A COMPARISON OF THERMOCAUTERY AND CRYOSURGERY AS DISBUDDING METHODS IN BUFFALO CALVES

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ABSTRACT

Fourteen clinically healthy buffalo calves of either sex, with age varying between 01 to 04 weeks were selected for comparative study of the two methods of disbudding viz., thermocautery (Group - I; 6) and cryosurgery (Group - II; 8). The buffalo calves between the age group of 01 to 04 weeks were found suitable for both the methods of disbudding. Cryoguard protected horn bud were cryofrozen to -40°C. The cryosurgical disbudding did not lead to any open wound at the site and so also the cryofrozen horn buds remained at the site which later sloughed off progressively providing a natural biological covering to the underlying granulating bed till the completion of the healing. The cryosurgical disbudding was found to be cost-effective, practically surgeon convenient and clinically feasible as well as advantageous and so also less stressful to the subject as compared to the thermocautery disbudding in buffalo calves.

KEY WORDS: Buffalo calves, Horn bud, Thermocautery, Cryosurgery

INTRODUCTION:

In advanced dairy husbandry practice, the horn bud of young dairy and beef calves are normally removed in order to reduce the risk of injuries to farm workers or other animals . Damage to horn can also result in reduced milk production and growth. The benefits of dehorning include less bruising in yards, trucks and at meat works, and less room on trucks. Dehorned animals are much easier to work in the yards and tend to be much less aggressive. They fit through races and gateways more easily. People will also be more confident when working with dehorned stock, as they will be less likely to be scared or intimidated (Lemcke, 2006). The horns are prone to various types of affections and additionally, they are very troublesome and are refractory to treatment. This is the reason why depriving the animal of their horn in early age is recommended (Verma and Kumar, 1999).

MATERIALS AND METHODS:

Fourteen clinically healthy buffalo calves of either sex, with age varying between 01 to 04 weeks were randomly allotted to two groups as follow in order to study the two methods of disbudding viz., thermocautery and cryosurgery. These methods were comparatively evaluated for its easiness, effectiveness and safety as well as for its cost effectiveness in buffalo calves grouped as Group - I Thermocautery disbudding (6 buffalo calves) and Group - II Cryosurgical disbudding (8 buffalo calves).

All the buffalo calves were restrained manually in the lateral recumbency. Sites were prepared by shaving or clipping the hair around both the horn buds for disbudding.

Commonly available electric dehorner (Jupiter Scientific ltd., Bombay, India.) was used for thermocautery disbudding. Electric dehorner was heated till the tip of the dehorner became dull red. Then tip of the dehorner was juxtaposed on the horn bud with pressure for one minute and then rotated once or twice to scoop out the buds (Plate - 1a) one by one on either side.

Minicroygun liquid nitrogen cryosystem Model-(800)-777-CRYO(Brymill,cryogenic systems, ellington) having 350 ml capacity was used for cryosurgical disbudding. During the cryosurgical procedure of disbudding, distance of one inch was maintained between the horn bud and spray tips. The probe of digital thermometer was inserted through wooden cryoguard protecting the horn bud and held in place to monitor the freezing and thawing temperature. Liquid nitrogen was sprayed over the horn bud till the temperature reached up to -40°C (Plate - 1c). The frozen horn bud with ice-ball was left untouched for autothawing so as to reach

the temperature up to 0°C. Direct spray freezing followed by autothawing in a single sitting was uniformly followed for cryosurgical disbudding in all the buffalo calves.

RESULTS AND DISCUSSION:

In thermocautery disbudding method, electric dehorner was heated till the tip of the dehorner became dull red. Tip of the dehorner was juxtaposed on the horn bud with pressure for one minute and then rotated once or twice to scoop out the buds one by one on either side. In cryosurgical disbudding method, the horn bud was cryofrozen to – 40°C temperature under monitoring using digital thermometer. Use of locally made wooden cryogaurd helped to protect the cryodamage to the tissues adjacent to horn buds. In both the techniques no sedation or anaesthesia was given for the disbudding. In supplementation to this practice, Kasundra et al. (2006) reported the thermocautery to be comparatively more painful and imposed a greater stress then that of the cryosurgery for the intended purpose in cow calves as supported by the levels of the serum

(a) Application of hot dehorner on the horn bud

(b) Immediate appearance of the site following thermocautery

(c) Horn bud covered with cryoguard and frozen to - 40°C

(d) Sloughing of horn bud on 45th day following cryosurgery

Plate 1 : Disbudding in buffalo calves

cortisol. The cryofrozen horn bud showed hyperemia in its surroundings immediately following freezing. Later, the dry and necrosed horn bud detached and sloughed off over a period of 45 days (Plate-1d). The results corroborated with the reports of Kasundra et al. (2006), Sharma et al. (2007) and Paithanpagare (2008). According to Bengtsson et al. (1996), cryosurgical disbudding required mild sedation or anaesthesia to animals, but considered it as less painful method than thermocautery. The procedure remained simple, was easy to perform and was considered safe both to the calf and the operator. The site did not require any post-operative care and found free of the complications except for the recurrence in one calf. The recurrence was thought to be due to the procedural defect, possibly the under freezing of the buds during cryosurgical disbudding.

Following thermocautery disbudding, wounds at the sites healed uneventfully in all the calves within 12-15 days. Thick scar formed at the end of 4th week after disbudding which later sloughed between 6th to 8th week and the site was found covered with hair growth in the area surrounding the wound. Horn growth was not observed till the end of 20th week post-disbudding. Whereas, in cryosurgical disbudding area surrounding the horn buds developed severe hyperemia following unassisted thawing of the frozen buds. The horn buds showed progressive tendency of drying and sloughing, which later got detached from the site around 15 days indicating a complete healing. The site of the horn buds found depigmented and hairless when observed at the end of 2 months. Except for one, no calf developed horn till the end of 18th week.

The cryosurgical disbudding did not lead to any open wound at the site and so also the cryofrozen horn buds remained at the site which later sloughed off progressively providing a natural biological covering to the underlying granulating bed till the completion of the healing. The sequential phenomenon following cryosurgical disbudding was additionally considered to be advantageous as the site remained dry and covered which prevented the ever common problem of fly strike and then maggots' infestation.

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