

# It's all in your head: Goat disbudding for newbies

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Horns are one of the few defense mechanisms that goats are equipped with and they can be useful for animal restraint. However, keeping livestock with horns can present safety concerns to producers, animals and infrastructure. Horns can become caught in fencing resulting in animal distress. They can also be used to cause harm to other livestock and humans or may be used to damage feeders, buildings or fences. Some producers may wish to mitigate these challenges by removing the horns or preventing them from growing at all. Veterinarians play an integral role in ensuring that this procedure is accomplished as efficiently as possible and that appropriate analgesia is utilized. Disbudding and dehorning of sheep is not recommended at any age unless the immediate health and welfare of the animal is at stake (i.e. horn trauma).

## What time is the right time?

Disbudding is the process of destroying horn-producing cells of young goats before they form a connection with the skull. Standard breed goats should be disbudded between 5-7 days of age and miniature breeds should be disbudded no later than 14 days of age. The American Association of Small Ruminant Practitioners recommends utilizing cautery disbudding techniques over surgery, caustic paste, clove oil, or band application due to prolonged discomfort created by these methods.<sup>1</sup> After 14 days, horn buds begin to fuse to the frontal sinus of the skull and disbudding is no longer reliably effective for complete prevention of horn growth. Animals are more likely to develop “scurs” or partial horns due to incomplete removal of horn bud tissue. Early disbudding is also preferred as it is less painful and traumatic when the bud has not yet fused to the skull. Discussing and scheduling this procedure with clients at the time of pregnancy diagnosis is a good way to ensure that clients do not miss this short window. Once horns are visible through the hair, it is too late for disbudding to be effective.

## Anesthesia, analgesia and procedure

All methods of disbudding are painful; the only way to get horn-free goats without discomfort is through genetic selection. Horned bloodlines may carry other more desirable genetic traits which makes utilizing horned animals in a breeding program necessary. Analgesia and anesthesia can be used very effectively to mitigate the pain associated with this procedure. An injectable non-steroidal antiinflammatory drug (NSAID) – such as flunixin meglumine (1.1 mg/kg IV), or meloxicam (0.5 mg/kg SC) – should be administered before the procedure. Alternatively, oral meloxicam (0.5 mg/kg PO) can also be administered by the producer instead of injectable NSAIDs and should be given at least 60 minutes prior to the appointment. Avoid feeding within an hour of surgery if medically appropriate for the animal's size. Smaller animals should be fasted for 30 minutes before the appointment. Start your cautery iron at least 5 minutes prior to the procedure. If working in cold weather, allow more time for the iron to heat up. Try to place your iron in a sheltered place away from flammable material such as hay or paper. I used a butane disbudding iron for all my small ruminant

disbuddings with no issues. This was more convenient as not all the farms I worked for had an electricity source near the animal housing area. Some practitioners prefer electric irons as they believe gas-powered irons get too hot and increase the risk of cerebral heat trauma. Finding which equipment is most efficient and safe in your hands is imperative and will not be the same for every practitioner.

As veterinarians, we have the privilege of using anesthetic agents to make our patients more compliant. These drugs can also contribute to a multimodal analgesia protocol. Use this privilege and sedate your patients before disbudding! There are 2 common sedation protocols in small ruminants:

- Xylazine 0.1 mg/kg IM
- Midazolam (0.2-0.3 mg/kg) + Ketamine (6 mg/kg) IV

While local anesthesia is recommended when disbudding cattle, injectable and topical local anesthetics are not effective for disbudding pain management in goats.<sup>2</sup> However, both xylazine and ketamine do carry analgesic properties as well as sedation. These are short-acting protocols which allow for 15-20 minutes of heavy sedation. Xylazine can be reversed with your  $\alpha_2$ -adrenergic antagonist of choice if preferred. I give sedation before preparing the disbudding site to give the drugs time to take effect. Once drugs have been administered, use clippers to shave the horn buds. Not only does this give time for the sedation to take full effect, it also allows for better visualization of the horn buds and decreases the amount of non-bud tissue that your iron needs to expend heat on. A hot iron is essential for quick and effective disbudding. Figure 1 depicts the “before” and “after” of proper shaving, disbudding and application of topical bandage spray in a goat kid.

Once the patient is appropriately sedated and the head is shaved, they may either be placed in a disbudding box or restrained by an assistant. I always had my assistant wear a heat resistant glove (i.e. oven glove) on the hand that restrained the goat's head to avoid any accidental burns. Ears can also be burned as animals are prone to head shakes during the procedure so advise your assistant to hold the ears against the head during the procedure. When applying the iron, the goal is to create a copper ring 360° around each horn bud that spans the full thickness of the skin. I prefer to completely remove this ring of tissue using the iron but it is also acceptable to leave it in place and advise owners that it should fall off in several days. Apply a liquid bandage spray after the process is complete. Some kids will still shake their head occasionally during the procedure despite sedation but this will be less reaction than if the animal was not sedated. After disbudding is complete, encourage the owner or dam to stimulate the kids vigorously. Feeding is acceptable once kids can walk which should happen within 10 minutes of completing the procedure (if using ketamine + midazolam) or reversing xylazine.

Given that neither meloxicam or flunixin meglumine are labeled for use in goats, a veterinary prescription is required for these medications to be dispensed for producer use for this

**Figure 1:** Before (left) and after (right) disbudding of a Nubian goat kid. The horn buds are impossible to visualize without shaving the head.



purpose. Consult the Food Animal Residue Avoidance Databank for withdrawal recommendations.

Many clients are proficient at disbudding and prefer to perform this procedure themselves. Veterinarians can still be involved in this process by reviewing disbudding protocols and ensuring that appropriate analgesics are utilized.

## A word of caution

As previously mentioned, thermal and bacterial meningoencephalitis is possible due to trauma from disbudding. The best way to prevent these issues is to avoid prolonged contact between the iron and kid's head. My preferred technique is to apply the iron for 3-5 seconds at a time focusing on 1/3 of the circle during each burn and allowing 15-20 seconds between each iron application. Others will simply apply the iron to the entire horn bud once for 10 seconds. In my hands, I did not get an even burn using this method so focusing on certain areas for shorter periods allowed me to be most effective.

## Comments on mature goat dehorning

Dehorning is removal of horn tissue from the skull after the bud has fused to the cranium. The American Association of Small Ruminant Practitioners does not support cosmetic dehorning of goats or sheep.<sup>1</sup> This procedure should only be performed by a veterinarian for health or welfare reasons. General anesthesia and multimodal analgesia is imperative for these cases. Owners must be warned that post-operative care is extensive as dehorning creates a hole in the frontal sinus and the skull often takes several weeks to months to close. Fly control and cleanliness are essential.

## Alternatives to dehorning

In practice, I received dozens of calls from owners who wanted their mature goats dehorned, usually due to behavior issues. Animals that butt or use their horns to injure other animals or humans will continue to show aggressive behaviors whether they have horns or not. If these animals are part of a commercial setting, they should be culled from the herd. If these

animals are pets, behavior modification can be attempted using a deterrent such as a squirt gun. Using super glue to adhere pool noodles or tennis balls with an "X" cut in the bottom to pass the horn through is also an alternative for horn removal which can minimize trauma due to bad behavior and can also help to prevent horns getting stuck in infrastructure (Figure 2).

## Closing thoughts

Horns are a valuable defense mechanism for goats and are also useful for animal restraint. However, some producers may prefer that their goats not have horns for safety or cosmetic reasons. Caustery disbudding is the preferred method of horn bud removal and should be performed using multimodal analgesia and sedation in the hands of a veterinarian. If producers choose to perform their own disbuddings, veterinarians should work with them to ensure adequate pain control is utilized. As veterinarians, we should discuss disbudding at pregnancy diagnosis and schedule the appointment for this procedure at this time if possible. Disbudding should be performed within the first 7-14 days of life for standard and miniature breeds respectively. Dehorning should only be performed by a veterinarian for health and welfare reasons under general anesthesia.

## References

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**Figure 2:** Alternatives to dehorning adult goats using pool noodles (left) and tennis balls (right).<sup>3,4</sup>

