Forsøksdyrveterinærtjeneste

Laboratory Animal Veterinary Services

Vivarium

Universitetet i Bergen

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NORGE

Blood collection using the saphenous vein: An alternative to retro-orbital collection

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This technique was introduced by the Laboratory Animal Centre of the Norwegian Institute of Public Health by Annelise Hem and Per Solberg.
It was further developed by members of the Norwegian Resource Group for Laboratory Animal Science, which included Adrian Smith, Laboratory Animal Unit, Norwegian School of Veterinary Science and Richard T. Fosse, University of Bergen.

This technique has been published in *Laboratory Animals*:

Hem A, Smith AJ & Solberg P (1998): Saphenous vein puncture for blood sampling of the mouse, rat, hamster, gerbil, guineapig, ferret and mink. Laboratory Animals 32: 364-368

The article is available in pdf-format at the journal's website and can be accessed by clicking here. You will need Acrobat Reader to open this file.

The method as shown here is performed at the University of Bergen and shows modifications developed at the Vivarium of the University of Bergen. The web images have been prepared with the assistance of the Department Of Comparative Medicine, Medical University of South Carolina. All use must refer to the authorship of the method.

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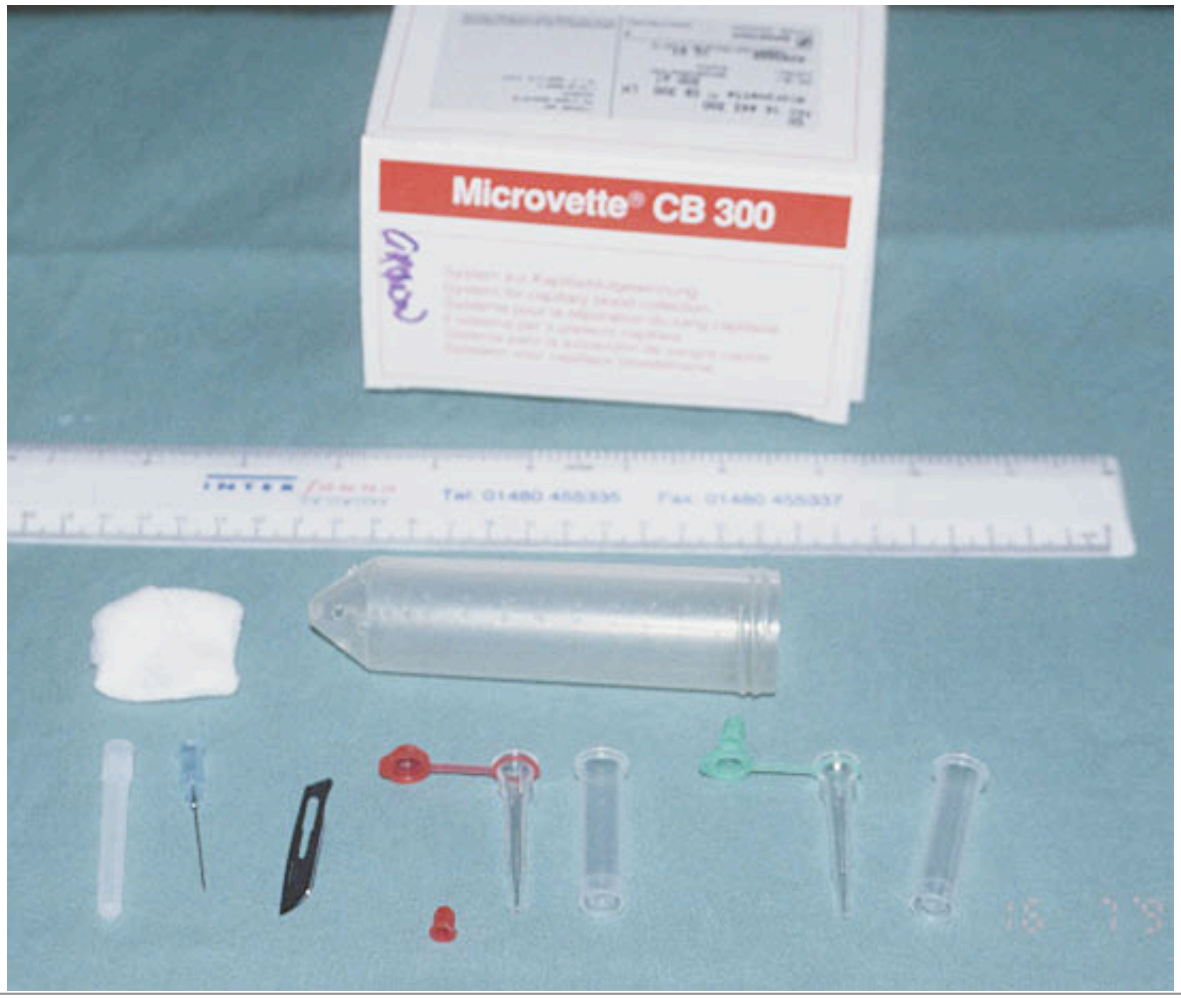
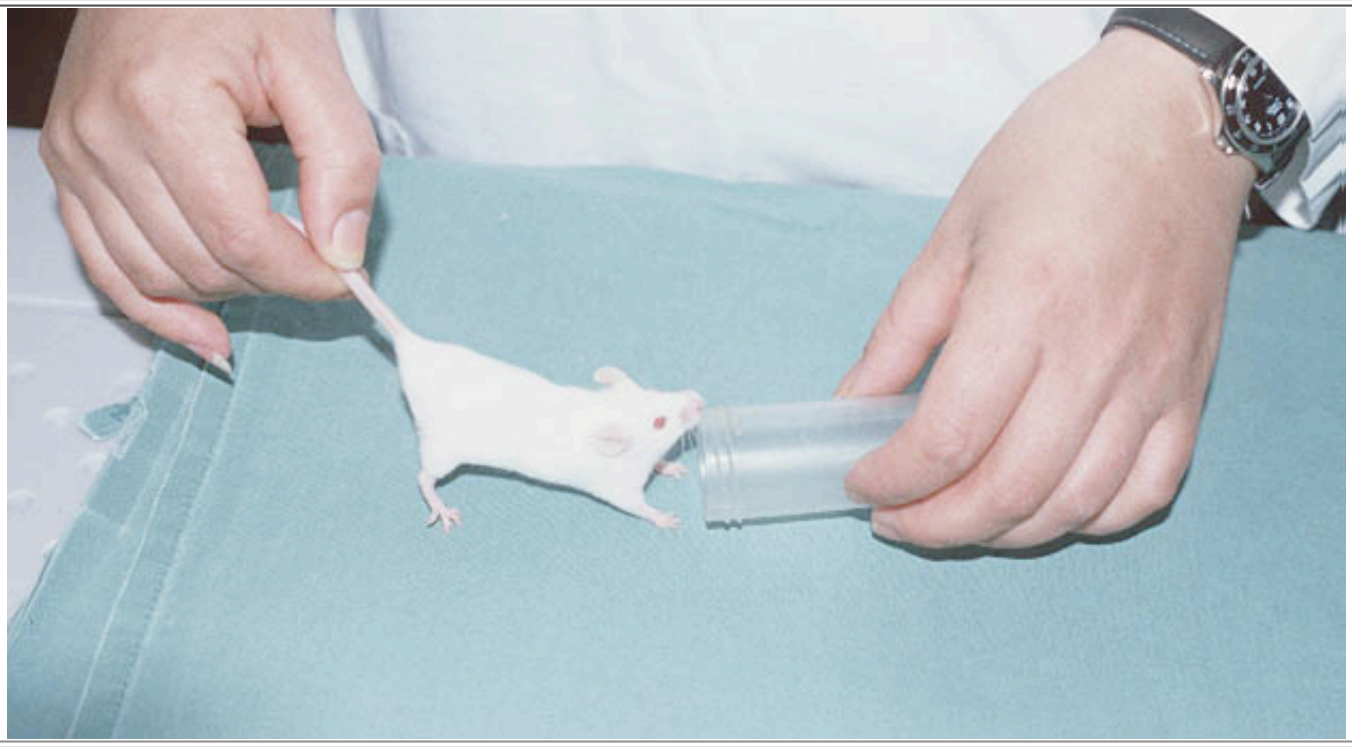
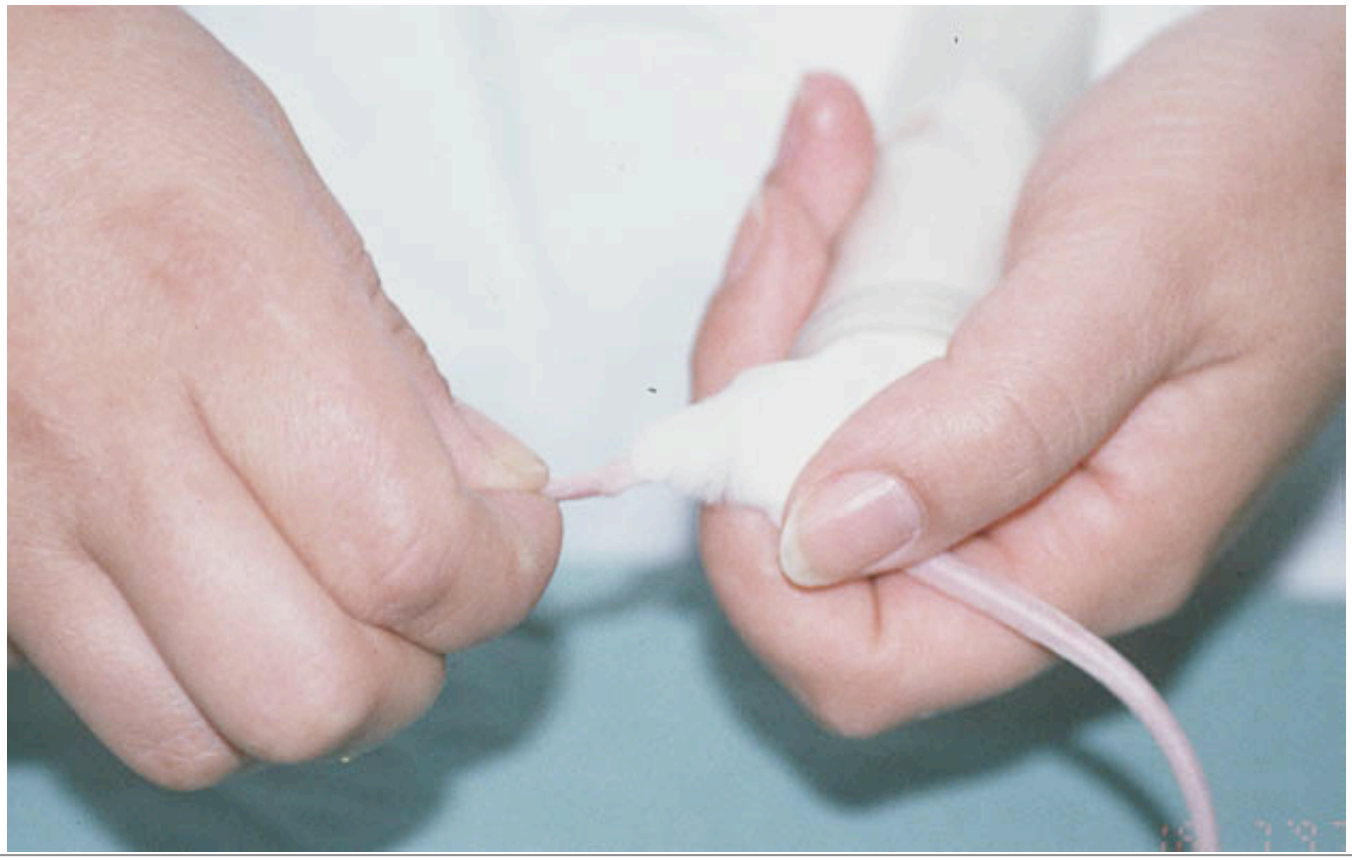


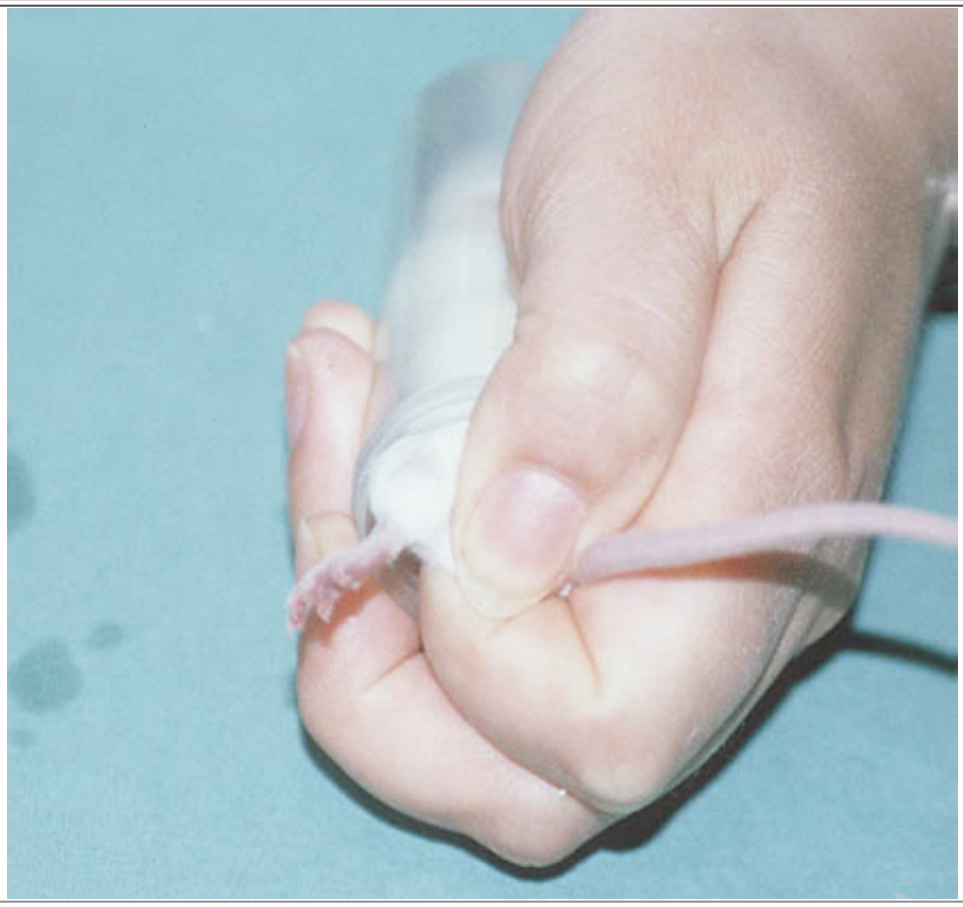
Equipment needed for collection. Note the special collection tube - Microvette, produced by Sarstedt, D-51588 Numbrecht, Germany.- Green tubes are heparinised, red are untreated for serum collection. The tubes collect a maximum of about 300 microliters. Note the 50ml syringe tube used for restraint. Holes are drilled in the end to allow air to get into the tube.



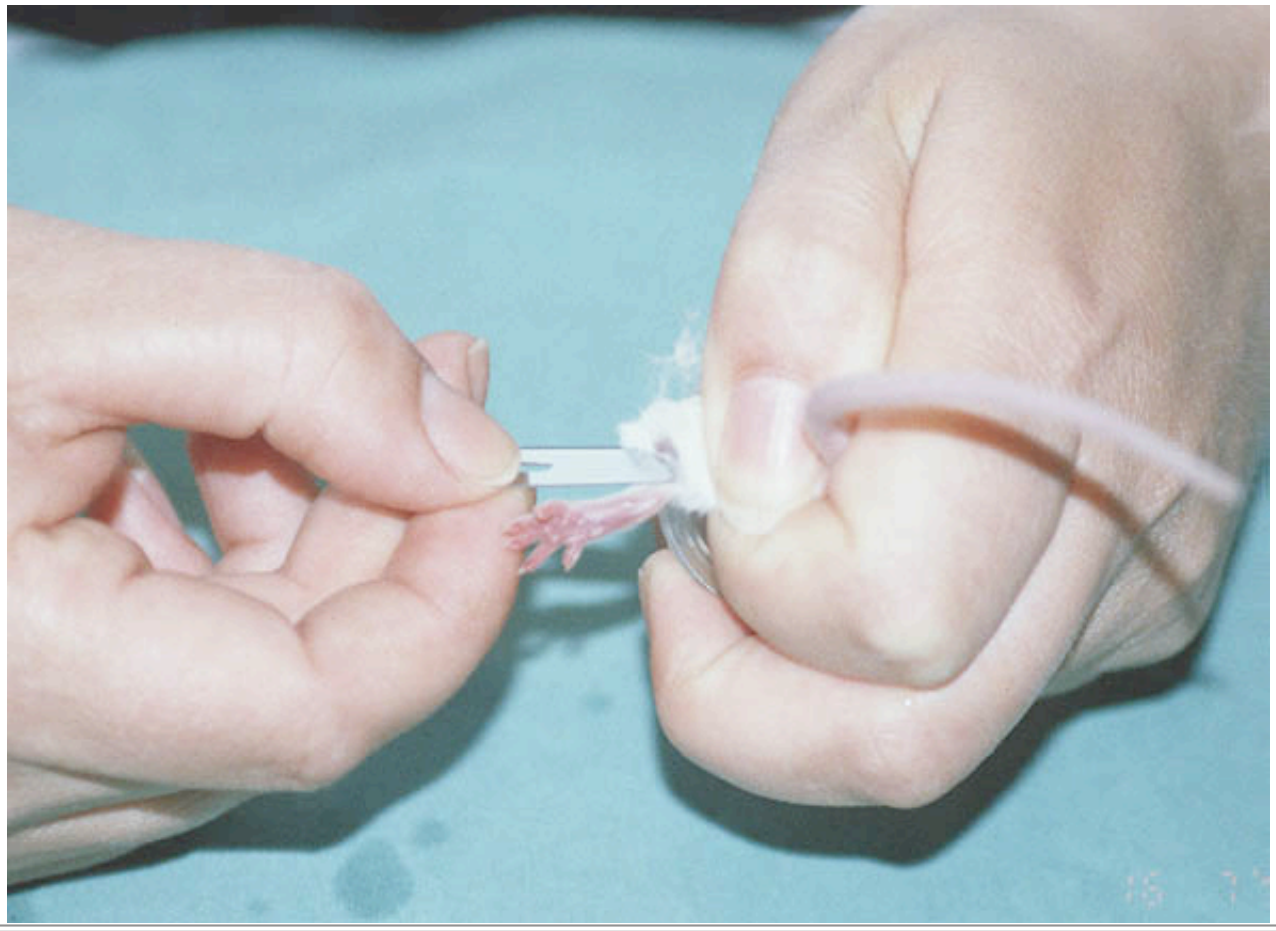
The animal is placed in the tube. It is not anaesthetised or tranquillised.



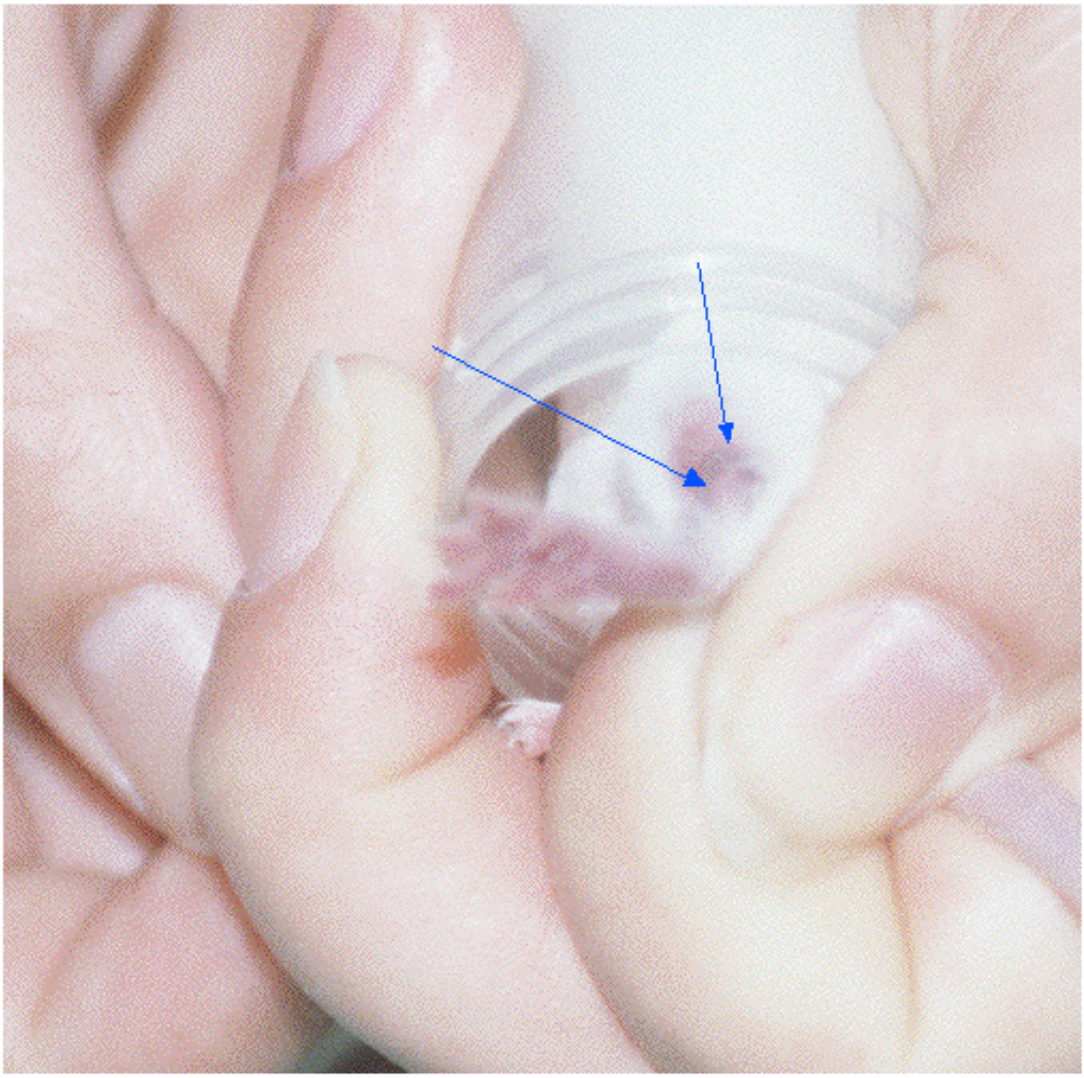
The hind leg is extended and fixed by holding the fold of skin between the tail and thigh.



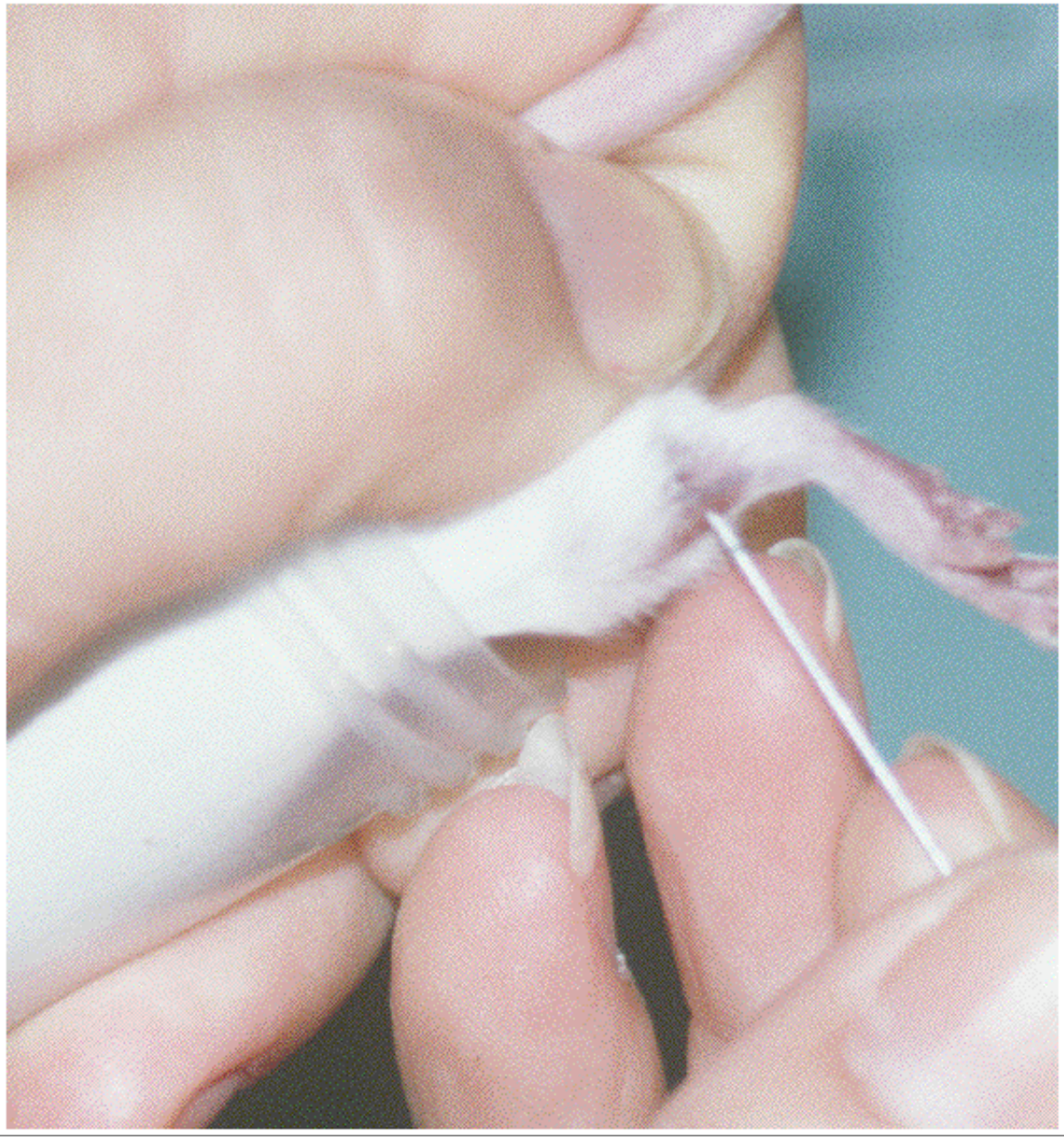
The leg is now fixed and is ready to be shaved.



The hair is shaved using a small scalpel

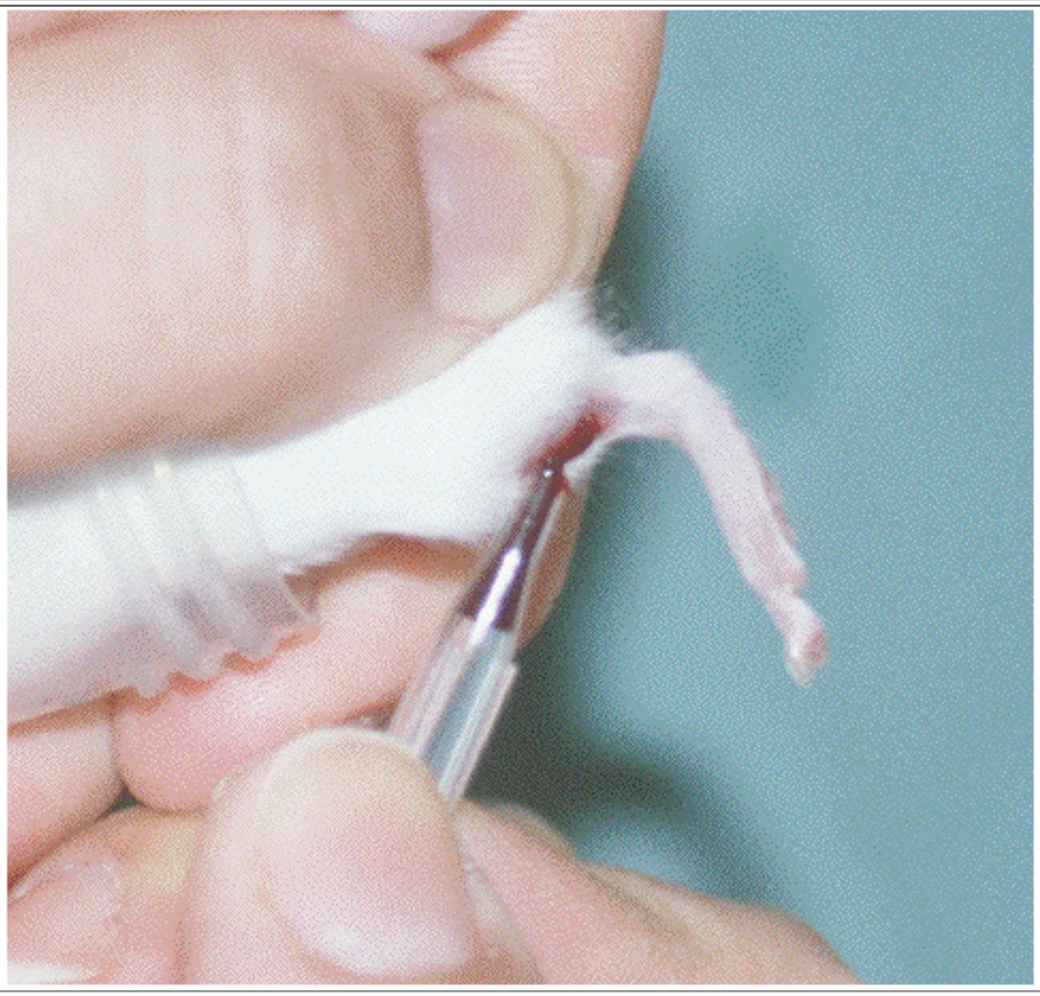


The saphenous vein is seen on the surface of the thigh and is marked by two blue arrows. Note that the leg is fixed by the skin between the caudal side of the thigh and the tail.



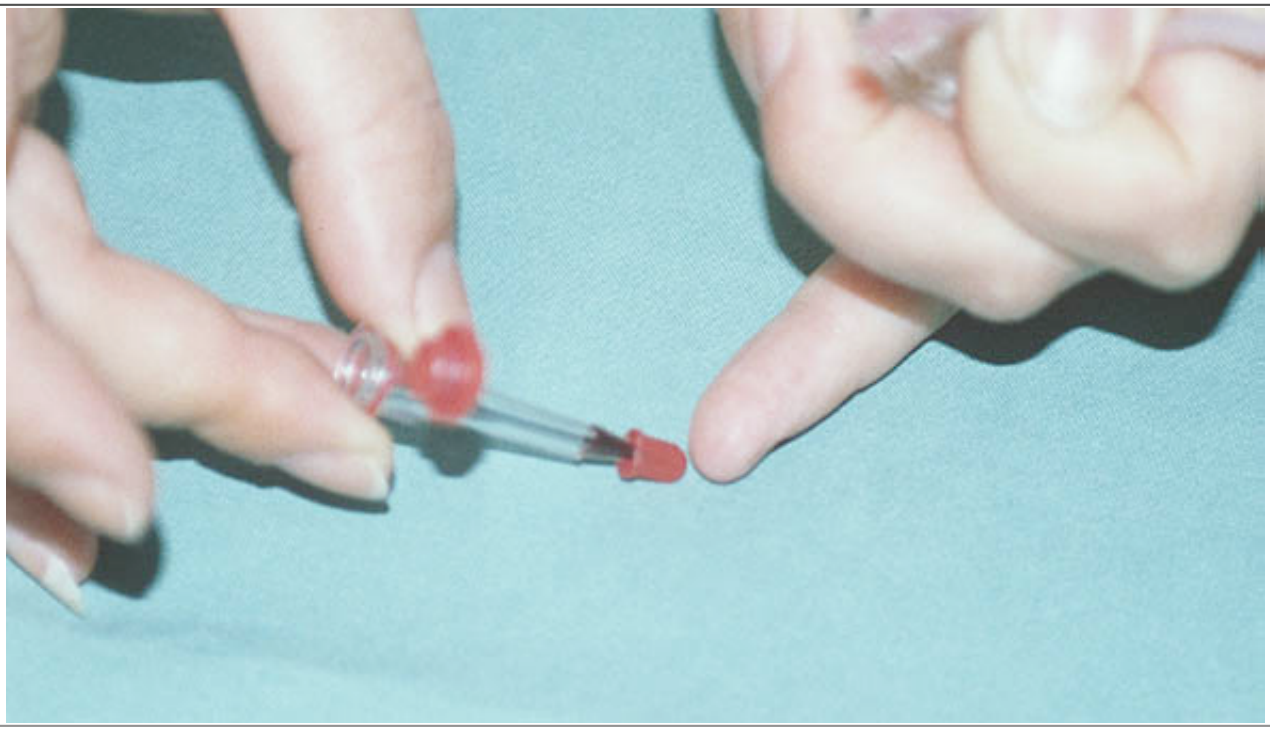
A 23 gauge (blue hub) needle is used to puncture the vein. It is not necessary to lance the vein in our experience.

A drop of blood will appear and is collected into the Microvette. Approx. 100 microliters (depending on the size of mouse) can be collected.



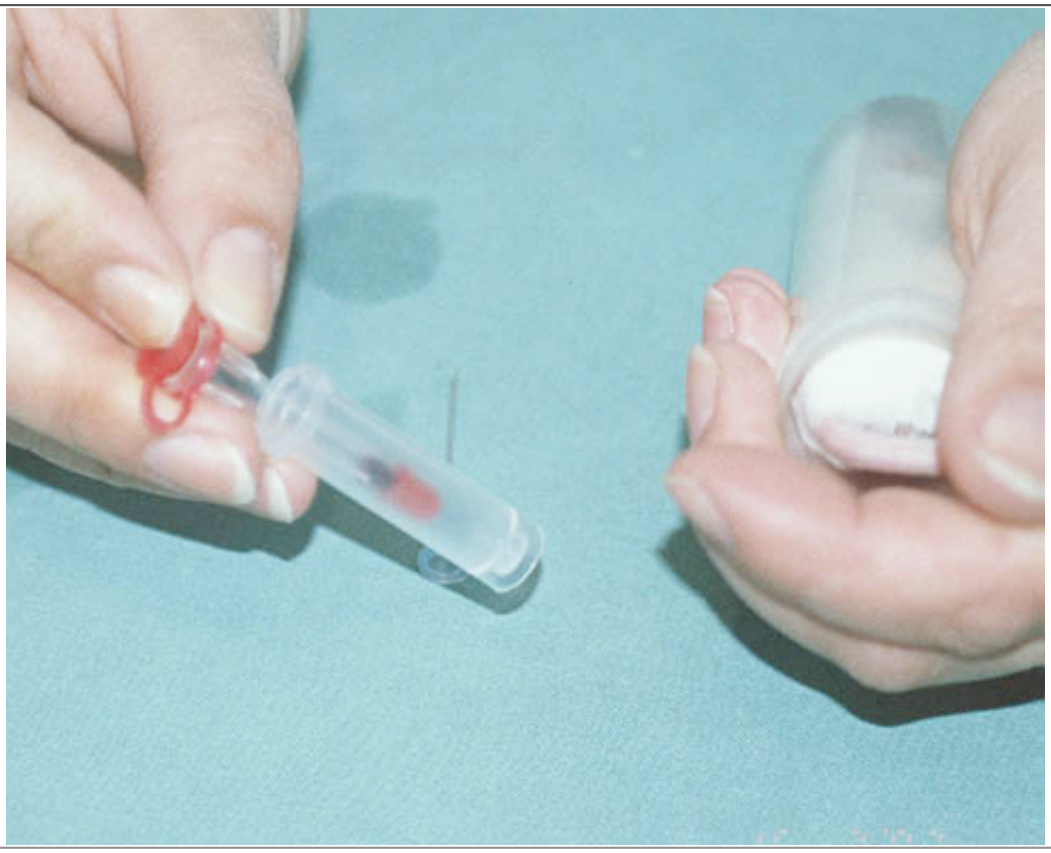
Blood flows freely into the tip of the Microvette. The flow of blood can be optimised by coating the surface of the skin with silicone grease. This reduces clotting and coagulation. This method is used of multiple samples are taken. Multiple samples are taken by removing the scab that forms and collecting from the same site - this can be done several times in the course of a day

The Microvette is removed and the foot flexed to reduce the flow of blood back to the puncture site.



The Microvette is sealed with a plastic cap. Note that the mouse is still in the restraining tube.

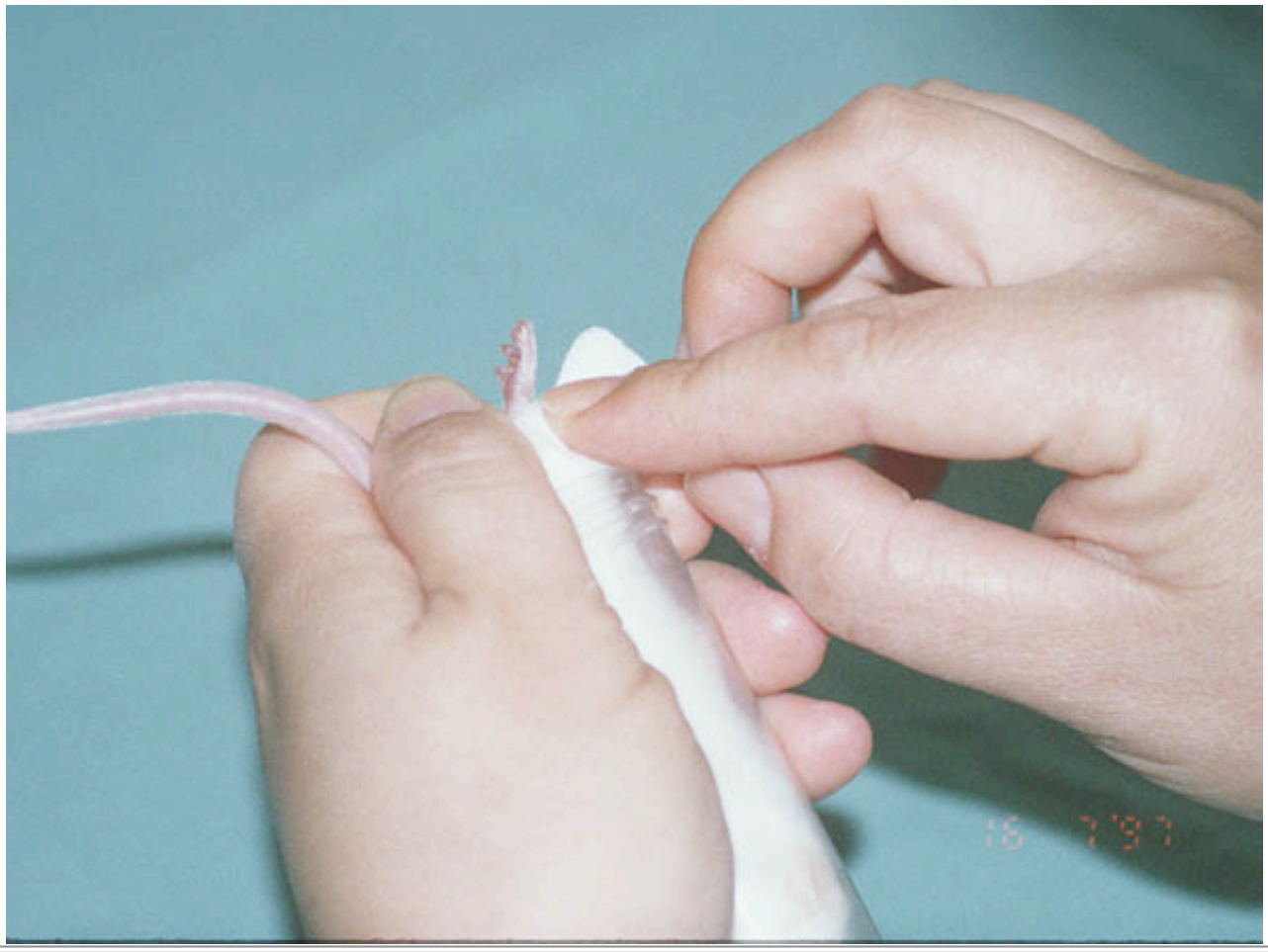
The open end of the Microvette is closed



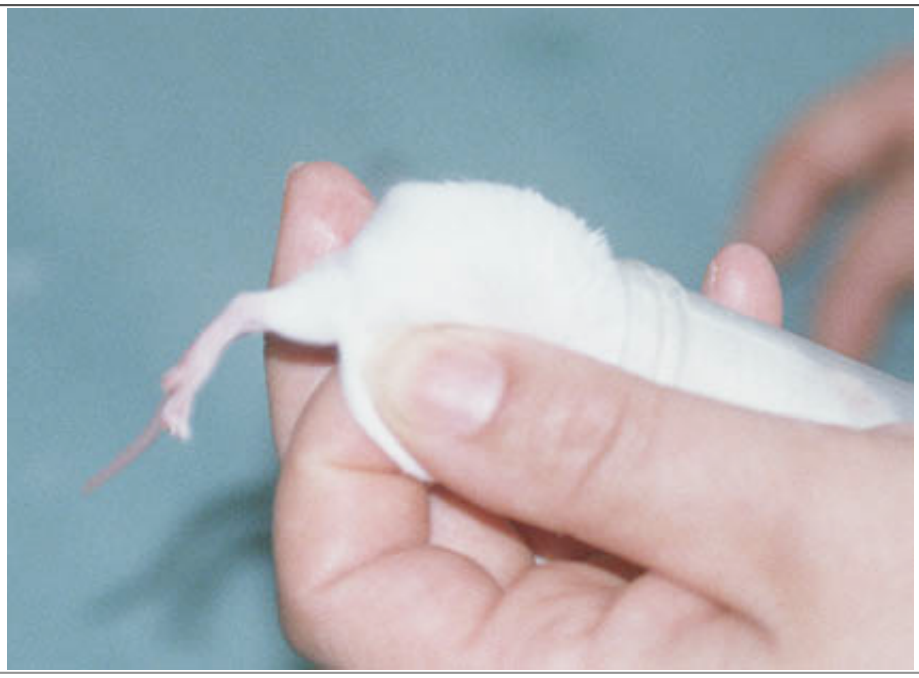
The blood collection tube is inserted into the outer case. The assembly is designed to be centrifuged in an Eppendorf tube rotor head.

The tube assembly is now ready for further processing - centrifuge.

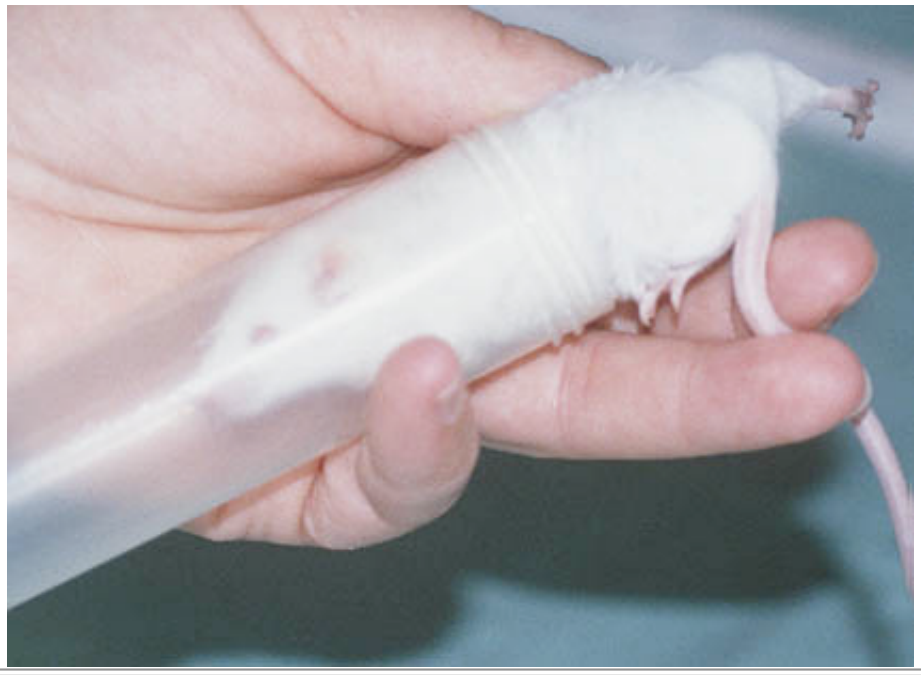
A cotton wool or gauze swab is applied to the puncture site and bleeding stopped. A small scab will soon form. This is scraped off for multiple collections from the same site. The site can be used several times in the course of a single day.



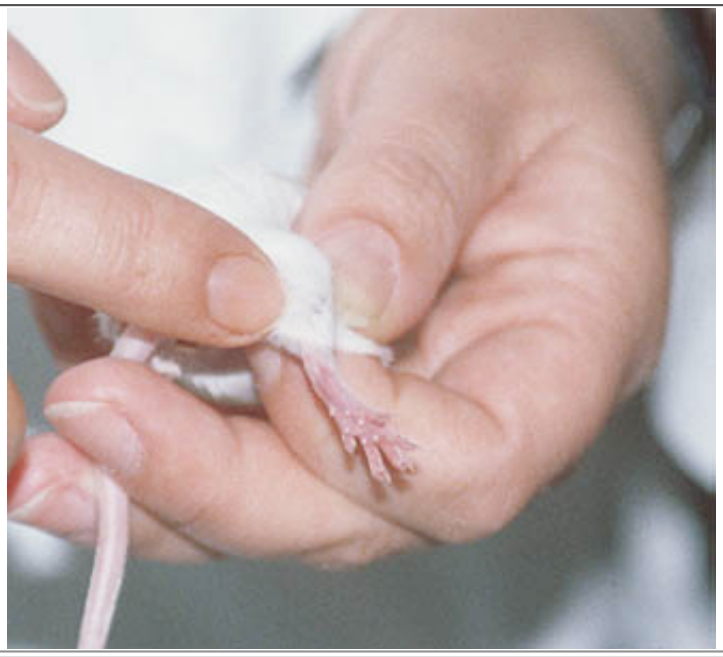
The compress is held in place until bleeding has stopped and the mouse returned to its cage



Blood can be collected from either leg. If the opposite (in this case the right leg) is used the fold of skin between the abdomen and cranial thigh surface is used to fix the leg.



The tail is fixed as before and the lateral surface of the leg can be shaved.



The leg is in the correct position and is ready for further preparation

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