material / staples
Chilled 0.9% sterile saline
Sterile gauze swabs
Screw top container x2
10% formalin (10-20 ml)
Ice packs
Polystyrene box
Card and pins

Biopsy site for sacrocaudalis dorsalis medialis muscle in suspected EMND



Biopsy site for semimembranosus muscle in suspected exertional myopathies

Muscle Biopsy Method

1. Contact the laboratory to pre-book your samples at least 48 hours in advance and organise same day or overnight courier service prior to sampling.
2. For horses with exertional myopathies the semimembranosis is generally chosen; for equine motor neuron disease, biopsy the sacrocaudalis dorsalis (craniolateral to tail head). For other disorders, choose the site based on the most obviously affected muscle or biopsy several regions.
3. Sedate horse
4. Obtain blood samples in both EDTA and plain/whole blood or serum labelled tubes.
5. Prepare skin for sterile surgery.
6. A Bergstrom biopsy needle is suitable, but reliable (and usually better) results are obtained with open biopsy.
7. Inject subcutaneously up to 10 ml of local anaesthetic, taking care to avoid direct injection into the muscle layer.
8. Wet several sterile gauzes with chilled sterile saline, squeeze them very tightly so they remain slightly damp but not wet, and lay them flat. If they are wet, the sample is ruined.
9. Make a 4cm incision (in the same orientation as the muscle fibres) in the skin and subcutaneous tissue, exposing the underlying muscle belly. Separate with Gelpi retractor.
10. Make 2 parallel incisions (3 cm) in the muscle parallel to the muscle fibres, about 1cm apart.
11. Then, while holding the incised muscle proximally, incise the proximal region and carefully undermine the strip (8mm depth). Finally incise distally. The muscle will contract as it is incised.
12. If working alone, carefully place the muscle sample on the damp gauze, and fold the top layer of gauze over it to stop it drying. If working with a non-sterile assistant, pass the sample to them.
13. Close dead space completely and close subcutaneous layer. **Note: a thorough closure reduces chance of dehiscence.**
14. Suture or staple skin.
15. Divide muscle transversely into 2 pieces with a clean, sharp cut. Place one piece in 10% formalin in a screw top container. **There should be at least 20 x volume of formalin.**
16. Taking care not to compress the remaining sample, remove it from the gauze holding only the edge, and place on the inside surface of a screw-top plastic container (on its own). DO NOT INCLUDE THE WET GAUZE AS THIS RUINS THE SAMPLE. Do not use pins or card.
17. Ensure all pots and tubes are labelled with the animal and owner name, the date and the muscle that has been sampled.
18. Place containers along with the EDTA and whole blood samples in a polystyrene box containing ice packs. Take care not to place the containers directly against the icepacks (the muscle itself must not freeze). Instead, provide some insulation (e.g. cotton wool).
19. Complete a submission form with the horse details and the tests required.
20. Seal and post the box by courier or hand deliver. If there is a delay before courier collection, then place the samples in a fridge at 4°C until collection.
21. Results are generally available within three to four weeks; if test results are required urgently for clinical reasons, please contact the laboratory and we will do our best to expedite the turn around.

AT ANY TIME PLEASE DO NOT HESITATE TO CONTACT THE LAB FOR FURTHER ADVICE, OR FOLLOWING RECEIPT OF THE RESULT.