How to save the eye on 95% of your cancer eye surgeries

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Abstract

The overwhelming majority of cows with squamous cell carcinoma (SCC or "cancer eye") can have the neoplastic tissue removed so that the eye does not have to be removed. Early detection of SCC is the key to only having to excise the neoplastic tissue while saving the eye. A lesion of approximately 1 cm or less can be readily seen when the cow walks through the chute for yearly vaccinations and/or pregnancy examination, and it is easily removed at this time.

Cows with SCC should not necessarily be automatic culls. A cow with a small lesion on the third eyelid or on the cornea that is removed in a timely fashion can have a long and productive life in the herd.

Key words: squamous cell carcinoma, cancer eye, surgery

Introduction

There are extensive publications written on the economic costs, risk factors, and prevention of squamous cell carcinoma (SCC or "cancer eye") in cattle. Those topics are discussed elsewhere. This paper focuses on how to surgically remove most SCC lesions so that the cow retains her eye and her sight.

Lesion Location

Third eyelid (nictitating membrane) – lesions here are quite easy to remove. Technique:

• Restrain cow in chute. Use a halter or head table to minimize movement of the head.
• Place a few drops of proparacaine hydrochloride onto the surface of the eye, being sure to include the 3rd eyelid.
• Draw up ~1-2 mL lidocaine into a 3 mL syringe with a 20-22 ga. needle. Place the tip of the needle between the medial canthus and the third eyelid. Quickly and carefully thrust the syringe with needle attached into the tissue of the 3rd eyelid. The tissue will have some resistance to the needle. Moving the syringe and needle slowly into the tissue will likely just move the tissue away from the needle and not allow penetration. You need to ‘pop’ the needle in.
• Inject the lidocaine. If you are in the correct position, the 3rd eyelid will quickly swell as you inject.
• Wait ~1-2 minutes.
• Apply locking forceps (Kelly or similar) in a wedge shape so that the neoplastic tissue is medial to the forceps. It is ideal to leave a few millimeters of normal tissue lateral to the neoplastic tissue and cut medial to the forceps.
• Remove tissue. There is no need for suturing
• Take a large ‘pig ear-notcher’ or similar tool and ‘notch’ the identification tag in the ear ipsilateral to the lesion to remind you and the owner that this cow has had SCC surgery.

Eyelids – removal of lesions on the eyelids is very similar to the technique described above for removal of cancerous tissue on the 3rd eyelid.

Liquid nitrogen freezing can also be used in some cases. Be careful to cover the globe so that no liquid nitrogen contacts the eye. A cryogenic unit can be used or if the lesions are small enough, a cotton-tipped swab can be placed in liquid nitrogen and then the swab can be pressed to the lesion for 20 to 30 seconds. If the lesion is larger than about 0.5 cm, it can be debulked first and frozen afterward. Always do 2 freeze/thaw cycles.

Globe – these are the lesions where some advocate removing the entire globe. Of the hundreds of SCC surgeries I have done, I would estimate that over 95% were done with the following technique while saving the eye. I learned this technique during my externships in Nebraska many years ago. Technique:

• Restrain cow in chute. Use a halter to minimize movement of the head by pulling head laterally contralateral to lesion.
• Place a few drops of proparacaine hydrochloride onto the surface of the eye, being sure to include the neoplastic lesion.
• It is nearly impossible to get a few drops of proparacaine from the bottle onto the surface of the eye without contaminating the bottle due to the position of the cow’s head. To circumvent this problem:
  • place a new nasal cannula onto a 1 mL syringe
  • partially unscrew the lid on the proparacaine
  • use the lid to ‘pop’ the dropper top off of the proparacaine bottle
  • place the cannula into the proparacaine solu-
JAVMA, February 1, 1969 had a report on the First Annual AABP Convention at the LaSalle Hotel, Chicago on November 24-26, 1968. Hitherto, the annual meetings had been held in conjunction with the AVMA Annual Meetings. The report stated:

One of the highlights of every AABP Convention has been the Practice Tips Session. At the Chicago meeting there were lively descriptions of novel gadgets and procedures.

Dr. Joe Knappenberger, AVMA President, was a guest speaker. He spoke of the practicing veterinarians’ role in the future, trends which would lessen the physical strain on the practitioner by using improved techniques and specially trained assistants. He defined the future role of veterinarians as supervisors instead of skilled laborers.

USDA. He was also concerned with the diminishing percentage of veterinarians engaged in food animal practice.

AABP officers (left to right) Drs. Etienne Le Fevre, Follett, Texas, president-elect of AABP; and Dr. John R. Herrick, Ames, Iowa, president-elect of AVMA. Dr. Le Fevre took over as president of AABP for 1969.

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A Few Notes on the Cancer Eye Video

0:00 – 0:30 Shows injecting 30 mL lidocaine retrobulbarly. Advance the 4” x 16 ga needle (I use a pig bleeding needle) at least 3.5” (8.9 cm), aspirate and inject. This anesthetizes the nerves that innervate the muscles that control the eye and adds volume to help proptose the eye.

0:31 – 0:44 1 mL proparacaine hydrochloride being infused around the globe to anesthetize the surface of the cornea. This is critical to eliminate pain and to keep eye from moving during surgery. Do not try to put a drop in from the bottle. You will touch the surface and contaminate the bottle. I use a 1 mL syringe and a nasal canula.

0:56 – 1:05 The best video of proptosing the globe. Thumbs adjacent and parallel to the lids. If it does not come out easily, can give 10 mL more lidocaine. I rarely need to add more.

1:27 – 1:31 Old way of dropping proparacaine onto globe. Canula works better.
• 2:08 – 2:56 best example of surgery. Attach hand to head so if cow moves you don’t make a mistake (I have done hundreds of these and never inadvertently cut the eye). Use scalpel like a pendulum and slice tumor off. Can use a caustic stick to control bleeding if needed (not shown).
• 2:56 – lubricate eye with saline or lidocaine before replacing.

• 3:25 – end replace eye into socket. Cow will be partially blind in this eye for about 2 hours. On rare occasions, I have done surgery on both eyes the same visit. Cow must be very calm and owner must have a pen for cow to recover for ~ 2 hours.