

Sheep castration, tail docking, and pain management

It is essential for sheep health and welfare, that any procedures having the potential to create pain and suffering should be balanced against the need for that procedure. Castration and tail-docking are sometimes routine husbandry procedures and, because they are painful, efforts must be made to reduce their use, especially where there are alternative management techniques.

For many flocks, we recognise that tail-docking is currently the only practical means of managing the serious negative health and welfare outcomes of fly-strike. However, docking should be considered a last resort approach and should always be in consultation with a veterinary surgeon.

Where castration and/or tail docking are considered to be necessary, this should be in consultation with the farm's veterinary practice as part of the farm health and welfare plan. Associated pain should ideally be minimised through the use of local anaesthesia and appropriate analgesia, however, this is impeded by the lack of licensed products for use in sheep.

We consider our associated recommendations as aspirational and something to work towards within the context of the flock and wider farm management plan.

Legislation

UK animal welfare legislation, via the Animal Welfare Acts^{1,2,3}, legally restricts mutilations unless they are carried out for the purposes of medical treatment.

There are some mutilations which are exempt from the ban on the basis that they can be necessary for long-term welfare or animal management reasons, control of reproduction, or for identification purposes. These procedures are listed in the regulations for the relevant UK jurisdiction.

The Mutilations (Permitted Procedures) (England) Regulations 2007⁴ and the Mutilations (Permitted Procedures) (Wales) Regulations 2007⁵ allow for:

- Castration using a rubber ring or other device to constrict the flow of blood to the scrotum on animals aged not more than seven days. When any other method is used, an anaesthetic must be administered where the animal is aged three months or over.
- Tail docking using a rubber ring or other device to constrict the flow of blood to the tail on animals aged not more than seven days. When any other method is used an anaesthetic must be administered. In all cases, enough of the tail must be retained to cover the vulva of a female animal or the anus of a male animal.

¹ <http://www.legislation.gov.uk/ukpga/2006/45/contents>

² <http://www.legislation.gov.uk/asp/2006/11/contents>

³ <http://www.legislation.gov.uk/nia/2011/16/contents>

⁴ <https://www.legislation.gov.uk/ukssi/2007/1100/schedule/5/made>

⁵ <http://www.legislation.gov.uk/wsi/2007/1029/schedule/5/made>

The Prohibited Procedures on Protected Animals (Exemptions) (Scotland) Regulations 2007⁶ allows for castration and tail docking but does not specify the method or apply age restrictions.

The Welfare of Animals (Permitted Procedures by Lay Persons) Regulations (Northern Ireland) 2012⁷ allows for:

- Castration using a rubber ring or other device to constrict the flow of blood to the scrotum on animals aged not more than seven days. When any other method is used it shall only be used up to the age of three months
- Tail docking using a rubber ring or other device to constrict the flow of blood to the tail on animals aged not more than seven days. When any other method is used it shall only be used up to the age of three months.

Historical Background

Castration has been traced back to around 4000 years BCE at around the time that the domestication of sheep for the purposes of managed wool and milk production intensified⁸. The perceived benefits include a reduction in undesirable aggressive behaviour and ease of management alongside the more obvious goal of the prevention of unwanted pregnancies.

Docking appears to be a later practice, not appearing in records until the 16th or 17th centuries, its main purpose seems to have been the reduction of faecal or urine contamination in the longer-woolled breeds that began to be prevalent at that time.

Current Practice

The essential reasons for both castration and tail-docking have altered little with time.

Castration to avoid unwanted pregnancies

Castration may be needed to prevent unwanted pregnancies in a mixed-sex flock. This can arise where the overall management of the farm means that a mixed-sex group is the best way to rear lambs prior to sale or slaughter. Hill breeds in particular, being slow growing, may reach sexual maturity before the desired slaughter weight. While animals can be segregated into same-sex flocks, this may not be convenient depending upon grazing availability and potential markets for lamb meat⁹.

Castration to avoid ram taint

Castration may also be performed to eliminate 'ram taint'. Taint of meat is due to the presence of skatoles in the fat that may contribute to an unpleasant taste. Although there is some evidence that the skatole concentration is greater in the fat of entire rams compared to castrate ram lambs, the concentration is also considered to be below the detection threshold¹⁰.

⁶ <http://www.legislation.gov.uk/ssi/2007/256/schedule/4/made>

⁷ <http://www.legislation.gov.uk/nisr/2012/153/schedule/3/made>

⁸ "That Which Was Missing": The Archaeology of Castration by Kathryn Reusch https://ora.ox.ac.uk/objects/uuid:b8118fe7-67cb-4610-9823-b0242dfe900a/download_file?file_format=pdf&safe_filename=THESIS01&type_of_work=Thesis

⁹ [FAWC report on the implications of castration and tail-docking for the welfare of lambs](#)

¹⁰ New Zealand Society of Animal Production: [BRIEF COMMUNICATION: Comparison of castrate and entire ram-lambs for meat quality and skatole in the fat](#)

Sheep castration, tail docking, and pain management

As sheep are seasonal breeders, the onset of breeding activity, rather than the absolute age of the ram is the more significant factor when assessing the likelihood of taint. Castration is unnecessary where lambs will be finished and sent to slaughter before they reach sexual maturity. Castration to avoid ram taint will therefore only be needed if the lambs are to be slaughtered at a greater age. Evidence shows that uncastrated ram lambs reach slaughter weight more quickly than castrates and produce the leaner meat favoured by consumers, as the male hormone testosterone promotes growth and favours muscle development over fat deposition¹¹.

Recommendation 1: Where possible, management practices aimed at achieving slaughter weight prior to sexual maturity should be adopted, providing this does not compromise welfare

Recommendation 2: Where sexual maturity is reached before slaughter, where possible, the onset of breeding activity should be prevented by physical and visual separation of ram lambs from ewe lambs

Recommendation 3: Castration should only be carried out when alternatives are not compatible with the overall management of the farm. Where possible, pain should ideally be minimised through the use of local anaesthesia and appropriate analgesia, taking into account the lack of licensed products.

Tail-docking to avoid fly-strike

Tail-docking is still performed to prevent faecal contamination of the tail and prevent subsequent myiasis (fly-strike).

Fly strike involves the opportunistic invasion of tissues by the larvae of *Lucilia sericata* (greenbottles), *Phormia terrae-novae* (blackbottles) and *Calliphora erythrocephala* (bluebottles). The eggs are deposited by the female flies on soiled fleece and hatch into larvae within 12 hours. As a direct consequence of the health and welfare harms of blowfly strike, there can be severe economic losses resulting from hide and wool damage, mortality, production losses¹², and reduced fertility in the ewe. In severe outbreaks, mortality rate can be as high as 10% of the flock¹³. Although it may be possible under some conditions to put management techniques in place in order to avoid the need for routine tail-docking, the health and welfare consequences of fly-strike should not be underestimated and when it occurs it can occur with surprising speed.

Preventive strategies could include:

- Selection of breeds with physical characteristics that reduce susceptibility: breeds with an open fleece are generally expected to have lower humidity at the skin surface and will dry more rapidly. The degree of skin folding around the breech may also be a factor
- Dagging (the removal of soiled wool) and crutching (the regular shearing of wool from around the breech)
- Shearing
- Foot rot control
- Frequent flock inspection, especially at high risk times

¹¹ Dr Tim Keady: [Lambs – why castrate?](#)

¹² Richard Wall, Fiona Lovatt: Blowfly strike: biology, epidemiology and control *In Practice* April 2015 Volume 37 181-188
<https://www.flockhealth.co.uk/Portals/0/Documents/In%20Practice2015Wall%20Lovatt-181-8.pdf>

¹³ E.Mainau, D.Temple, P.Llonch, X.Manteca: Welfare implications of tail docking and castration in sheep
<https://www.fawec.org/en/fact-sheets/51-sheep/247-castration-taildocking-sheep>

- Appropriate insecticide use, or insect growth regulators which affect the ability of insects to grow and mature normally.

Recommendation 4: The health and welfare consequences of fly-strike should not be underestimated and farmers and vets should work in partnership to ensure that prevention forms an integral part of the farm health and welfare plan

Recommendation 5: Where possible tailored management techniques appropriate to the climate, environment, and flock, should be put in place in order to reduce the need to tail-dock

Recommendation 6: Tail-docking should be carried out when alternative management strategies are considered to be insufficient to eliminate the risk of fly-strike. Where possible, pain should ideally be minimised through the use of local anaesthesia and appropriate analgesia, taking into account the lack of licensed products.

Worm control

While a change of pasture can result in faecal-staining, the main reason for diarrhoea in growing lambs is as a consequence of parasitic gastro-enteritis (PGE). Heavy worm burdens will result in stunted lambs or even deaths, but even at modest levels, lambs will grow more slowly.

Good worm control can help reduce the need for docking as well as achieving faster growth rates, which in turn results in slaughter weights being achieved earlier so reducing the need for castration. To achieve good worm control, and therefore minimise the effect on lamb performance and profitability, a strategy which incorporates a range of appropriate management tactics along with the careful use of anthelmintics must be employed. Above all, the strategy must be sustainable, and responsible with regard to anthelmintic use. The SCOPS principles <https://www.scops.org.uk> should be applied.

Recommendation 7: Good worm control should form an integral part of the farm health and welfare plan

Recommendation 8: Anthelmintic use should be judicious with particular emphasis on the SCOPS principles of sustainable parasite control

Methods of castration

- **Rubber ring or elastration** – a thick rubber ring is placed around the neck of the scrotum using an elastrator. The obstruction to the blood supply results in a shortage of the oxygen necessary for cellular metabolism, causing the tissues to become necrotic and eventually shed, along with the rubber ring, around 4 weeks after application. Assessment of behavioural and cortisol responses in lambs castrated using the rubber ring method suggest that this procedure is associated with acute pain. In very young lambs this may be so debilitating that insufficient quantities of colostrum are ingested, predisposing the lamb to a range of diseases. The lesions caused by the rubber ring are accompanied by behavioural changes indicative of chronic pain¹⁴

¹⁴ J.E.Kent et al Chronic inflammatory responses of lambs to rubber ring castration: are there any effects of age or size of lamb at treatment? <https://www.cambridge.org/core/journals/bsap-occasional-publication/article/chronic-inflammatory-responses-of-lambs-to-rubber-ring-castration-are-there-any-effects-of-age-or-size-of-lamb-at-treatment/7AB864C7E192F0F674FE492F58D475C2>

- **Surgical castration** - the testes are completely removed via an incision in the scrotum, with or without cutting, clamping or cauterising the spermatic cords. The FAWC report 1994 concluded that surgical castration caused significantly more distress than other methods. This position was reiterated in 2008¹⁵. In addition to the acute and chronic pain associated with the surgical procedure, there is a significantly increased risk of infection in comparison to the rubber ring method. There is also risk of severe haemorrhage, and risk of prolapse of intestinal loops.
- **Clamp (Burdizzo) castration** – the spermatic cords are crushed by application of a clamp to the neck of the scrotum. When properly applied for the appropriate length of time blood supply is obstructed and innervation of tissue beyond the crush is destroyed. This method may be used up to three months of age, and as skin remains intact the risk of infection is lower than with surgical castration. Behavioural observations suggest that beyond the initial acute pain associated with the process, the method represents a welfare improvement on the rubber ring method¹⁶
- **Short scrotum castration** – the testes are pressed against the abdominal wall by a distally located scrotal ring. The proximity of the testes to the body wall compromises effective spermatogenesis¹⁷. Although legal in the UK, this method is rarely used as it offers no appreciable advantages over normal ring castration and may be less effective
- **Immuno-castration** – testicular activity is depressed by the administration of a vaccine which prevents the release of the gonadotrophin releasing hormone (GnRH). This method has obvious advantages compared to the pain associated with physical castration, however there is no licensed vaccine against GnRH currently available for sheep in the UK.

Recommendation 9: Castration should only be carried out in consultation with a veterinary surgeon, as part of the farm animal health and welfare plan.

Recommendation 10: Castration must only be carried out by a trained and competent person and in accordance with legislation. Where possible, pain should be minimised through the use of local anaesthesia and appropriate analgesia, taking into account the lack of licensed products.

Recommendation 11: Castration should not be performed on lambs until the ewe/lamb bond has become established and a good colostrum intake has been assured. Particular attention will be needed for male lambs who may also be tail-docked at the same time.

Recommendation 12: Surgical castration at any age should only be carried out by a veterinary surgeon, where possible using local anaesthesia and appropriate analgesia under the Cascade.

Methods of tail-docking

Any decision to tail-dock should only be taken in consultation with a veterinary surgeon as part of the farm health and welfare plan.

Tail-docking methods

- **Rubber ring or elastration** - a thick rubber ring is placed around the tail using an elastrator. As with castration by this method, the obstruction to the blood supply causes the tissues to atrophy and drop off, along with the rubber ring, around 4 weeks after application. This method has been

¹⁵ [FAWC report on the implications of castration and tail docking for the welfare of lambs](#)

¹⁶ J E Kent et al: Randomised, controlled field trial of two new techniques for the castration and tail docking of lambs less than two days of age <https://www.ncbi.nlm.nih.gov/pubmed/14994857>

¹⁷ Kandeel and Swerdloff: Role of temperature in regulation of spermatogenesis and the use of heating as a method for contraception. <https://www.ncbi.nlm.nih.gov/pubmed/3275550>

shown to cause acute pain in lambs of any age¹⁸. Although evidence suggests that the pain associated with tail docking by this method is less than that caused by rubber ring castration, it is still considerable. The debilitating nature of acute pain can mean that very young lambs may ingest insufficient quantities of colostrum, predisposing the lamb to a range of diseases.

- **Surgical docking** – part of the tail is removed with a sharp knife. Studies of behavioural and cortisol responses show that surgical docking causes significantly more pain compared with other docking methods, and as such the FAWC report 2008 recommended that surgical docking by anyone other than a veterinary surgeon should be prohibited.
- **Hot docking iron** – the tail is severed using a purpose-designed heated docking iron. Evidence indicates that the pain response is similar to that associated with the rubber ring method. As the tail is removed at the time of the operation, FAWC takes the view that this method is preferable to the rubber ring method for older lambs with larger tails. As with all lambs over 7 days old, an anaesthetic should be administered at the time of docking.

Recommendation 13: Tail docking should only be carried out in consultation with a veterinary surgeon, as part of the farm animal health and welfare plan.

Recommendation 14: Tail docking must only be carried out by a trained and competent person in line with legislation. Where possible, pain should be minimised through the use of local anaesthesia and appropriate analgesia, taking into account the lack of licensed products.

Recommendation 15: Tail docking should not be performed on lambs until the ewe/lamb bond has become established

Recommendation 16: Surgical docking at any age should only be carried out by a veterinary surgeon, using appropriate anaesthesia and appropriate analgesia under the Cascade.

Recommendation 17: If both tail docking and castration are needed these should be carried out at the same time to reduce distress and the risk of mis-mothering.

Anaesthesia and analgesia

There are currently no analgesics and a very limited number of anaesthetics licensed for use in sheep within the UK which greatly reduces the potential for use. However, they can be prescribed by vets under the cascade¹⁹ provided appropriate withdrawal periods are observed.

Meloxicam has been shown to provide significant analgesic benefits to sheep²⁰ and products containing this active ingredient have been licensed for use in sheep in Canada and Australia. Care needs to be taken to avoid an overdose when calculating dose volume for small lambs.

While there are compelling welfare arguments to use local anaesthetic and/or NSAIDs for both castration and docking, the number of animals involved and the size of young lambs presents significant logistical problems. If the needles used for injecting local anaesthetic or NSAIDs are used for multiple lambs,

¹⁸ Kent et al: Changes in plasma cortisol concentration in lambs of three ages after three methods of castration and tail docking <https://www.ncbi.nlm.nih.gov/pubmed/8235094>

¹⁹ The Cascade: prescribing unauthorised medicines <https://www.gov.uk/guidance/the-cascade-prescribing-unauthorised-medicines>

²⁰ Colditz, Paull, Lloyd, Johnston, Small: Efficacy of meloxicam in a pain model in sheep <https://www.ncbi.nlm.nih.gov/pubmed/30693494>

potential infections may outweigh any welfare benefits, although using a sterimatic device can provide a solution.

A device that delivers local anaesthetic and applies a rubber ring has been developed, which is of benefit in overcoming issues of practical delivery of local anaesthetic to large numbers of lambs. It has not yet been launched in the UK.

Recommendation 18: where possible local anaesthesia and appropriate analgesia under the Cascade should be used for all surgical castration and tail-docking procedures, and anaesthetic must be used for surgical castration in sheep aged three months or over

Recommendation 19: local analgesics and anaesthetics with currently established use in sheep should be licensed as such in the UK.