



SOP 093 Synoviocentesis of the tibiotarsal joint in horses

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Written by: Unknown
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Purpose

- (1) The objective of this standard operating procedure is to provide guidance to the Charles Sturt University staff:
 - a. To describe the process of synoviocentesis in horses.
 - b. To collect joint or synovial sheath fluid samples from the tibiotarsal joint of the horse suitable for laboratory analysis, by synoviocentesis.
- (2) Synoviocentesis is a common and routine procedure in equine practice. The samples acquired are used to assist in diagnoses and assessment of therapeutic regimes. The most common use is collection of joint fluid for cytology and culture to aid in the diagnosis of synovial sepsis.

Scope

- (3) This procedure applies to any person who is involved in AEC approved projects involving Synoviocentesis of the tibiotarsal joint in horses.
- (4) All researchers and teaching staff using animals for scientific purposes must be competent. For definition of competency refer to Charles Sturt University's Policy on 'Animal Care Competency Training and Assessment'

Details of procedure

Restraint:

- (5) The horse should be restrained appropriately. The choice of restraint will be based on an assessment of the behaviour of the individual horse. Restraint should ensure quick, easy and safe collection of the sample causing minimal distress. Horses are to be restrained with a halter and lead rope (and a rearing bit, if necessary), before the procedure is started. Further forms of restraint could also include:
 - a. Sedation: if horses are deemed to need sedation, this should be administered before the procedure is commenced, or as soon as possible thereafter. Drug(s) used will vary with individual horse temperament and clinical assessment.
 - b. If horses are deemed to need a nose twitch this should be applied to the horse immediately prior to undertaking the procedure(s) and after all other preparations are complete. It is dangerous to leave a twitch applied to a horse for a protracted period of time. If a horse is impossible to twitch or reacts adversely to the twitch, additional sedation should be used, or the procedure should be abandoned. Ear twitching is NOT permitted under any circumstances during teaching or research activities.
 - c. If horses are to be restrained in the horse stocks for the procedure(s):
 - the horse should be positioned in the stocks with the head facing the front wall and the rear end closest to the outside door



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Skin Antisepsis:

- (6) Appropriate skin antisepsis must be completed.
 - a. Chlorhexidine scrub of the area is performed first. Skin preparation generally begins at the centre of the shaved area or proposed synoviocentesis site and continues using a concentric circular pattern until the edges of the shaved area are contacted. Once hair is touched the gauze is discarded and a new gauze is used. This action is performed for 7-8 minutes
 - b. A final preparation with 70% alcohol follows. This involves the alcohol swab starting at the centre of the shaved area or proposed synoviocentesis site and continues outward to the hair. Once hair is touched the gauze is discarded and a new gauze is used. This is repeated 3 times at over the entire shaved area.
- (7) The operator must wear sterile gloves and use a sterile needle and syringe.
- (8) The depth of penetration is seldom more than 1-3cm. A needle gauge between 21-18G and a length of 2.5cm – 3.8cm (1-1.5 inch) is sufficient. When the tibiotarsal joint is distended by effusion, the medial and lateral plantar synovial pouches are readily discernible and arthrocentesis at either of these sites is also easily accomplished.
- (9) The tibiotarsal joint can be penetrated in both the recumbent and standing animal for the purposes of synoviocentesis. The limb can be in either a straight or flexed position. Access can be gained on either the medial or lateral side of the saphenous vein as it vertically transverses the joint, approximately 2.5- 3.8cm distal to the level of the prominent medial malleolus at the distal end of the tibia (see figure 1).
- (10) The needle is inserted at 90 degrees into the joint and the sample taken. Correct synoviocentesis technique is confirmed when synovial fluid is seen in the hub of the needle. If this is not visualized the needle can be redirected or changing the depth of penetration without removing the needle from the skin until joint fluid is visualized. If the needle cannot be advanced further due to contact with bone the needle should be withdrawn slightly. The procedure should be discontinued if hair or dirt appears to contact the needle site. The procedure can be repeated at this time following repeat skin preparation as described above. Generally sample size collection is approximately 3-5mL however, larger samples up to 10m-15mL in distended joints can safely be taken.

Drugs, chemicals, or biological agents

- (11) Antiseptic such as chlorhexidine scrub and medical grade alcohol to clean skin surface prior to synoviocentesis.
- (12) Sedatives include:
 - a. Xylazine: 0.2-0.5 mg/kg IV
 - b. Detomidine: 0.01 mg/kg IV
 - c. Acepromazine: 0.02-0.04 mg/kg IV
 - d. Butorphanol: 0.01-0.02 mg/kg IV

Impact of procedure on wellbeing of animals

- (13) Synoviocentesis poses a very low risk of iatrogenic joint infection when performed under strict aseptic technique as described above. If an animal is not adequately restrained during the procedure, there is the small possibility of the need breaking off in the joint. If this was to occur arthroscopic surgery would be required to retrieve the foreign body. Other unlikely



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detrimental side effects may include damage to the cartilage if the horse moves during the procedure. This usually has no clinical side effect to the horse.

- (14) Nose twitches can lead to unwanted behaviours. Misuse of twitches can lead to physical damage, head shyness, and negative behavioural outcomes both in the short and long-term.

Animal care

- (15) Synoviocentesis poses a very low risk of iatrogenic joint infection when performed under strict aseptic technique as described above. If an animal is not adequately restrained during the procedure, there is the small possibility of the needle breaking off in the joint. If this was to occur arthroscopic surgery would be required to retrieve the foreign body. Other unlikely detrimental side effects may include damage to the cartilage if the horse moves during the procedure. This usually has no clinical side effect to the horse.

Pain relief

- (16) Not required.

Reuse and repeated use

- (17) Procedures should only be performed once per day in animals for demonstration purposes. For research purposes, animals may be sampled twice daily.

Qualifications, experience or training necessary to perform this procedure

Demonstrator

- (18) Operators should be familiar with the correct techniques and the anatomy of horses before attempting this procedure.

Students

- (19) Procedures should be clearly demonstrated before students attempt them. Students should be aware of the requirements for sterile technique.

All operators

- (20) Competence in handling, restraint and understanding of, and appropriate response to, equine behaviour is essential.

Record requirements

- (21) None required



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Associated documentation (including pictures if available)



Figure 1: 'Equine Joint Injection and Regional Anaesthesia' 2011 William Moyer, Jim Schumacher, John Schumacher

Glossary

(22) None required

References and relevant links

(23) None required