

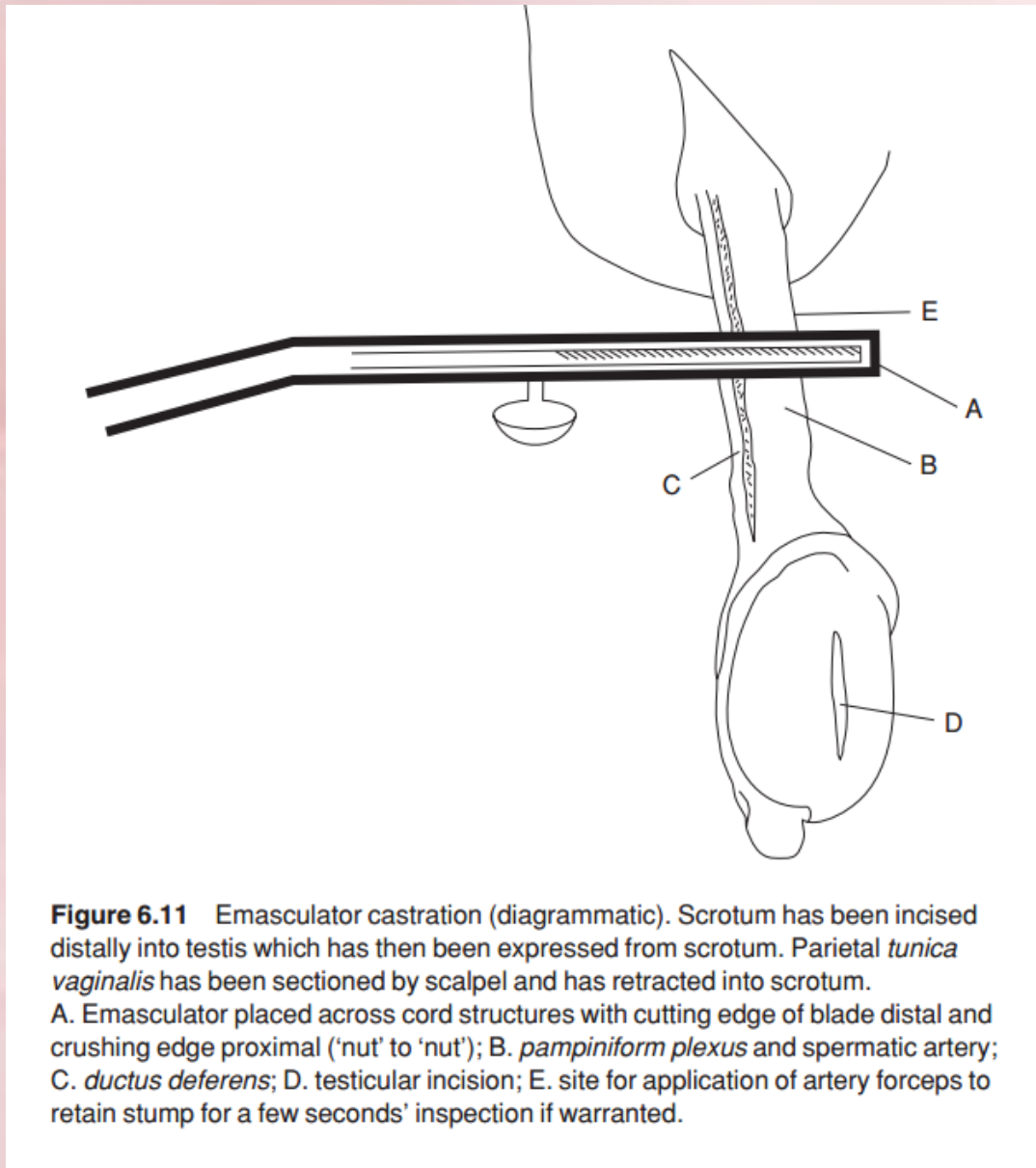
Surgical Technique

1. This procedure is done aseptically on the field.
2. The distal tip of the scrotum is grasped and pulled towards the surgeon. An assistance can push the testes upwards towards the calf's body.
3. A horizontal incision with a scalpel is made through skin and fascia at the widest part of the scrotum (distal third) and the entire distal segment of the scrotum is transected.
4. One testicle is held while a vertical incision (proximal to distal) was made along the length of the testicle to the point of the epididymis head, with a light pressure to separate the layers of the loose connective tissue of the scrotal fascia, and the parietal vaginal tunic.
5. The testicle is everted through that long incision.
6. The tunica vaginalis is removed by creating a tear using the pressure of a fingertip through the thin layer adjacent to the testicle. This tear is lengthened as the finger is pushed distally towards the head of the epididymis.
7. The tunica vaginalis pull taut then is separated from epididymis head with scalped. While pulling the testicle taut towards the surgeon the fascia and tunica vaginalis is pushed proximally towards the animal's body.
8. The surgeon's hands should not touch the proximal regions of the spermatic cords. An alternative to the horizontal incision is to use the Newberry knife. The Newberry knife makes a vertical incision from approximately the middle of the scrotum leaving cranial and caudal flaps of scrotal skin. The testes are dissected in the same manner as above. The incision heals by these flaps contracting on themselves thus allowing better drainage of the surgical site.

Technique now varies depending on method of haemostasis:

- small calf (one week to two months): emasculator, torsion, traction are possibilities in descending order of preference
 - large calf (two to six months): emasculator, torsion. Traction is contraindicated as excessively painful
 - small bull: emasculator, possibly with ligation
9. Especially in larger bulls double ligate the spermatic cord to adequately prevent hemorrhage. Using two haemostats 1 cm apart, clamp down fully on the spermatic cord. Begin to knot a circumferential ligature proximally to one haemostat with sterilized cat gut absorbable suture material. Upon removing the haemostat tighten the knot firmly which should sit within the groove made by the haemostat. Tie off the cat gut securely and repeat above the other haemostat.

10. Apply the emasculator for 1-2 minute(s) distally to the double ligation “nut to nut” (as seen in figure 6.11). It is important that the emasculators be pushed proximal and that tension on the cord be relaxed when emasculation is performed.
11. Once closed the testicle should be cut off while the spermatic cord attached to the body crushed allowing for improved haemostasis and ensuring that the spermatic cord is not cut, bleeding and retracted back into the body.
12. Place haemostat (or artery forceps) on edge of spermatic cord proximal to emasculator but not across cord, remove emasculator, and check for haemorrhage.
13. Repeat for the other testicle.
14. Following removal of the emasculators, any redundant adipose tissue is removed. The incision may be sprayed with a topical antibacterial. Spray around the wound with larvicide. Check for signs of haemorrhage and infection daily for a few days.



Postoperative Management

The wound is left open to heal by secondary intention. Concurrent immunization for black leg and malignant edema is recommended. Prior immunization would be preferable, but it is often not practical. Exercise of the calves is important following castration. Calves should be monitored for signs of hemorrhage for approximately 24 hours.

Complications and Prognosis

The prognosis for surgical castration is good and complications are usually mild and infrequent. Potential complications include hemorrhage, excessive swelling, preputial oedema - invariably from extension of scrotal swelling, tetanus, and infection. Infection may occur 5-15 days following the procedure and often arises much later than would be anticipated. Infections usually manifest as acute cellulitis and require prompt treatment with drainage and antibiotics.

Recommendations

This procedure should be performed early in a calf's life. It is recommended that nursing calves be castrated at 1-4 weeks of age. Bucket-reared calves should probably be castrated 3-4 weeks later because of their slower start nutritionally and their inferior conditions.

Features to Surgical castration:

Generally, surgical castration is preferred because it is associated with rapid wound healing and a low failure rate although the method of castration used by beef cattle operations varies with region and is subjective. It may not be recommended in for feed lot cattle where post-operative conditions such as ubiquitous distribution of faeces increases the likelihood of infection.