Tail Docking and Castration of Lambs

(Published February 1996)

Manus Graham, MVB, MRCVS
The Moredun Foundation
Pentlands Science Park
Bush Loan
Penicuik
EH26 0PZ
Summary

- Only castrate or dock if necessary
- Avoid castrating or docking lambs less than 24 hours old
- Only castrate or dock healthy lambs
- Ensure lambs to be castrated or docked are protected against the Clostridial diseases
- Avoid castrating or docking in bad weather or in mucky or soiled surroundings and during the fly season.
- Before castrating check that there is no scrotal hernia and that both testes are present in the scrotum
- Check afterwards, especially last thing at night, for signs of ill effects such as haemorrhage or excessive discomfort.
- Ensure all operators are trained, competent and aware of the relevant laws and Codes.
Tail Docking of Lambs

With regional variations, the practice of tail docking is widespread in the UK, usually though not invariably to reduce future accumulations of faeces around the tail and breech area which favour the occurrence of Blow Fly Myiasis (“Strike”). The blowfly (Lucilia sericata) is attracted to the damp warm conditions of a soiled breech and tail to lay its eggs. The larvae which hatch out burrow into the flesh to feed, leading to tissue damage, distress, loss of condition and even death depending on the severity of the infestation. The occurrence of strike is more common in the south of England and Wales (up to 80% of flocks and almost 3% of sheep) compared with the northern part of England (59% of flocks and 0.7% of sheep), probably because the climatic conditions in the south favour the blowfly which is less abundant at the altitudes encountered on hill farms and, furthermore, because differences in breed and type of grazing mean that hill flocks are less prone to scouring.

Other reasons given for docking include ease of management at mating and lambing and altering the appearance of certain breeds for traditional reasons. Whereas the former may be the case, the latter is not a sound reason for docking. There is a belief that long tails may reduce breeding efficiency in ewes but the evidence does not support this.

However, available evidence does indicate that docking is beneficial to lambs on farm where blowfly strike is a problem, one study revealing an incidence of strike five times greater in undocked lambs compared with docked lambs. In this regard length of tail remaining after docking is important. Very short tails increase susceptibility to strike whereas long docked tails give the lowest incidence of strike. The minimum length of tail is also governed by the law (see below).

The tail affords a degree of protection against the elements to the sensitive anus and vulva and perhaps the udder also. Therefore it is in each farmer’s interest to consider carefully the necessity for docking lambs rather than doing so out of routine. Clearly, if scouring is controlled by an adequate pasture management and worming programme the need to dock should be reduced.

Methods of Tail Docking

Rubber Ring

This is the most widely used method. Using an elastrator, a constricting latex ring is applied to the tail below the level of the anus in males and the vulva in females. This cuts off the blood supply to the tail beyond the ring resulting in death of those tissues and the sloughing (shedding) of that part of the tail. The actual separation usually occurs at the joint immediately above the ring. This takes about 3 to 4 weeks. Some operators attempt to place the ring on a joint in the belief that this is less painful or more effective. At present there is no hard evidence to support this although a minority of lambs do seem to react less than others for some reason.

- **Advantages**: effective; cheap; can be performed by single operator; relatively unskilled; relatively safe for operator and lamb.
- **Disadvantages**: infection can occur over the prolonged sloughing period as the ring cuts into the tissues. This can allow bacteria to gain access via the tail resulting in abscesses or, more seriously, Clostridial diseases such as tetanus.
Also, Pus formation around the ring is common and may attract flies. Rubber rings may not be used by Law is the lamb in more than 7 days old, timing incompatible with common hill farming practice. Despite its ‘clean’ appearance, there is a good deal of scientific evidence that this method involves considerable pain in the majority of lambs.

**Knife**

A small minority of farmer (3% in England and Wales) use this method. Severing at a joint is easier and therefore swifter. A scalpel or very sharp knife which is not used for any other purpose (other than castration) must be employed. It should be placed in an antiseptic liquid such as povidone-iodine (“Pevidine”) or chlorhexidine gluconate (“Hibitane”) after use on each lamb. Good hygiene is essential. Soiled tails should be cleaned and swabbed with a dilute Pevidine or Hibitane solution before docking and the operator’s hands should be washed and dried frequently. An assistant should catch and restrain the lambs thereby allowing the operator to keep his/her hands free from contaminants. Applying a wound powder or spray (e.g. Terramycin aerosol) to the stump may help prevent infection.

- **Advantages:** effective; cheap; can legally be used in older lambs.
- **Disadvantages:** risk or serious haemorrhage (bleeding), particularly in older lambs, which causes a major set-back or at worst is fatal; leaves an open wound which can allow entry of bacteria; not suitable in fly season; there is scientific evidence that it is the most painful method; two people required if hygiene to be maintained.

**Burdizzo**

A Burdizzo or similar bloodless castration instrument (see below) is used to crush the tail, preferably on a joint. It is held in place for 5 to 6 seconds and then usually a knife is introduced below the jaws of the instrument and the tail severed just below the crush.

- **Advantages:** less likely to bleed severely compared with the knife method; can legally be used in older lambs.
- **Disadvantages:** slow; some consider this method cruel as it may involve crushing bone; may damage the Burdizzo jaws; effectively leaves an open wound; awkward to perform single-handed; good hygiene requires a handler and an operator.

**Docking Iron**

These instruments (a number of different designs are available e.g. Alfred Cox, Ritchey Tagg) use a blade heated by an integral gas burner to sever and cauterise (sear) the tail in one swift action. The lamb is held by an assistant or a specially designed cradle.

- **Advantages:** as well as severing the tail easily, the heated blade cauterises the tissues and blood vessels thus minimising or preventing haemorrhage; the heat sterilises the blade; scientific evidence suggests this is the least painful method, as the nerve endings are destroyed by the intense heat; one design can be operated single-handedly and the flame and blade have a guard over them; can legally be used in older lambs.
- **Disadvantages:** some designs involve the use of two operators with a risk of burns being suffered; fire risk; some scientific evidence suggests that cauterised tails take slightly longer to heal; a different method must be used for castration.
Long Term Side-effects of Tail Docking

Various studies have been conducted to see if the different methods of tail docking adversely affect subsequent growth and productivity. No such effects were found overall. Nevertheless, individual lambs which suffer severe haemorrhage or infection are detrimentally affected. There is evidence that a proportion of docked lambs may develop similar nerve problems as are seen in human amputees who develop phantom limb pain.

Castration of Lambs

![Diagrammatic representation of the anatomical structures in the region of the scrotum of the lamb](image)

**Figure 1.** Diagrammatic representation of the anatomical structures in the region of the scrotum of the lamb.

The testes (or testicles) produce sperm and the male hormone testosterone which is responsible for secondary sexual characteristics and influences certain aspects of male behaviour. Removal or inactivation of the testes renders the animal infertile (thus preventing indiscriminate breeding) and removes the influence of testosterone on carcass characteristics and behaviour. Consequently the darker, characteristically flavoured and tougher meat found in mature rams is avoided, as is inter-male fighting for dominance with its associated problems of injury and loss of productivity.
Castrated lambs have more fat cover on the carcass and marbling of muscle which aids in cooking and is considered by some to improve the flavour of the meat. However, entire (un-castrated) male lambs show better growth rate, efficiency of feed utilisation and carcass yield than castrated lambs (wethers). In addition, there are risks associated with castration (see below) as well as the costs and labour involved.

However, non of the drawbacks associated with entire mail lambs appear until the animal reaches puberty at 4 months of age onwards, while many of the benefits of leaving them entire are present. Therefore, where it is intended to fatten lambs for slaughter before this age it is advantageous not to castrate them.

The testes originate in the abdomen of the developing foetus (unborn lamb) and subsequently descent down the left and right inguinal canals (breaks between the abdominal muscles) into the scrotum (“purse”). These inguinal canals remain open throughout life. As the testes enlarge they are no longer able to squeeze up (or down) the canals. However, shortly after birth they are small enough to do so and rough handling will reflexly cause the testes to be withdrawn into the abdomen temporarily, thus delaying castration.

In a minority of individuals a testis may fail to descend into the scrotum and continue to develop to a limited extent in the abdomen. These cases are referred to as monorchids or “rigs”. The testis retained in the abdomen will be at body core temperature which is too high to allow the production of sperm so if the one testis in the scrotum is removed in the normal way the animal is likely to be infertile. This temperature effect is exploited by technique call “short-scrotuming” which is sometimes used as an alternative to castration of lambs in Australia and New Zealand. The testes are pushed back up the inguinal canals, or up against the abdominal wall in the case of slightly older lambs, and the rubber ring is placed around the neck of the empty scrotum thus preventing the testes returning to their normal position and temperature. This renders the animal infertile but the advantage over castration is that although a testis at body temperature does not produce sperm, it does produce testosterone hormone and so the beneficial effects of this on productivity can be enjoyed while avoiding indiscriminate breeding.

Occasionally a small loop of intestine may inadvertently travel down the inguinal canal and be present in the scrotum, a condition referred to as a scrotal hernia. Such a loop of intestine can be felt as a slippery, mobile structure which makes one half of the scrotum look “fuller” than the other. Ant attempt at castration under these circumstances will be disastrous as severe damage to the intestine usually results in a a slow death.

It is important therefore before attempting to castrate a lamb by any method to ensure both testes are in the scrotum and that they are not accompanies by loops of intestine.

**Methods of Castration**

**Rubber Ring**

The rubber ring is designed to constrict the blood flow to and from the testes and scrotum, all of which slough off after approximately 3 to 6 weeks, leaving a sealed scar behind.
Using the same instrument as for tail docking the rubber ring is applied to the neck of the scrotum having first ensured that both testes are present and there is no scrotal hernia.

The ring should be placed below (i.e. on the scrotal side of) the two rudimentary teats while ensuring that both testes are trapped in the scrotum. Only when everything is correct should the ring be gently released off the elastrator.

Avoid placing the ring directly on the teats or the testes as this may increase discomfort. Placing the ring too high i.e. between the teats and the body wall, can trap the urethra (the tube by which urine passes from the bladder to the penis) thus preventing the bladder from emptying. This causes great discomfort and the bladder finally ruptures leading to the slow death of the lamb.

- **Advantages**: quick; no blood loss; effective with care; modest level of skill required for safe use; assistant not essential.
- **Disadvantages**: as for tail docking (legal in the first week of life only, painful infection may occur around the ring); risk of trapping urethra; in very small lambs (particularly very young Blackface) the testes are so small that they can actually pass back up from the scrotum through the central hole in the ring after the ring has been correctly applied. These lambs will not be castrated but should be infertile for the reasons discussed above.

**Surgical (Open) Castration**

As the name suggests this method involves a surgical procedure resulting in the complete removal of the testes. As with any surgery, good hygiene is essential if infection and delayed healing are to be avoided. Surgical castration leaves an open wound with direct communication via the inguinal canals into the abdomen so at least the same standard of asepsis (hygiene) mentioned above in relation to tail docking by knife should be employed with regard to the instrument, the operator and the lamb. An assistant is required to catch and restrain the lamb thus leaving the operator’s hands free and clean. Only a very sharp knife or scalpel designated for the purpose should be used for castration.

As always, check that there is no scrotal hernia and that both testes are present. The scrotum should be cleaned if necessary and swabbed with dilute Pevidine or Hibitane. The bottom of the scrotum is drawn downwards (leaving the testes behind) and cut off with one smooth stroke of the scalpel. The open scrotum is then pushed up towards the abdomen causing the testes to appear. The testes are grasped one at a time and drawn steadily downwards until the cord breaks. The remaining part of the cord recoils into the inguinal canal and the blood vessels in it contract and thus are much less likely to bleed than were they to be cut. However, some testicular arteries fail to seal despite this traction and severe haemorrhage can result causing a serious setback or death.

Although by leaving an open wound there is less chance of abscess formation since the wound can drain, such a wound may allow infection to gain access. Furthermore, should any loops of bowel travel down either of the inguinal canals there is nothing to prevent them prolapsing and becoming damaged with usually fatal consequences.
Finally, while still the subject of some debate, there is considerable scientific evidence that, compared with the other methods in common usage, this method produces the most severe and prolonged acute pain.

- **Advantages:** can be used in lambs up to 3 months of age; cheap; effective; quick; modest level of skill required.

- **Disadvantages:** risk of severe haemorrhage; risk of potentially serious infection; risk of prolapse of intestinal loops; two people required to maintain good surgical asepsis; not suitable during fly season; acutely painful.

**Bloodless Castrators (Emasculators)**

These instruments are designed to damage irreversibly the blood vessels to each testis by crushing the spermatic cords without cutting the skin of the scrotum. Thus deprived of their blood supply, the testes *atrophy* (shrink up) and become non-functional after several weeks. Although the testes shrivel *within* the scrotum, the scrotum itself is retained. This is the crux of the method and it’s main advantage - there is no open wound by which infection could gain access.

It is essential that the scrotum is not crushed across it’s full width. Were this to happen then it would be likely to atrophy (due to *all* the small blood vessels in the skin of the scrotum being crushed) and fall off leaving a gaping wound which would be unlikely to heal over. Such a wound would cause considerable suffering and could allow infection to gain access into the abdominal cavity via the inguinal canals resulting in peritonitis and death.

For many years the Burdizzo emasculator has been available. It is important to use the small version for lambs as the larger cattle model would crush too much of the scrotum. Lugs or “cordstoppers” on the ends of the lower jaw help prevent failures (see below). It can be difficult to manoeuvre the cord, apply the instrument and restrain the lamb at the same time (often the lamb will struggle vigorously when the crush is applied, if not before) so ideally a handler and an operator are required to do the job safely and effectively. More recently a new lamb emasculator, the Little Nipper, has become available which is designed to be easier to use with one hand. Both of these instruments are precision made and must not be used for other purposes. They should be stored carefully, oiled and with the jaws open.

Each testis gives off a spermatic cord (containing an artery, a vein, a nerve and a *vas deferens* which is the tube that carries sperm from the testis to the penis) which can be felt running in the neck of the scrotum from the top of the testis towards the inguinal canal in the abdominal wall. Doing one side at a time, the spermatic cord is manoeuvred to the outer edge of the neck of the scrotum (in order to minimise the amount of scrotal skin that will be bruised by the jaws of the instrument) before being crushed. It is vital that the skin in the middle of the scrotum is not damaged but essential that the cord is crushed. When the second cord is being crushed the instrument should be applied slightly lower so that the left and right crushes are not directly opposite one another but staggered in order that a greater width of skin in the middle of the scrotum is undamaged. This undamaged area of skin will contain sufficient small blood vessels to keep the scrotum viable (alive).
Care must be taken to ensure that the cord does not slip from the jaws as they are closed. The lugs help to prevent this but were it to happen then the blood supply to that testis would be undamaged and the testis would develop in the normal way. This is arguably the major drawback with this method as such failures will not be apparent for some weeks. Skill and care are therefore required.

Traditionally two crushes are applied to each cord for good measure, the second one below the first as this area should by then be numb. However, a single crush on each cord maintained for 6 to 10 seconds may be effective with some instruments. The instrument should be applied below the teats (to avoid the urethra as in the rubber ring method) but away from the testis to avoid unnecessary pain. Ensure there is no scrotal hernia present before applying the instrument. Crushing a loop of bowel would usually result in leakage of gut contents and death.

When the cord is crushed the main nerve to the testis is also destroyed and so the testis quickly becomes insensitive. So although the crush itself is painful there is not the build-up of the type of pain one gets with the rubber ring. However, there is usually some subsequent swelling and stiffness of gait.

The method relies on the instrument being in good working order and the operator being possessed of a considerable level of skill in its use. The high number of failures (i.e. lambs not effectively castrated) sometimes encountered with this method is its main criticism. Hasty application (missing the cord) and hasty removal (failure to apply the crush for 6 to 10 seconds) are major contributing factors. Another factor is the instrument itself. If the hinges or the jaws of the instrument are worn then it may not exert enough pressure to crush the cord effectively. Furthermore, if the jaws of the instrument have become roughened by rust or abuse (being used as pliers etc.) then they will cut the skin of the scrotum in places and serious infection will follow.

Variability in the pressure exerted by different instruments has been studied and prototypes of powered instruments which always exert the same pressure have been developed.

- **Advantages:** no open wound or focus for infection or flies; no blood loss; can be used on lambs up to 3 months of age; cheap once instrument has been purchased; scientific evidence suggests it is not as painful as other methods at least in the first few hours after castration.

- **Disadvantages:** comparatively high level of skill and care required; failure rate can be considerable; failures not easily detected at the time; ideally an assistant is required to hold the lamb; risk of damaging urethra; comparatively slow; effectiveness of instruments varies with manufacture, wear and abuse; cost of instrument.
Aftercare
After castration or docking lambs should be placed in a clean sheltered area where they can recover and mother-up.

All lambs should be checked throughout the day and especially last thing at night for signs that something is amiss. These may be persisting signs of discomfort or distress if, for instance, the urethra has been trapped and the lamb subsequently cannot urinate. Check the position of the rubber ring, if one has been used to castrate, and remove by careful cutting if it is too high and place a new one in the correct position. Similar signs may be seen where a scrotal hernia has gone un-noticed. Prompt removal of the ring may save the animal. If the lamb has lost a lot of blood then it will appear weak or dull and on closer inspection its gums and conjunctiva (the membranes inside the eyelids) will appear pale.

It may pant in an effort to get more oxygen and its heart may be felt beating furiously by squeezing the chest gently above the breast bone just behind the elbows. The lamb may feel very cold, particularly the extremities (check the feet and ears).

It may be possible to stop bleeding from the tail with a tight bandage (or rubber ring) but lambs that are weak are best treated by a veterinary surgeon.

Dull, weak and cold lambs may be in shock. This can occur not only with severe blood loss but also with serious tissue trauma (damage) and severe pain. If these signs appear and persist after the Burdizzo method castration gently check for signs of a scrotal hernia or crushed urethra. These cases require veterinary attention on humane grounds.

Act promptly where there are signs of problems and seek veterinary advice if in doubt.

The Law Relating to Castration and Tail Docking
A number of acts of parliament, as amended, and regulations made under these acts, govern the castration and tail docking of lambs in the United Kingdom.

Under the exceptions to the Veterinary Surgeons Act 1966 a lay person aged 18 or over may castrate rams up to the age of 3 months.((Schedule 3 Amendment) Order 1998) or tail lambs using any of the recognised methods with the exception of the rubber ring (see below) Once a ram lamb has reached 3 moths of age then only a veterinary surgeon may castrate it and he or she is obliged, under the Protection of Animals (Anaesthetics) Acts 1954 and 1964, to use an anaesthetic. Also under the 1964 act, use of the rubber ring method of castration or tail docking is limited to lambs in their first week of life.

Under he Agriculture (Miscellaneous Provisions) Act 1968 (which makes it a criminal offence to cause unnecessary pain or unnecessary distress to livestock, punishable by a maximum fine per offence of £2,500 or 3 months imprisonment or both) appropriate Ministers are empowered to make regulations for the purposes of the act which are mandatory. Under the Welfare of Livestock (Prohibited Operations) Regulations 1982 (as amended by the Welfare of Livestock (Prohibited Operations) (Amendment) Regulations 1987) sufficient tail must remain after docking to cover the vulva in the case of female sheep and the anus in the case of male sheep.
Furthermore, this act also provides for the Ministers concerned to make the Codes of Recommendations for the welfare of livestock. These Welfare Codes are advisory only. However, although not an offence in itself, failure to observe them can be used in evidence to support a prosecution brought under the Act. In addition, the Welfare of Livestock Regulations 1994 requires that all persons who keep livestock, or who cause or knowingly permit livestock to be kept (i.e. owners or stockmen) are familiar with the relevant Welfare Codes. For sheep, in relation to castration to castration and tail docking, these state that such procedures must be carried out “in strict accordance with the law by a competent trained operator”.

Finally, under the Protection of Animals Act 1911 to 1988 (in Scotland, the Protection of Animals (Scotland) Acts 1912 to 1988) it is a criminal offence to perform any operation “without due care and humanity” and in addition to a fine and/or imprisonment, anyone convicted of such cruelty can be disqualified from having the custody of any animal at all.

Timing of Castration and Tail Docking

As well as the legal constraints there are important husbandry considerations which should influence farm policy on these procedures.

All currently available methods of castration and tail docking involve a greater or lesser degree of acute pain which dominates the lambs behaviour for between one to three hours afterwards. This has been shown repeatedly in numerous rigorous studies conducted here in Edinburgh and in New Zealand, Australia and the USA. Some lambs become preoccupied by this pain and in some cases physically incapable of anything else while it lasts. If this occurs in the first 24 hours of life then the lamb may not feed sufficiently. This can lead to mismothering and an inadequate intake of colostrum, leaving the lamb prone to various diseases, particularly ‘watery mouth’. Hypothermia is another risk where newly born lambs are subjected to these procedures. Therefore it is recommended that lambs should be at least 24 hours old before being castrated or docked. Mismothering is also a risk where housed lambs are castrated or docked immediately prior to being turned out so this also should be avoided.

In outdoor-lambing hill flocks, gathering-in too early also increases the chance of mismothering so castration and docking tend to be left until other procedures such as tagging and vaccination can be carried out at the same time. Under present legislation (see above) this excludes the use of rubber rings as the lambs are too old.

Finally, these procedures are best avoided in the fly season.

Further Considerations

Numerous studies have shown that all methods of castration and tail docking are considerably less stressful for the lamb as indicated by a rapid and, in some cases, prolonged elevation of the stress hormone cortisol in the blood.
In weak or sickly lambs this additional stress may be sufficient to cause a terminal 
decline, or at best prove a permanent set-back. Therefore, only healthy lambs should be 
subjected to castration or tail docking. If in doubt, postpone these procedures until the 
animal is well.

Most methods of castration of castration and tail docking, including the rubber ring, leave 
a potential focus or port of entry for bacteria, some of which cause debilitating or fatal 
diseases. It is vital to ensure that lambs to be castrated or docked are protected against the 
Clostridial diseases (such as tetanus). In young lambs this is usually by passive immunity 
(i.e. they have received colostrum from a vaccinated ewe within hours of birth, or they 
have been given the relevant antiserum). In some flocks protection against castrating and 
docking in bad (particularly wet) weather or in mucky or soiled surroundings as this 
increases the risk of infection since many bacteria, including Clostridial organisms, are to 
be found in soil and droppings.