

Brief Communication

METHOD FOR THE REPLACEMENT OF A PERMANENTLY IMPLANTED ARTERIAL CATHETER WITHOUT SURGERY

The insertion and exchange of an arterial catheter were carried out in 4 sheep ranging from 1 to 5 years. The animals were used in studies in respiratory physiology for which measurement of arterial pO_2 , pCO_2 , and pH was needed.

The experimental design, with the animal restrained in a box, excluded blood sampling from an exteriorized carotid (*Bone et al.* 1962, *Mc Clymont* 1950). Only arteries on the head outside the box could be used.

Several makes and types of catheter tubing were tried. Portex P.V.C., FG 4 luer, 209/100/040/060 — umbilical cannula with side-openings proved to be best, having the correct elasticity, softness, flexibility and length.

During the operation the animal was immobilized in a specially constructed chair (Fig. 1). In this position the animal appeared to be relatively comfortable with minimal tendency to struggle. Incidentally this position is also in common use when shearing the sheep.

The part of the head where the incision was to be made was shaved. Stetsolid (Dumex) was used as a sedative (1 mg Stetsolid/kg body weight i.m.), 1—2 hrs. before the operation.

One % Xylocain solution was used as a local anesthetic. Arteria facialis was located by palpation before incision.

After exposure of the artery the catheter was inserted and fixed with 4—5 ligatures (Fig. 2). For later exchange of the catheter it was found most favorable to use 3—4 ligatures of catgut (No. 2) around the artery. This was, for safety reasons, supplemented with 1 ligature of linnen thread. All ligatures were tightened carefully not to cause stenosis. The catheter was filled with Heparin 5000 i.u. per ml and closed with a 2-way stop-cock. The stop-cock was fixed in its locked position by adhesive tape. The catheter was then placed between the eye and the ear with the stop-cock on the top of the head (Fig. 2).

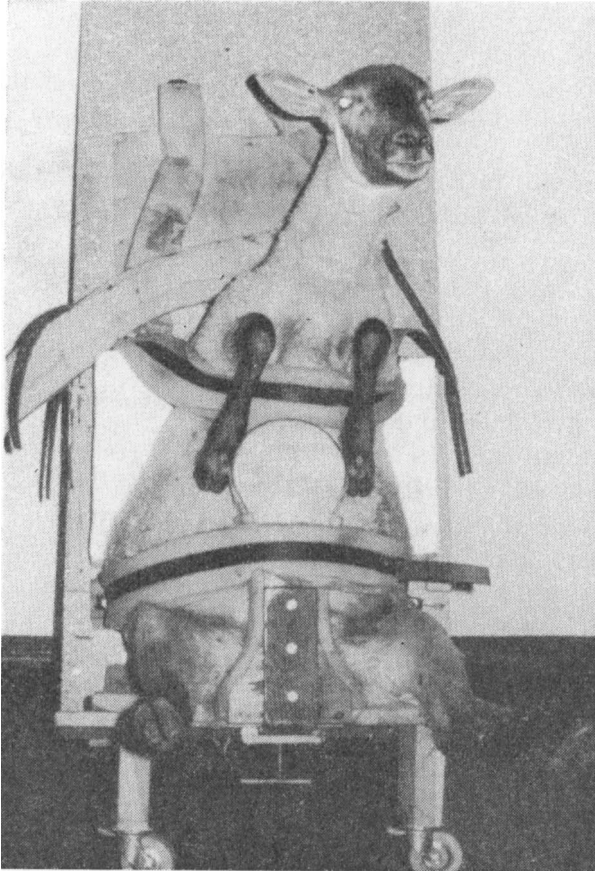


Figure 1. Sheep in the immobilization chair.

An elasticband and adhesive tape were applied as a final covering. After 1—2 weeks clogging of the catheter usually occurred, in spite of daily Heparin infusion.

About 3 weeks after the operation the incision was usually healed, the catgut ligatures resorbed, and a smooth fistula formed around the catheter. The catheter could be removed and a new one easily replaced without surgery. No bleeding occurred after changing.

The described method makes it possible to replace an obliterated catheter in less than $\frac{1}{2}$ min. No post-operative difficulty with infection was encountered. The area around the fistula was, however, daily cleaned with 5 % iodine in alcohol as an extra pre-

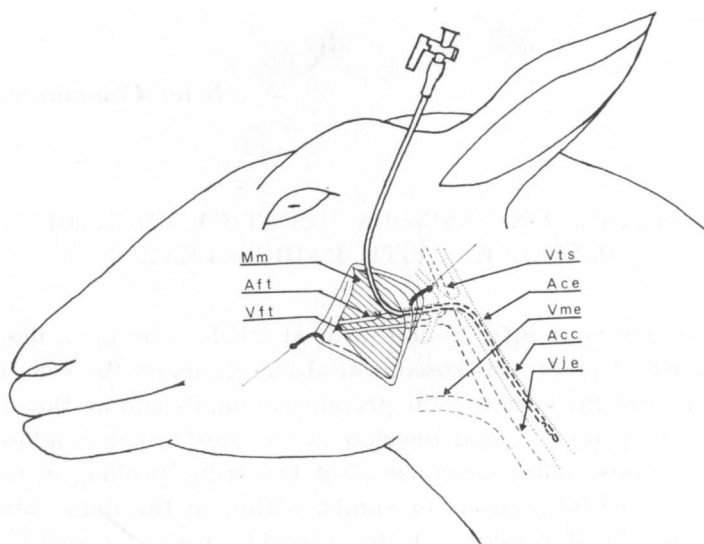


Figure 2.

Mm = Musculus masseter	Ace = Arteria carotis externa
Aft = Arteria facialis transversa	Vme = Vena maxillaris externa
Vft = Vena facialis transversa	Acc = Arteria carotis communis
Vts = Vena temporalis superficialis	Vje = Vena jugularis externa

caution. The described method simplifies the use and reduces the complications connected with a permanently inserted arterial catheter. The strain on the animal is also much less as repeated surgery is not needed.

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