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Surgical management of teat avulsion in a goat using disposable skin staples

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Abstract

A four-year-old non-descript goat, was presented with a history of multiple dog bitten wounds. Clinical examination revealed an avulsion wound of the left teat at its base with an exposed teat canal and gland cistern. Under sedation with Injection Xylazine @ 0.1mg/kg B.W. administered intravenously, the muscular part of the teat was sutured. Skin was closed with stainless steel disposable surgical staples. On day 11, alternate staples were removed and leftover staples were removed on the 15th post-operative day.

Keywords: Goat, teat, avulsion, stapling

Introduction

Avulsions are wounds in which there is an actual loss of tissues due to the tearing action of the object, which in many cases is a barb wire [1]. The incidence of teat lacerations is relatively higher in goats due to their pendulous udder and long teats [2]. In the repair of teat lacerations, there is a guarded prognosis with high incidence of wound dehiscence and fistula formation [3]. Frequent complications that are encountered upon conventional suturing techniques were suture line leakage and dehiscence of suture line because of the minimum suture holding capacity of the tissue. Success rate of teat surgery is mainly dependant on suture quality and effective drainage [4]. Post-operative wound dehiscence was found to be less in wounds apposed with surgical staples, when compared to conventionally sutured wounds [5]. The present study discusses the surgical management of teat avulsion in a goat using disposable skin staples, and its post-operative care.

History and Clinical examination

A four-year-old non-descript doe was presented with a history of dog bitten wounds on the shoulder region and on the left teat. The animal was administered with a dose of tetanus toxoid and anti-rabies vaccination before being presented to TVCC, RIVER, and Puducherry.

Clinical examination revealed multiple dog bitten wound on the skin of the left shoulder and an avulsion wound on the base of the left teat, exposing the teat canal and gland cistern (Fig. 1). Dribbling of milk was noticed through the wound. Physiological and haematological values were within the normal range and the milk was apparently normal in its colour, consistency and pH. Surgical correction of the avulsed teat was advocated.

Treatment

The animal was sedated with Inj. Xylazine (XYLO-B^a) @0.1mg/kg body weight. Intravenously and controlled on right lateral recumbency. The edges of the exposed teat canal and cistern was debrided and flushed with metronidazole (Metrogyl^b) and povidone iodine (Wokadine^c). A 22G scalp vein tube was passed into the teat canal to maintain patency of the teat canal. The muscular layer of the teat was sutured using polygalactin 910 No. 4/0 in a simple continuous fashion (Fig. 2). Collagen based silver sulphadiazine ointment (Sore Treat^d) was applied over the site. The skin was apposed with 12 stainless steel disposable staples having wire diameter 0.57mm, length 6.4mm and width 4mm (Acos by Sunmedix- Surgiplus, Pondicherry, India) (Fig. 3). The teat was then protected with an adhesive bandage (DYNAFIX^e) (Fig. 4). The animal was administered Inj. Tetanus toxoid 0.5ml intramuscularly, Inj Ceftriaxone (Intacef^f) @25mg/kg intramuscularly for 7 days, Inj Ceftriaxone (Intacef^f) @500mg intra mammary in the left teat for 7 days. The post bite anti rabies vaccination protocol was followed.

Healing and scab formation were noticed on the 11th post-operative day, and alternate staples were removed. On the 15th post-operative day, ultrasonographic examination of the left teat was carried out using a 7.5 MHz linear probe by the water bath method. The ultrasound revealed hyperechoic areas indicative of wound healing: (Fig. 5) Left over staples were removed on the 15th post-operative day and the wound healed under the scab. (Fig. 6)

Results and Discussion

In the present case, the introduction of a scalp vein tube into the teat canal was found to be effective in maintaining the patency and preventing stenosis in accordance with [2]. A cost effective sterile prosthetic tube made up of modified polyvinyl chloride in the teat cistern and fixed in-situ with sutures at the teat tip, is well tolerated by animals and is effective in maintaining the lumen of the teat post operatively [6]. Ultrasonography of the teat is commonly performed by water bath technique with the help of higher frequency linear probes of 7.5MHz [7]. The use of water bath for scanning of the teat increases the acoustic impedance difference between the teat wall and the surrounding media [8]. Skin staples were found to be effective in opposing the skin. Skin staples were useful in ensuring no post-operative complications like wound dehiscence, inflammation and infection. The inert composition of stainless steel staples, is a favourable factor, causing little inflammation, resisting infection and resulting in minimal trauma to the tissue [9]. Staples were found to produce better apposition of wound edges with less tissue trauma and reduced tissue compression. The staples were removed easily with a staple remover which is less painful and animals showed uncomplicated, complete scarless wound healing, without any wound dehiscence, fistula formation and gaping of edges [10].

Conclusion

In conclusion, the lumen of the teat canal can be effectively maintained post operatively by the introduction of a scalp vein tube into the teat canal. Ultrasonography of the teat using the water bath method is useful in evaluation of the teat canal, and surrounding tissue. The application of staples is easy and less time consuming. Opposing the skin using stainless steel skin staples was effective, and ensured no post-operative wound dehiscence due to the inert nature of stainless steel, and minimal tissue trauma caused while applying the staples.



Fig 1: Avulsion of the teat at its base



Fig 2: Suturing of the muscular layer



Fig 3: Skin is apposed with stainless steel disposable staples



Fig 4: Teat is protected with adhesive bandage

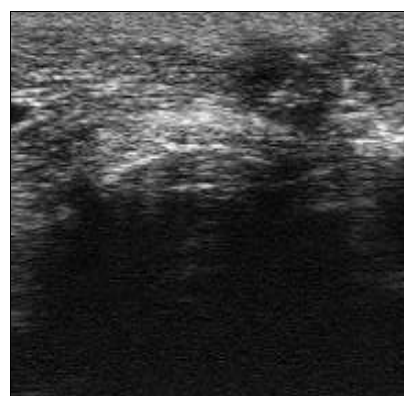


Fig 5: Ultrasonography- Hyperechoic area indicating wound healing



Fig 6: Staples removed; the wound healed under the scab

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