ARTIFICIAL INSEMINATION IN CATTLE

Beef, Dairy and Equine ANSC 2205

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Who invented artificial insemination?

- The first successful experiment with artificial

insemination in animals was performed by Italian

physiologist LazzaroSpallanzani, who in 1780, while

investigating animal reproduction, developed a

technique for artificial insemination in dogs.

Who invented artificial insemination? (cont.)

This approach was refined in the 1930s
In Russia, and the subsequent
development
of methods for the cryopreservation

Who invented artificial insemination? (cont.)

(preservation through freezing) of semen led to the widespread use of artificial insemination in animals.

What are the advantages of AI in cattle?

The chief advantage of artificial insemination is that the desirable characteristics of a bull can be passed on more quickly and to more progeny than if that animal is mated with females in a natural fashion.

What are the advantages of AI in cattle? (Cont.)

- Increased efficiency of bull usage
- Increased potential for genetic selection
- Decreased costs
- Increased safety for animals and farmers
- Reduced disease transmission

What are the major drawbacks in AI in cattle?

Artificial insemination has some potential drawbacks, however, that must be considered. First, it can be more laborious, Male animals instinctively detect
the females that are in the correct status for conception.

What are the major drawbacks in AI in cattle? (cont.)

With artificial insemination the detection work falls on the responsibility of the farmer. Poor detection results in decreased rates of fertility.

What are the major drawbacks in AI in cattle? (cont.)

Also, increasing the number of offspring per male has selective advantages only if the best males can be accurately determined.

What are the major drawbacks in AI in cattle? (cont.)

Otherwise this process only decreases the
genetic variability in a population. Increasing
the number of offspring per male always reduces the gene pool.

What are the major drawbacks in AI in cattle? (cont.)

The benefits of
more intense selection must be balanced against the negative effects of decreased variation.

DISADVANTAGES OF ARTIFICIAL INSEMINATION

- Costly
- Estrus detection must be good
- Low conception rate
- Semen has to be stored properly
- Inbreeding
- The bull must be properly tested

Heat detection in cattle

Coming into Heat

- Stands and bellows
- Smells other cows
- Head butts other cows
- Mounts other cows but will not stand to be mounted
- Red, moist, swollen vulva
- Clear mucous discharge from vulva

Cow coming into Heat

Standing Heat

- Stands to be mounted
- Mount other cows
- Bellows frequently
- Nervous and excitable

Cow in standing heat

Artificial Insemination procedures

- Step #1: Restrain the animal to be inseminated.

Step #2:

- Raise the tail with the right hand and gently massage the rectum with the lubricated glove on the left hand.

- Step #3: Gently wipe the vulva with a paper towel to remove excess manure and debris.

Procedure for artificial insemination

Step #4:

Insert the gun at a 30 upward angle to avoid entering the urethral opening and bladder located on the floor of the vagina.

Procedure for artificial insemination

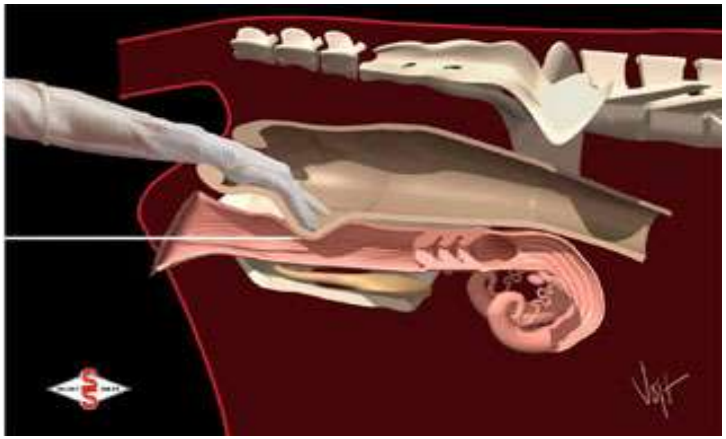


Figure #1: Keeping the gloved hand even with the tip of the inseminator gun.

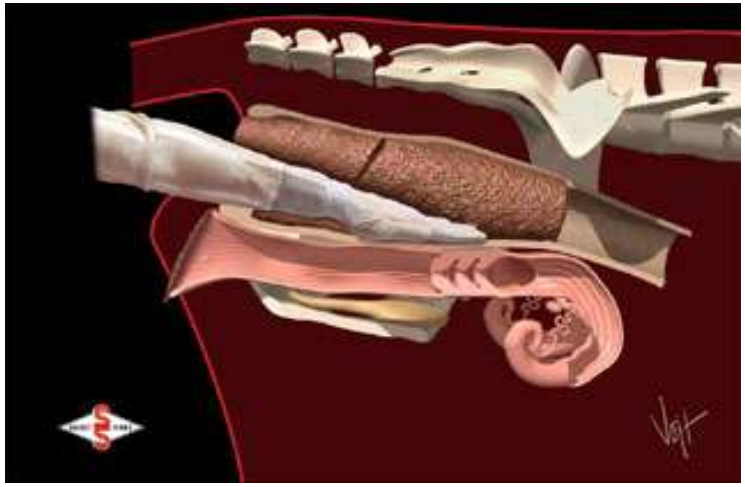


Figure #2: Allowing manure to pass over the top of the hand and arm.

Procedure for artificial insemination

Figure #3: Dealing with colon constrictions.

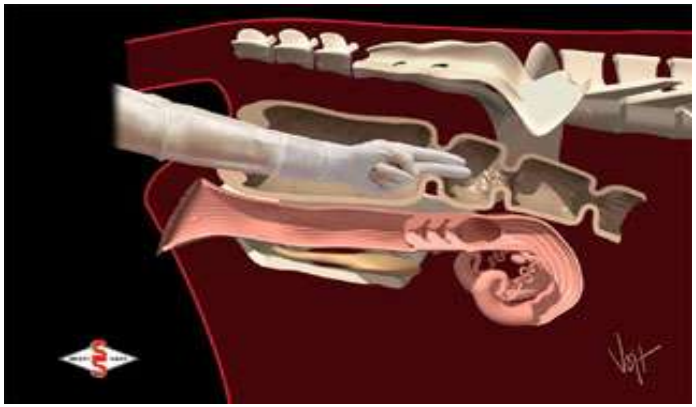
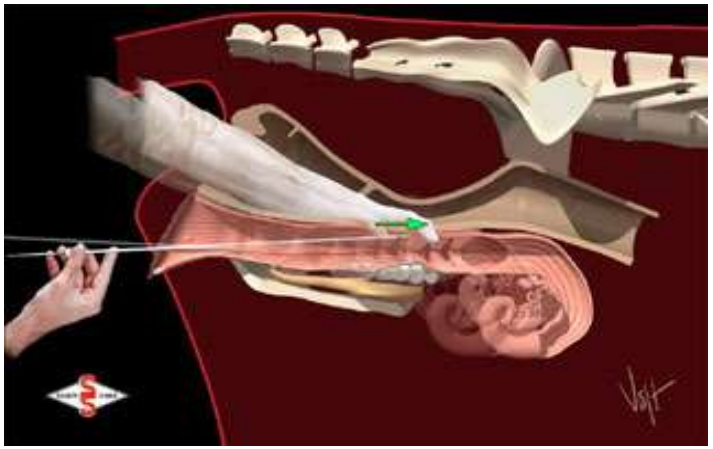


Figure #4: Grasping the cervix and gently moving it



Procedure for artificial insemination

Figure #5: Close-up of the cervix.

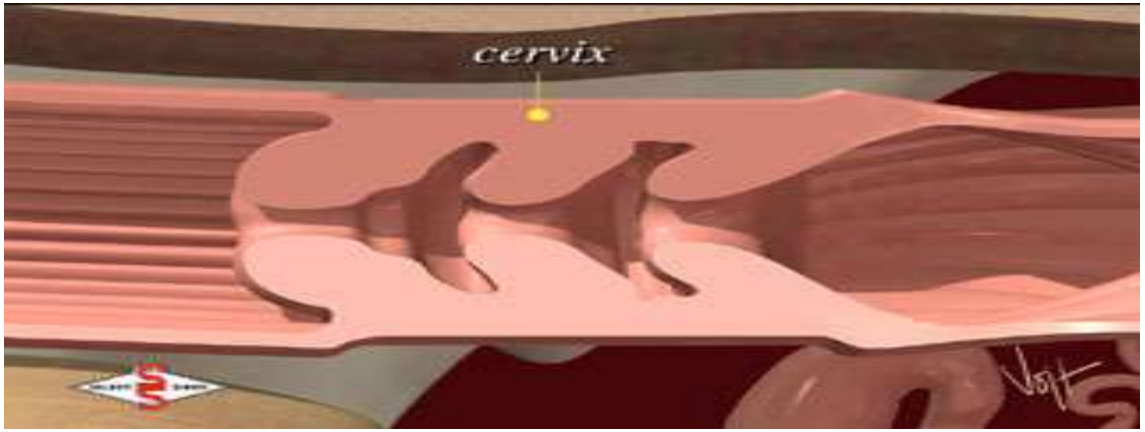
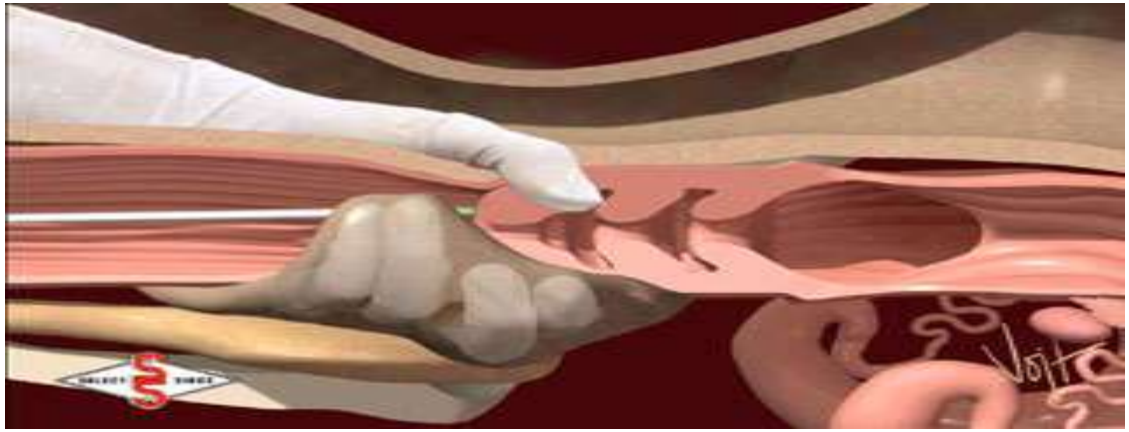


Figure #6: Finding the opening of the cervix.



Procedure for artificial insemination

Figure #7: Moving the cervix over the tip of the insemination gun.

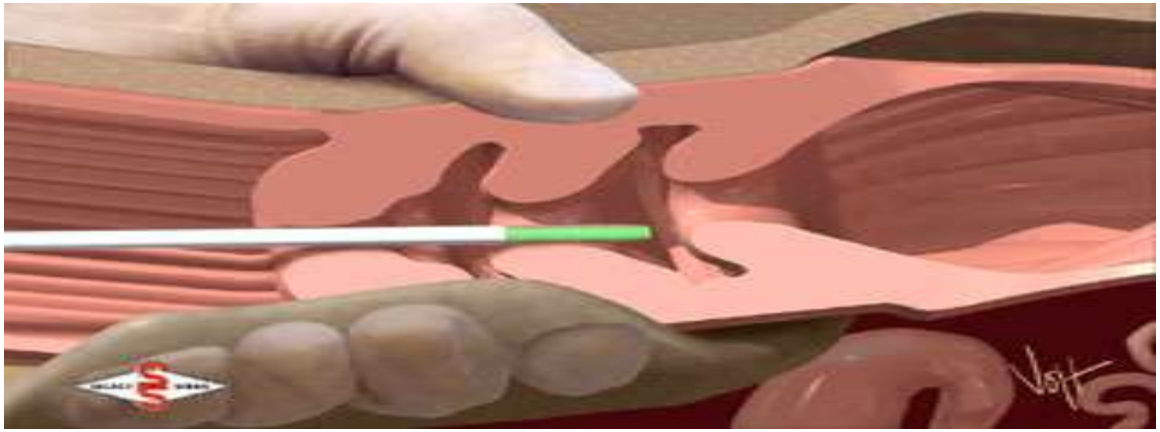
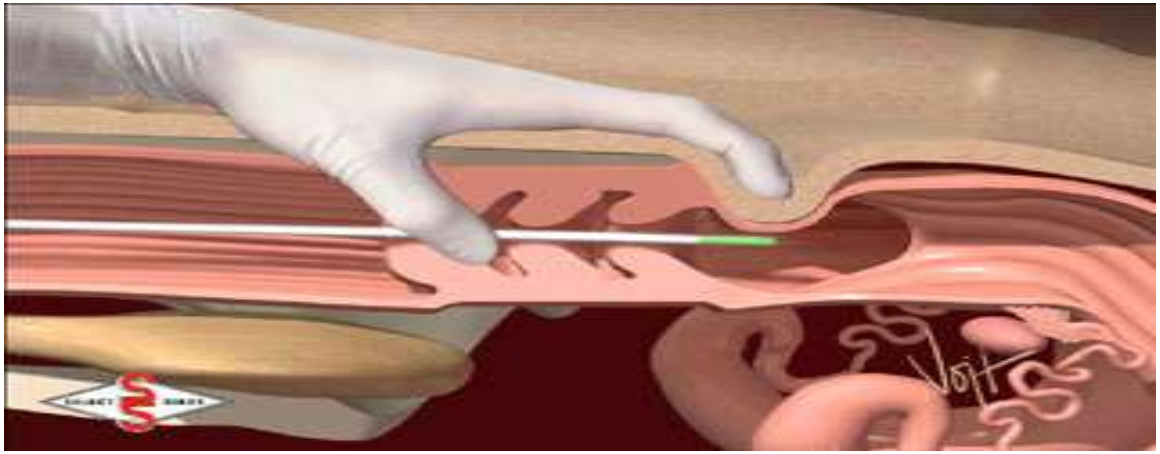


Figure #8: Locating the end of the insemination gun.



Procedure for artificial insemination

Figure #9: Depositing the semen in the body of the uterus

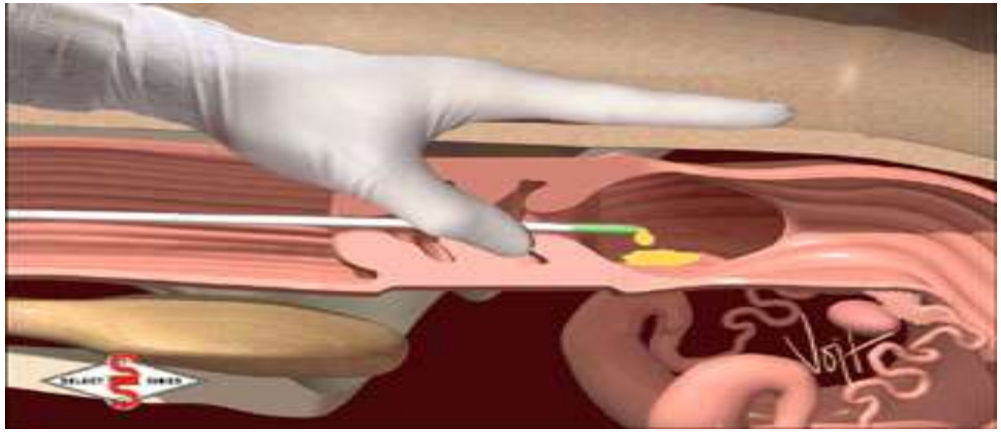
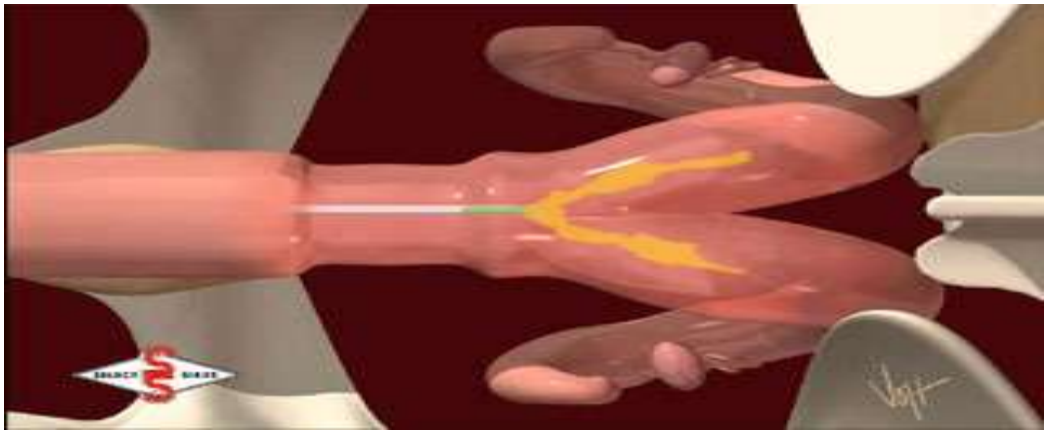
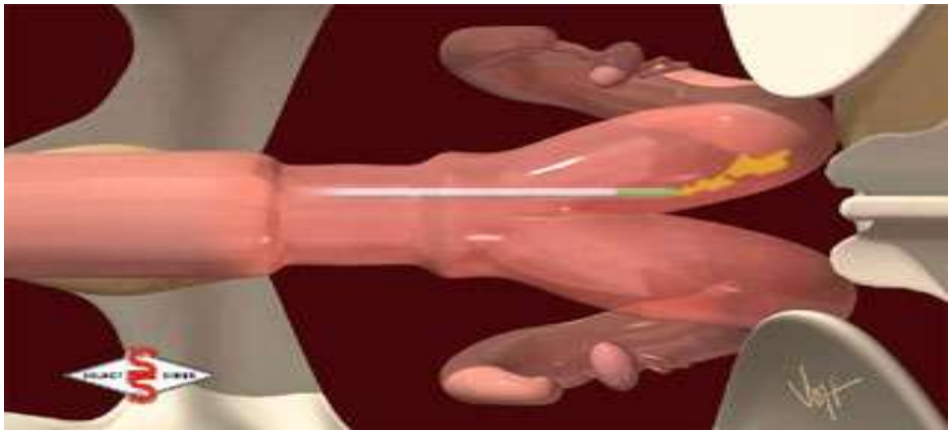


Figure #10: Good distribution of the semen to both uterine horns.



Procedure for artificial insemination

Figure #11: Improper distribution of the semen into one horn because the insemination gun is pushed too far forward.



The female reproductive tract indicating the target location