Technical Note

Cosmetic dehorning of adult goats

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(Accepted 19 May 1990)

ABSTRACT


A surgical procedure for dehorning adult goats involves undermining the skin around the horn and closure following removal of the horn. The procedure reduces aftercare for surgery by reducing healing time in comparison to conventional dehorning procedures in adult goats as well as reducing the chance of sinusitis.

INTRODUCTION

Dehorning is important in goat veterinary practice. Horned animals are not desired in dairy goat herds in some countries. Fairs and goat shows in the USA bar animals with horns. Adult goats with horns are sometimes dangerous to other goats and young human caretakers. Many goats are kept and cared for by children. Bucks can and will use their horns without provocation inflicting wounds on people (Bailey, 1984; Guss, 1977).

Dehorning of adult goats is a difficult procedure. The removal of the triangular horns in adults necessitates opening a large area of the frontal sinuses (Guss, 1977). Conventional dehorning procedures described in the literature predispose goats to sinusitis. Aftercare from the surgery can extend for months, even up to a year. The skin is slow to grow back over the large area. In bucks, the opening left by dehorning can take six months or more to close (Bailey, 1984). This paper describes an approach to the removal of horns in adult goats which heals fast, and reduces the chance of sinusitis and prolonged aftercare.
MATERIALS AND METHODS

Anatomy
There is a marked difference in the anatomy and shape of the head of goats as compared to cattle. In goats, the horns are closer together and arise directly behind the eye orbits in a parietal position unlike the temporal position in cattle. The horns of goats generally have an oval cross section and grow caudally over the skull. The frontal sinus excavates the horn core at the base but does not reach so far toward the tip as in cattle. Horns of goats are placed so close to the orbit that the supply structures (blood vessels and nerves) ascend directly behind the zygomatic process (Dyce et al., 1987).

Anesthesia
General anesthesia is necessary to provide restraint and prevent severe pain and shock. A combination of ketamine-xyazine is useful. As with other ruminants, food and water should be withheld from the goat for 12 to 24 hrs. before surgery to avoid bloat, regurgitation and possible aspiration pneumonia during the surgery (Turner et al., 1982). Administer i.v. 0.22 mg/kg of xylazine hydrochloride (Rompun, Haver, Shawnee, KS 66201, USA) and follow in 1–2 min with 11 mg/kg of ketamine (Ketaset, Bristol Laboratories, Syracuse, NY 13201, USA). The combination will give approximately 40–45 min. of analgesia. A supplemental dose of ketamine could be given if longer anesthesia is required. With this combination, the goat could also be intubated to prevent aspiration of rumen fluid.

Surgical Procedure
The area around both horns should be clipped and prepared for aseptic surgery. The skin is incised 1 cm from the base of the horn. Leave plenty of skin, otherwise closure can be very difficult. Start the skin incision on the cranial aspect of the horn, encircling horn and directing the caudal incision toward the ears. The loose skin around the ears permits easier closure of the skin incision.

Undermine the edges of the incision using sharp dissection with scissors (Figure 1). Place a Gigli wire saw in the caudomedial aspect of the horn and remove the horn by directing the saw in a craniomedial direction while an assistant supports the goat's head. Hemorrhage should be controlled by ligation or pulling and twisting the vessels. If the goat is dehorned correctly, the frontal sinuses will be exposed due to extensive communication between the lumen of the cornual process and the frontal sinus. It is important not to cut too close to the caudomedial area so as not to invade the cranial cavity. Undermine the skin for an additional 2–3 cm on either side to permit closure. Care must be taken not to invade the auricular muscles when undermining the caudal aspect.
Fig. 1. Skin is undermined and ready for placement of Gigli wire.

Fig. 2. Appearance of the incision two weeks after surgery.
The surgical site should be flushed with physiological saline to rinse out any bone dust. Dust nitrofurazone powder onto the sinuses prior to skin closure. Close the skin with simple interrupted suture pattern using tension sutures (horizontal mattress) placed well back from the edges of the incision using a nonabsorbable material such as vetafil (S. Jackson, Inc., Washington, D.C. 20014, USA). Repeat the procedure for removal of the other horn. Place a non-adhesive pad on the closed incision site and bandage the head.

**Postoperative Management**

Administer procain penicillin G at 22000 IU/Kg i.m. for 5–7 days. Change the bandage after 4 days. Movement of the skin incision site when the goat breathes is prevented by keeping the bandage on until the time of suture removal. Remove sutures in 10–14 days. Figure 2 shows the appearance of the incision site two weeks postoperatively.

The author used the surgical procedure in eight goats of mixed breed ranging from 1.5–2.5 years of age with no complications. The goats were followed for eight weeks after surgery to insure that there was no breakdown of skin or any other complications.

**DISCUSSION**

It is best to dehorn goats when they are only one week old with a hot electric iron. When this is done, a ring of horn producing skin (epiceras) should be removed with the horn which is capable of changing to horn producing tissue (Garrett, 1988; Turner et al., 1982). Some experience is needed to get just the right amount of horn and cornual sinuses (Bailey, 1984). However, in the cosmetic dehorning procedure of adults, more horn and cornual sinus should be removed to permit easy skin closure. The veterinarian should use his/her judgement in deciding whether to perform this procedure on goats with very large horns. In the authors' experience, goats with very large horns may not be good candidates for this procedure because sufficient skin may not be freed up to close any large opening created by horn removal. The same precaution is applicable when cosmetically dehorning adult cattle with a large horn base.

Dehorning adult goats is not for soft-hearted veterinarians. Bleeding is extensive and the amount of horn and cornual sinus removed gives the appearance of complete decapitation (Bailey, 1984).

Goats do not tolerate pain associated with even minor surgical procedures and can die of shock if sufficient analgesia is not provided (Turner, et al., 1982). Although the exact cause of this shock is not known, it is believed to be a reaction to intense fear or fright from the combination of restraint and pain (Bowen, 1977). Therefore, general anesthesia is obligatory for the cosmetic dehorning procedure in goats.

Sinusitis and myiasis in warmer months has been reported to be a compli-
cation of conventional dehorning procedures in adult goats due to opening of the frontal sinuses and long healing period (Bailey, 1984; Bowen, 1977; Turner et al., 1982). The described cosmetic dehorning procedure eliminates these complications and the procedure can even be performed in warm climates.

REFERENCES