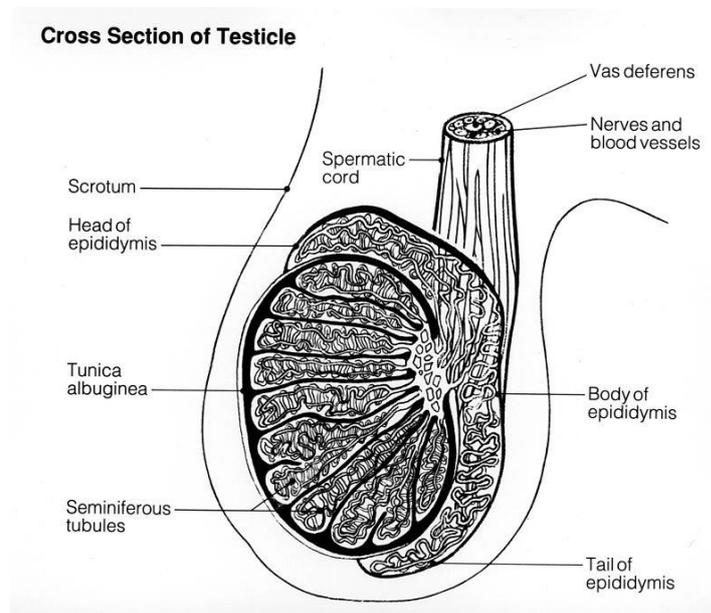


Epididymal Semen Harvesting

Post castration epididymal semen extraction refers to the removal of semen from the epididymis of the testes following castration of the animal. The technique can be used following routine castration, upon death of the animal or where the testes have suffered a severe trauma or testicular torsion. The technique provides a last chance method of salvaging semen when there is no other option available.

The Epididymis

The epididymis is a long highly convoluted tubular duct that lies alongside the testes (figure 1). Consisting of a head, body and tail, the epididymis acts as a storage area and site of final maturation of sperm cells prior to ejaculation.



Sperm cells formed in the testes drain into the head of the epididymis before passing along the epididymal duct into the body and tail of the epididymis. As they do so, they undergo a series of crucial final maturation changes and gain the ability to move and fertilise. At any point, up to 62% of sperm cells in the epididymal duct can be found in the tail of the epididymis, providing a significant reservoir of potentially fertile semen that can be harvested post castration of the stallion.

Shipping of the Testicles for Epididymal Semen Extraction

Following castration, the testicles should be transported to the place of semen harvest as rapidly as possible to maximise the chances of successful sperm extraction. Semen can be extracted up to 24hrs after castration of the stallion however success rates can be considerably lower. Same day processing, ideally within a couple of hours of their removal, is therefore the preferable situation.

Once the testicles have been removed, the ductus deferens should be tied off/ clamped as high up as possible to preserve as much of the ductus deferens as possible (see figure 2).



Figure 2: Correctly tied off ductus deferens

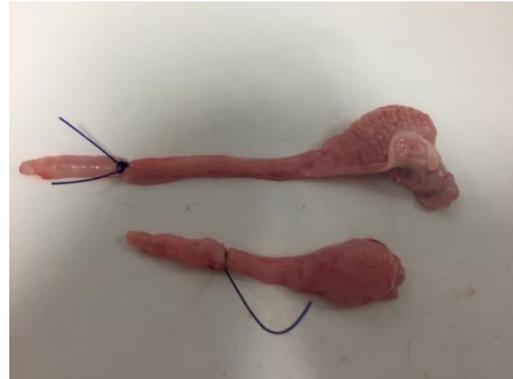


Figure 3: Incorrectly tied off ductus deferens

The testicles should then be rinsed in saline solution to wash off any blood and debris before being placed in a sandwich bag. The bag should then be wrapped in bubble wrap or newspaper. To aid in semen preservation, the testicles need to be cooled to 4 degrees Celsius. They should therefore be placed in a polystyrene box with ice packs. It is vital the testicles are not allowed to freeze; the aim is for gradual cooling. Bubble wrap/ newspaper must be placed between the ice packs and testicles which should be wrapped themselves as shown in figure 4. The box should then be secured and transported to the semen collection center as soon as possible.



Figure 4: Correctly wrapped & packaged testicles

Health Testing

Blood tests for equine infectious anaemia (EIA) and equine viral arteritis (EVA) and swabs from the penis for contagious equine metritis (CEM) and Klebsiella and Pseudomonas testing must be taken in accordance with the semen collection centre regulations (please see attached 'Post Castration Health Certificate'). In cases of planned castration and euthanasia, these samples should be taken in advance of testicle removal and the results sent to the semen collection centre in preparation for the procedure. In unplanned situations, samples should be taken at the point of castration. Any semen harvested will be held in quarantine at the semen collection centre until the results are received. Semen from horses testing positive for EIA, EVA, CEM, Klebsiella capsule types 1,2 & 5 will need to be destroyed in accordance with DEFRA requirements. Semen from pseudomonas positive horses will be tested directly to determine if the bacteria is present in the semen itself; positive cases will again need to be destroyed in accordance with centre regulations.

Extraction of Semen from The Epididymis

Upon arrival to the semen collection centre, the testicles are washed and the epididymis and adjoining vas deferens are removed and washed again (see figures below).



Figure 5: Washing of the testes



Figure 6: Removal of the epididymis



Figure 7: Removal of the epididymis and vas deferens

An aspiration needle is then used to cannulate the vas deferens (see figure below). A syringe is then fitted to the end of the needle and filled with semen extender before an incision is made at the junction between the body and tail of the epididymis to allow sperm cells to exit as the semen extender is flushed through the epididymis. The procedure is repeated for both testes and the extracted semen is pooled together.

The semen is then processed and frozen as per ejaculated semen.



Figure 8: Cannulation of the vas deferens



Figure 9: Flushing of the epididymis

Doses & Semen Quality

The amount of semen harvested is highly variable between stallions and dependent upon numerous factors including age, testicular size and condition and ejaculation frequency prior to semen extraction. On average, the total dose number can range from 10-60 doses.

Semen quality is usually good for reproductively normal stallions but is dependent upon the stallion's inherent semen quality prior to the procedure. Stallion related factors such as age, health status and reproductive history and extrinsic factors such as time from castration to semen extraction and temperature the testes were maintained at post castration are highly influential to the semen quality produced.

Fertility rates can be lower with epididymal semen versus ejaculated semen due to lack of exposure of the semen to components of the ejaculate that continue to mature the semen in preparation for fertilisation of the egg cell. The addition of an artificial seminal plasma replacer to the epididymal extracted semen helps to mitigate the effects of this and should be added prior to freezing of the semen.

Pricing

Post Castration Epididymal Semen Extraction = £900 +VAT

Freezing doses = £23.50 +VAT per dose frozen

Epididymal Versus Ejaculated Semen – Preferable Alternative?

Whilst epididymal semen extraction is a highly beneficial method of extracting semen in non-planned, emergency situations, it is not recommended as an alternative to ejaculated semen freezing. Due to the factors that can affect the semen quality, it should be viewed as a last chance method of semen harvesting. If situations permit for collection and freezing of ejaculated semen prior to castration of the stallion, this should always be recommended as the primary course of action. In this way, semen quality can be assessed prior to testes removal and actions can be taken to improve the semen quality if needed e.g. nutritional supplementation of the stallion, extender testing of the semen, sexual rest of the stallion to permit increased maturation of the testes or increased collection frequency for those with sexual inactivity related issues.

Summary

Epididymal semen extraction is undoubtedly a pioneering method of semen collection that permits semen extraction where other options don't allow. At Stallion AI Services, we have carried out over 50 extractions, banking and saving the genetics and breeding potential of stallions that otherwise would have been lost.

The service is available 7 days a week with samples accepted from 7am-3pm. For more information or to request use of this service, please don't hesitate to contact us on 01948 666 295 or email us at lab@stallionai.com .