

Long term ear and saphenous cannulation – to perform blood sampling over longer periods using the Seldinger technique

GLYNN BAILEY, TIM SIMPSON and JOE SHARPE

Labcorp Early Development Laboratories Limited

Correspondence: glynn.bailey@labcorp.com

Introduction

The standard practice to collect a blood sample from a Minipig is to invert the animal onto its back and into a cradle. The blood sample is then collected via jugular venepuncture. This technique can cause large amounts of stress for the animal and requires the animal to remain in this position until cessation of blood flow is achieved.

By implanting a long-term cannula into a large blood vessel via the auricular vein or the saphenous vein, the amount of handling, needle sticks and stress to the animals is reduced.

Procedure

- A JELCO® is inserted into the desired sample site to allow access into the vein. (Figure 1)
- A guide wire is then inserted into the vein through the JELCO®, in the case of the auricular vein, the guide wire is manoeuvred into the jugular vein.



Figure 1. JELCO® insertion.

- The cannula (10-20cm) is then threaded over the guidewire.
- Once the guide wire is in position, the guide wire is then removed and the cannula is capped. (Figure 2)
- The cannula is sutured to the skin and wrapped with tape to provide secure fitting.
- The animal is only under anaesthesia for approximately 45 minutes for 2 cannulas to be implanted.

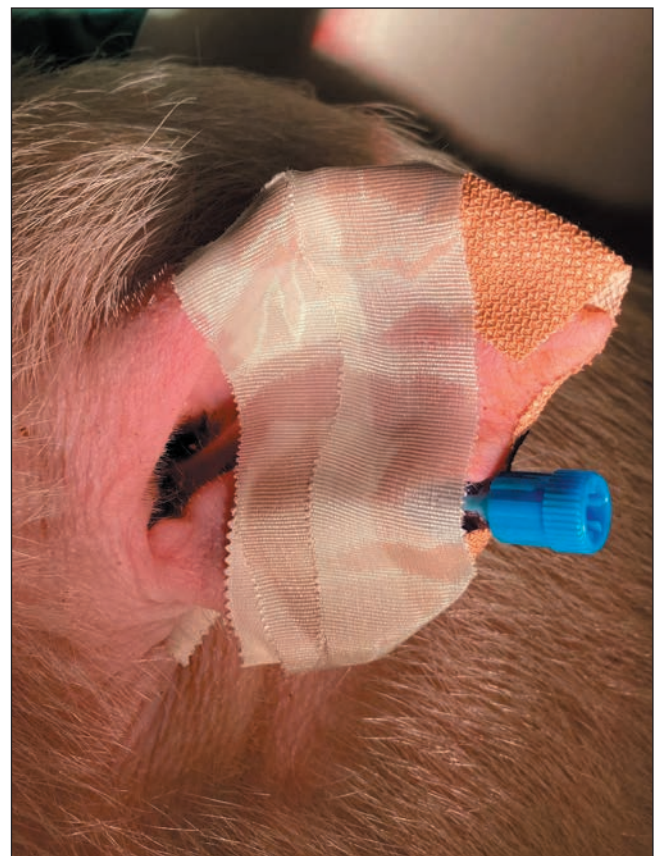


Figure 2. Capped cannula.

- During the sampling procedure, the animals can be offered treats to encourage the desired behaviour.
- Prior to blood sampling, a syringe is used to withdraw and discard the contents of the cannula.
- A fresh blood sample is then taken from the animal.
- The cannula is then locked with a solution of sodium heparin solution (5000ui/mL) and the cannula cap is replaced.

Results

- Long Term Cannulas have so far been implanted into Minipigs ranging from 10-50kg in weight.
- The cannulas have been found to remain patent for up to 3 weeks.
- Saphenous cannulation was found to be easier for implantation. However it does not provide the same access advantage of the ear vein cannula. (Figure 3)



Figure 3. Saphenous vein.

- Multiple samples can be taken over a long period of time with minimal impact to Animal Welfare.
- With a flow rate of 38mL/minute it allows large samples to be taken from the cannulas.
- The improvement to Animal Welfare leads to better relationships between technicians and animals.

Animal Welfare improvement

With a saphenous vein cannula implanted the need to handle the animals is greatly reduced.

With a marginal ear vein cannula implanted, the need to handle the animal is completely removed.

The time spent disturbing the animals is significantly reduced.

No longer inverting the animals allows that a greater bond of trust can be built between the animals and technicians.

Needle stick injuries are greatly reduced.

Very little, to no discomfort, is seen in the animals after the surgery is completed.