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Transpalpebral exenteration in cattle

J. Vermunt¹

SUMMARY *Description of a simple and fast surgical method and the necessary regional anaesthesia for treatment of extensive global and orbital affections is given. The results of this transpalpebral exenteration procedure were highly satisfactory.*

INTRODUCTION

Ophthalmic surgery in large animals is nearly always related to the economic value of the animal, the amount of post operative treatment and the type of lesion. Especially in cattle the majority of ophthalmic surgery is of the peri-ocular type and includes procedures involving the orbit, eyelids, nictitating membrane, nasolacrimal system and conjunctiva. In this article we give special attention to surgery of the orbit. Orbital surgery in large animals is divided into the following:

Evisceration: Removal of the contents of the eyeball, with the sclera being left intact. This procedure has only been used occasionally in very valuable horses with the insertion of ocular prostheses.

Enucleation: Removal of the eyeball after the eye muscles and optic nerve have been severed. (subconjunctival- and transpalpebral ablation).

Exenteration: Removal of the entire contents of the orbit (1, 9).

Enucleation is the most frequently used orbital surgical procedure and is reserved for: (1) massive trauma and loss of the entire globe or contents of the eyeball; (2) septic panophthalmitis; (3) extensive corneal ocular neoplasms; (4) phthisis bulbi with associated conjunctivitis and (5) enlarged painful glaucomatous eyes which rarely occur in cattle. The transpalpebral ablation procedure is used almost exclusively in cattle, especially in cases of extensive neoplastic involvement of the conjunctiva,

nictitating membrane and globe. The exenteration procedure can be chosen in case of extensive neoplastic and septic conditions of the entire globe and orbit (2).

Both the transpalpebral ablation and the exenteration give more hemorrhage and tissue loss, but the procedures may be accomplished in a short period of time. The relatively small globe and larger orbit in cattle provide greater room for surgical procedures (3). When little time is available and speed required a combination of the transpalpebral ablation and exenteration procedure may be used. (transpalpebral exenteration).

Ophthalmic surgery in large animals is performed under topical, regional or general anesthesia. In cattle, regional and general anesthesia are the most frequently used. Both methods need sedation prior to induction of anesthesia.

General anesthesia can be obtained by using chloral hydrate or barbiturates (4). For regional anesthesia we can use the combined retrobulbar and auriculopalpebral nerve block (5). Most commonly used modifications are the Peterson method (6) and Slatter method (7).

According to Slatter the Peterson block does not give reproducible results on a consistent basis (8). Whatever method is chosen, one has to be sure of accurate placement of the local anesthetic solution.

In this article we describe the surgical procedure of transpalpebral ablation/exenteration and the obtained results.

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MATERIALS AND METHODS

During the period October 1981 - July 1983 transpalpebral exenteration procedures have been performed on 20 cattle (12 Friesians, 6 Herefords, 2 Jerseys).

Indications for this type of surgery were:

- severe septic conditions of the globe and orbit; 5 cases;
- extensive neoplasms of the globe; 5 cases;
- extensive neoplasms of the conjunctiva; 8 cases;
- massive ocular trauma; 2 cases.

We prefer surgery with light sedation and regional anesthesia, because most farms have proper restraining facilities. For sedation we used 0.5-2 ml of Xylazine 2% (Rompun®) intravenously. The eye and its immediate surroundings are vigorously cleaned with water and surgical soap (Betadine scrub®).

The external eye is flushed with sterile normal saline and all debris and discharge is removed as good as possible. Regional anesthesia was accomplished by either the Peterson block or the Slatter block. In the Peterson block a 10 cm slightly curved 18 gauge needle is inserted in a space bounded by the supra-orbital process, Zygomatic arch and the coronoid process to reach the pterygopalatine fossa. After aspiration to prevent injection into the internal maxillary artery, 30 ml of plain lignocaine 3% (Xylotox®) is infused retrobulbar. The needle is then partially retracted and directed to a point 4-6 caudal of the supra-orbital process along the dorsal aspect of the zygomatic arch to administer a palpebral nerve block with another 10 ml of lignocaine. For the Slatter block retrobulbar injections are placed at four separate places through the conjunctiva. 10 ml of lignocaine is injected through the dorsal, ventral, medial and lateral canthi plus an infiltration of the eyelid margins.

The retrobulbar infusion of a relatively large amount of anesthetic solution causes a certain degree of exophthalmus and makes orientation easier.

The whole area is now sprayed with a 5% tincture of iodine solution. The eyelids are apposed with a horizontal mattress suture or closed with towel clamps to be used as a hold or lead while removing the orbit contents. The lids are incised by scalpel 2-3 cm from the eyelid margins for 360°. Dissection is continued through the orbicularis oculi muscle and around the conjunctival fornices. From now on the dissection follows the bony part of the orbit up to its apex. Hemorrhage is minimized by blunt separation and direct pressure. Once the apex is reached a heavy curved hemostat is applied on the optic nerve and hemostasis obtained by vessel ligation using No. 2 chromic catgut.

The orbit is packed with absorbable gelatin sponges (Gelfoam®), or stepwise folded sterile gauze. Terramycin powder or penicillin — dihydrostreptomycin is installed into the orbit. The remaining eyelids are stitched with nonabsorbable interrupted horizontal mattress sutures using No. 3 Synthafil®.

In case of packing the orbit with gauze we leave about 5 cm hanging out in the medial canthus and ask the owner to remove this after 48 hours by very careful pulling out the gauze from between the sutures.

Only the 5 cases with septic conditions of the globe and orbit were injected parenteral with 6-10 grams oxytetracycline (Terramycin L.A. ®) once or 6-10

million units penicillin plus 5-8 grams dihydrostreptomycin (Depomycine®) for 5 days. The non absorbable external stitches are removed after 10-14 days.

RESULTS

When extensive neoplasm was the indication for transpalpebral exenteration, surgery was only done on animals with no regional lymph node involvement.

When there was marked lymph node enlargement present we advised culling the animal. From the neoplasm cases, suitable for surgery, a sample was taken for histopathology. In all cases the clinical diagnosis 'cancer eye' was confirmed by the laboratory results. Both the Peterson block and the Slatter block, if placed correctly, are fairly easy and reliable methods of regional orbital anesthesia. Recovery from the orbital surgery was in all cases uneventful. None of the animals showed septic wound conditions and no fistula formation occurred in the gauze packed orbita cases.

Normally we advise the owners to cull the operated on animals at the end of their lactation period. 16 Animals started their following lactation and are producing well. Missing the one eye seems to give no problem. The other 3 cases, all Herefords, kept for beef production were slaughtered in excellent condition. One Friesian cow showed marked new tumorous infiltration of the orbita 2 months following the initial operation. She was condemned at the freezing works because of metastases.

DISCUSSION

Transpalpebral ablation and exenteration are both almost exclusively used in cattle. Both procedures are relatively simple and need little time to perform. When there is no need or possibility to preserve the globe or maintain vision these surgical methods should be first choice.

A combination of both methods, the transpalpebral exenteration provides a surgical procedure which may be accomplished in a very short period of time. When the diagnosis and decision to operate are made, the whole transpalpebral exenteration procedure can be done in less than thirty minutes.

No post operative treatment is required. Antibiotics, placed in the orbit during surgery, are administered once. Administra-

tion of systemic antibiotics is only indicated if deemed necessary, e.g. in presence of marked sepsis.

Considerable post operative swelling and deformity of the orbit are likely to occur with this transpalpebral exenteration method, but this can hardly be of any significance in production and food animals.

'Cancer eye' susceptibility in cattle is thought to be of moderate heritability, so perhaps such animals should not be used for breeding replacement stock.

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