

Subcutaneous Injections: A New Technique

by Dr. Ian Davison

As a surgeon and alpaca breeder, I have occasionally been called upon to exercise the skills and understanding gained in one field in the conduct of the other. To date, I have had no call to restrain patients with menacles of the type used for shearing; nor have I yet been spat upon by even the most recalcitrant of surgical subjects.

But I have had the unhappy experience of skinning several alpacas whose demise has been met through a spectrum of misadventures ranging from stillbirth to old age, and snake bite to sarcocystosis. My recurring impression, each time I repeat this melancholic ritual, is how extremely thin is the subcutaneous layer beneath the skin. Unlike many animals most especially humans, the layer of fat beneath the alpacas skin is either extremely thin or nonexistent for much of the body, and the skin rests loosely but directly upon the muscle or bone that constitutes the frame of the alpaca.

It raises a question as to why this should be so, especially in animals that have evolved mechanisms which make them peculiarly well adapted to the harsh high altitude climate of the South American Andes. Perhaps the external coat of fleece provides such efficient insulation against thermal extremes that it no longer requires the alpaca equivalent of the humans "undercoat" of fatty tissue.

But that is not the point of this article. I have long struggled to find a way of efficiently delivering subcutaneous vaccinations to alpacas without injecting into the muscle, a mistake which is likely to result in the formation of painful abscesses. The difficulty of keeping the tip of the needle within the very thin subcutaneous layer is compounded by the conspiracy of fleece which obstructs vision and access, and an animal that is likely to respond suddenly and violently to the unexpected displeasure of a needle.

I have employed a variety of strategies, which have included at times injecting through glabrous skin of the perineum (under the tail), where vision is not obscured by the shroud of fiber, and bending the needle at the hub so that it can be delivered with a sliding action through the skin rather than a puncturing one.

But all without uniform success. Until that is, I hit on the idea of using "short" needles. I reasoned that, if the skin was (say) 2mm thick, then a needle that was only 3 or 4mm long would penetrate below the skin surface if introduced perpendicularly, but would be most

unlikely to penetrate the deeper muscle layer (or at the very worst, do so in such a superficial way that a muscle abscess would be a most unlikely result). But needles do not come that short. The job was therefore to bring the hub closer to the needle tip, so that its effective length was shorter.

This can be very simply achieved by cutting the very tip off the needle cover, so that the needle protrudes beyond it just a millimetre or two. The injection is then administered, with the cover still on the needle, by a stabbing motion through the fleece at virtually any point on the body of the alpaca. The needle tip is prevented from penetrating any further than is allowed by the needle cover, a distance which can be predetermined by the person administering the injection.

Using this technique, I find I am now able to inject subcutaneously with both certainty and efficiency, and have a cavalier disregard for where on the torso of the animal I direct my aim. In fact, using this technique with a spring loaded injection gun and an alpaca race, I expect to be able to inject the entire herd in a time that would have been previously unimaginable!

The same technique could just as easily apply to intra muscular injections of antibiotics or vitamins, where people are unused to administering injection, and concerned that they might inadvertently inject too deeply into bone or a body cavity. In these circumstances, the needle cover would be cut shorter to allow for more of the shaft of the needle to protrude beyond it, but virtually eliminating the worry of injecting too deeply.

Happy Injecting!

