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Modified gastrocnemius tenectomy with intact deep calcaneal tendinous tissues to relieve spastic paresis in bullocks

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ABSTRACT

Bovine spastic paresis is a neuromuscular disease occurring sporadically in all cattle breeds of the world. The surgical procedure to alleviate spasticity signs has been employed to salvage the calf for slaughter. The surgical procedure of "Modified gastrocnemius tenectomy with intact deep calcaneal tendinous tissues" applied in eight adult bullocks was effective in correcting signs of spastic paresis. The technique, being simpler and economical, could be adopted under field conditions.

Key words: spastic paresis, bovine, gastrocnemius tenectomy, bullock

Introduction

Spastic paresis is a neuromuscular disease occurring sporadically in dairy, beef and crossbred cattle (WEAVER, 1991) and is known to be a hereditary disease. Bovine spastic paresis is defined as a static locomotor syndrome characterised by hyperextension, following the spastic contraction of the gastrocnemius muscles of one or both the limbs, when the animal rises. Always apyretic, the disease gradually worsens, without spontaneous cure; there are not even very short remissions; it is not in

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itself fatal, and there are no behavioural or sensory signs (LEDOUX, 1996). In severe case, the affected limb appears shorter and may not touch the ground, but swing like a pendulum (BARVALIA et al., 1999).

The occurrence of spastic paresis in Indian cattle has not been properly documented. This may probably be due to frustrating postoperative results, as well as a lack of effective surgical technique and hence neglect of such cases by field veterinarians. The occurrence of this condition is sporadic in India. However, in Gujarat State it is frequently encountered in the Kankrej bullocks (GADGIL et al., 1970; GADGIL et al., 1972; BARVALIA et al., 2000a). Although the condition is not sufficiently serious to endanger the life of an animal, its unsightly and intractable nature reduces the animal's economic value and causes diminution of its working capacity, especially in draft animals.

Being a simple procedure, the traditional method of gastrocnemius tenotomy (GÖTZE, 1932) has been practised for many years with well-known complications such as dropped hock, with recurrence and sometimes with no improvement in the condition (GADGIL et al., 1970; GADGIL et al., 1972; WEAVER, 1991). Selective or total tibial neurectomy has more reliable long-term results (BOUCKAERT and DE MOOR, 1966) but it is more invasive and complex. A recent technique involving modified gastrocnemius tenectomy adopted by PAVAUX et al. (1985), and PAVAUX et al. (1988) has yielded satisfactory results in calves.

Materials and methods

The technique was applied to 8 clinical cases of spastic paresis. Animals were denied feed and water for 12 hours. An area over a 15 cm length above the calcaneus (point of hock) was prepared for aseptic surgery.

Animals were restrained in lateral recumbency, keeping the affected limb raised. Animals were sedated with xylazine HCl (Xylaxin, Indian Immunologicals, India) at the rate of 0.1 mg/kg b.wt., intramuscularly. Local analgesia was achieved with 15 ml lignocaine HCl 2% (Morcaine Vet, Marvel Lab., India) infiltrated at the site of skin incision and deeply around the Achilles tendon.

Surgical technique. The steps of surgical procedure are shown in schematic diagram (Fig. 1). A linear 8 cm-long incision was made through the skin and subcutaneous tissues over the anterio-lateral border of the Achilles tendon, starting 3 cm above the point of hock (Fig. 1A).

The skin and subcutaneous tissues were undermined. The calcaneal tendinous covering was incised and dissected (Fig. 1B) parallel to the oblique depression present between the tendons of superficial digital flexor

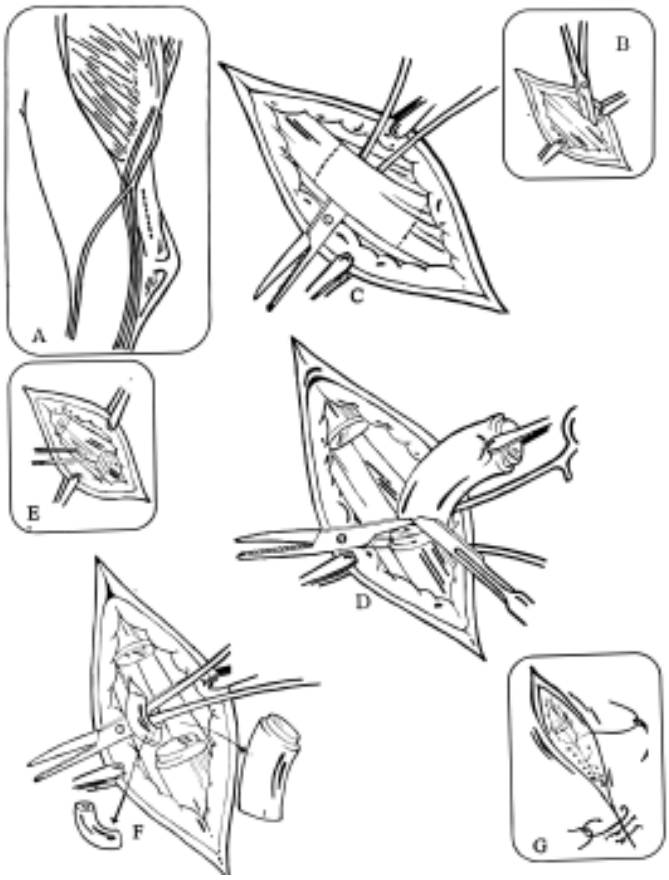

Fig. 1. Schematic representation of modified gastrocnemius tenectomy

and medial head of the gastrocnemius muscle. Through this incision the superficial tendon of the gastrocnemius muscle along with the calcaneal covering (preferably one after another) were elevated by stout, long, curved artery forceps (Fig. 1C) and transected at two points about 4 cm apart. The tendon was transected first at the upper point, as the proximal segment tends to retract immediately after its transection (Fig. 1D). The deep tendon of the gastrocnemius muscle placed cranio-medially was identified and its covering was incised longitudinally (Fig. 1E). The deep tendon of gastrocnemius was then exteriorized from its tendinous calcaneal sheath, transected at two points and a 3-cm section was removed (Fig. 1F). The superficial digital flexor tendon and deep tendinous calcaneal covering were kept intact. Bleeders were clamped and ligated. The subcutaneous tissues were sutured by applying a simple continuous layer of No. 1 chromic cat gut, and skin edges by simple interrupted sutures using nylon filaments (Fig. 1G). The suture line was dressed with povidone-iodine solution and sealed with a thin cotton layer soaked in Tr. Benzoin compound.

Post-operative treatment consisted of parenteral injection of oxytetracycline (Terramycin, Pfiser India Ltd.) at a rate of 5 mg/kg b.wt. intramuscularly for 5 days. Suture line was dressed on alternate days. Skin sutures were removed on the 10^{th} post-operative day. Animals were allowed to move around loosely during the post-operative period and light work commenced only after one month. In bilateral cases, a second operation was advised after complete recovery in the operated leg.

Results and discussion

Clinical symptoms observed pre-operatively in animals, such as taut tendo achilles, straight and short leg, extended hock, wasting of thigh muscle, raised tail head (Fig. 2) disappeared slowly within one week after surgery (Fig. 3). The technique was applied on two bilateral and six unilateral clinical cases of spastic paresis in bullocks, with the animals being observed for six months. It yielded complete relief in spasticity signs in all the bullocks with, notably, not a single case of failure or relapse under field conditions. No supportive bandage or plaster cast was required. The procedure described above was found to be simple, less expensive and useful under field conditions.

Fig. 2. A bullock with severe spasticity signs in left leg before operation

Fig. 3. A bullock with near normal stance within a week after operation

References

BARVALIA, D. R., D. B. PATIL, R. R. PARSANIA (1999): Clinical signs of spastic paresis in bullocks: A report of 59 cases. Intas Polyvet 2, 164-169.

BARVALIA, D. R., D. B. PATIL, R. R. PARSANIA (2000a): Incidence of spastic paresis in bullocks in Gujarat. Indian J. Anim. Sci. 70, 392-393.

BARVALIA, D. R., D. B. PATIL, R. R. PARSANIA (2000b): Clinical evaluation of modified gastrocnemius tenectomy to relieve spastic paresis in adult bullocks. Indian J. Vet. Surg. 21, 17-24.

BOUCKAERT, J. H., A. DE MOOR (1966): Treatment of spastic paralysis in cattle: Improved de-nervation technique of the gastrocnemius muscle and postoperative course. Vet. Rec. 79, 226-229.

GADGIL, B. A., S. P. AGARWAL, U. G. PATEL (1970): Spastic paresis in adult Indian cattle. Vet. Rec. 86, 694-697.

GADGIL, B. A., S. N. TRIPATHI, G. T. PANDYA (1972): Spastic paresis and its treatment. Indian Vet. J. 49, 211-214.

GÖTZE, R. (1932): Spastic paresis of the hindquarters of calves and young cattle. Dtsch. tierärztl. Wochenschr. 40, 197-199.

LEDOUX, J. M. (1996): La paresie spastique bovine est-elle une maladie transmissible? Bull. Soc. Vet. Prat. De France, T 80, 453-467.

PAVAUX, C., J. SAUTET, J. Y. LIGNEREUX (1985): Anatomie du muscle gastrocnemen des bovins appliquee a la cure chirurgicale de la paresie spastique. Vlaams Diergeneeskd. Tijdschr. 54, 296-312.

PAVAUX, C., G. ARNAULT, M. BAUSSIER, M. DUMONT (1988): Technique dite "de Götze" dans le traitement de la paresie spastique des bovins: triple tenectomia. Le Point Veterinaire 20, 41-50.

WEAVER, A. D. (1991): Modified gastrocnemius tenectomy: A procedure to relieve spastic paresis in dairy calves. Vet. Med. 86, 1234-1239.

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SAŽETAK

Spastička pareza goveda je neuromuskularna bolest koja se sporadično javlja diljem svijeta. Za ublažavanje grča primjenjuju se kirurški zahvati. Kirurški postupak preinačene tenektomije mišića m. gastrocnemius sa sačuvanim tkivom tetive dubokog fleksora prstiju primijenjen u osam odraslih volova pokazao se učinkovitim u poboljšanju znakova spastičke pareze. Postupak je vrlo jednostavan i može se primijeniti u terenskim uvjetima.

Ključne riječi: spastička pareza, vol, tenektomija, m. gastrocnemius