

Castration Risks and Benefits: Dogs

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Population control: surgical castration is currently the most reliable permanent means of preventing unwanted breeding in male dogs. In view of the large numbers of unwanted dogs in the UK, male dogs should be castrated unless there is a good reason not to do so, and if they remain entire unwanted matings must be reliably prevented through careful management.

Health-related effects: recent research suggests that castration might increase the risk of some health problems in male dogs while it reduces the risk of others. There is not currently enough evidence to know how reliable these findings are and whether they apply to all dogs or just certain populations of dogs. Until more research becomes available decisions regarding castration should be made according to its effects on population control and behaviour rather than health.

Behavioural effects: castration involves removal of both testes, the main source of testosterone in males. Testosterone acts as a behaviour modulator: it does not directly cause behaviours, but increases the likelihood that certain behaviours will occur, including:

- Escaping/roaming to find in-season bitches
- Urine marking
- Confident aggression to other male dogs
- Excessive mounting of bedding, people, other dogs

Testosterone can also influence other behavioural traits, increasing:

- "Risk-taking" behaviours: entire animals may be more likely to engage in a risky situation rather than withdrawing.
- Arousal and intensity of aggression shown during a conflict: entire males tend to become aroused more quickly, show higher arousal levels and remain aroused for longer than castrated males.
- "Self-confidence": research in other species suggests that testosterone is associated with confidence and castration with an increase in fearfulness/anxiety. This has not been adequately researched in dogs.
- Interest in other dogs, especially bitches, making it harder to get their focus when working/training.

The longer term effects of castration before puberty compared to afterwards on the development of social behaviour in male dogs have not been fully evaluated and again, more research is needed before we can assess this more accurately.

Whether or not castration will affect the likelihood of a dog showing a particular behaviour will depend on a number of things including:

- Whether or not that behaviour is influenced by testosterone: many problem behaviours are not influenced by testosterone at all, and some of those that are, such as mounting or urine marking, can occur for other reasons including frustration or anxiety.
- How long the dog has been showing the problem behaviour: learning increases the likelihood of a dog continuing to show a particular behaviour after castration.

Castration most likely to be beneficial in:

- **Dogs showing behaviours that are likely to be influenced by testosterone esp:**
 - Escaping/roaming/distractibility due to nearby in-season bitches
 - Indoor urine marking
 - Confident aggression to other male dogs (particularly entire males)
 - Excessive mounting of bedding, people, other dogs

NB: castration can reduce the severity of these behaviours but may not completely eliminate them; behaviour modification may also be needed. Castrating sooner rather than later should reduce the effect learning has in maintaining behaviours longer term, and castration before puberty should reduce the likelihood of these problems occurring, although it does not always prevent them altogether.

- **Dogs that live with or near entire bitches and become very frustrated when they are in season and/or if there is any risk of unwanted mating.**

Castration may be beneficial in:

- **Aggression between two entire male dogs that live together:** castration of one or possibly both of the dogs can potentially help to reduce tension between them but ONLY if done alongside BEHAVIOUR MODIFICATION, and ONLY after the dogs have been assessed carefully by a qualified behaviourist before castration is considered.
- **Dogs showing aggression that does not seem to be motivated by fear,** but ONLY if done alongside BEHAVIOUR MODIFICATION to address the reason why the dog is showing aggression (advise behaviour consult **before** castration).

Castration unlikely to be beneficial (or detrimental) in dogs showing:

- **Unruly, over-excitabile adolescent behaviours:** these will respond better to reward-based training and appropriate mental and physical stimulation.
- **Inappropriate predatory, hunting or herding behaviours** e.g. chasing inappropriate targets, digging etc.

Castration could potentially be detrimental in dogs that are generally fearful/unconfident or specifically fearful of unfamiliar people, places and being handled:

There are many anecdotal reports of fearful dogs becoming even more fearful after castration. This could be related to the effect of losing testosterone on their self-confidence, although more research is needed to verify this. This could also occur as a result of aversive experiences associated with castration itself.

- These dogs might benefit from being left entire if showing no testosterone-related behaviour problems, and if unwanted mating can be reliably prevented.
- If castration is necessary for behavioural reasons or to prevent unwanted mating, behaviour modification to reduce fearfulness should ideally be implemented first.
- Care should be taken to make the experience of being castrated as minimally aversive as possible for a fearful dog:
 - a. For dogs that might bite when scared: muzzle training beforehand to ensure dog is comfortable wearing a basket muzzle (e.g. Baskerville Ultra), and that they are wearing this when they arrive at the surgery.
 - b. Premed on arrival at surgery and allow owner to stay with dog until they start to become drowsy.
 - c. Ensure premed contains agents that reduce anxiety and awareness. NB: ACP alone does not reduce awareness and can actually increase sensitivity to stressors, particularly noises, while reducing the dog's ability to respond to them, so can cause or exacerbate noise-related fears.
 - d. Ensure the dog is kennelled in an area that is quiet and not brightly lit, both before and after surgery (loud noise and bright light are significant stressors for dogs).
 - e. Ensure all handling is calm and gentle, both before and after surgery.

- f. Put an item of clothing that the dog's owner has worn and not washed in kennel during recovery so the dog is exposed to their owners' scent as they come round.
- g. Ensure effective pain relief both during and after surgery until animal no longer painful.

What to do if you are not sure whether to castrate or not?

Deslorelin (Suprelorin, Virbac) is currently the best reversible indicator of the effect of castration¹ and can be used to assess the potential behavioural effects of surgical castration from 4-6 weeks post-implantation. NB Testosterone initially increases for 2 weeks after implantation and then falls to post-castration levels after 4-6 weeks.

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¹ From a castration replication perspective, Suprelorin is preferable to Tardak because as a progestagen Tardak has a general sedative effect as well as reducing testosterone, confounding the behavioural influence of the drug.