

# Surgical castration of cats, dogs leads to increased tendency to postoperative coagulation, inflammatory changes

May 18 2012, By Elena R. Moldal

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Dogs and cats that are sterilised or castrated develop a stress response: inflammatory changes and an increased tendency to coagulation after the operation.

An injection of local anaesthetic into the testicles of male [cats](#) led to a reduced [stress response](#) during the operation. However, the postoperative stress response in cats was not affected by the use of local anaesthetic. Similarly, the choice of sterilisation method did not affect the response in bitches.

Surgery is regularly carried out on cats and [dogs](#), but up until now little

has been known about the surgical stress response in these [animals](#). The same response, for example infections and [blood clots](#), has been shown to arise in [postoperative complications](#) in humans.

Elena R. Moldal's doctoral research has studied stress response development after routine surgical operations on cats and dogs. She has focused on changes in physiological parameters during the operation and also on changes in various inflammation markers and in coagulation parameters after the operation. She used new diagnostic tools such as the analysis of heart rate variability and thromboelastography (a blood coagulation efficiency test). The former is used to appraise the activity in the part of the nervous system that is not consciously controlled, while thromboelastography evaluates the process of coagulation from start to finish.

Moldal's research included two studies involving 42 bitches and 39 male cats. In the first study, the dogs were divided into two groups, of which the bitches in the first group only had their ovaries removed (ovariectomy), while the second group had both their womb and ovaries removed (ovariohysterectomy).

In the second study, the male cats were divided into two groups and both groups were given a full anaesthetic, but the cats in one group were also given a local anaesthetic in their [testicles](#). While the cats were anaesthetized, physiological indicators in the part of the nervous system controlling pain impulses were registered, including pulse, blood pressure and variations in the heart rate. During both studies, blood tests were taken at fixed times up to 28 hours after the operation in order to measure inflammatory markers and different coagulation parameters.

Based on the results of this doctoral research, the use of local anaesthetic, with Lidocaine as a supplement to a general anaesthetic, can be recommended as a better painkiller for cats during the operation. The

postoperative stress response was the same in the bitches, whether only the ovaries or both the ovaries and womb were removed. Neither was there any difference in response between the cats that were given a general anaesthetic and those that were given a local anaesthetic in addition.

Both thromboelastography and the analysis of [heart rate](#) variability are useful tools for studying operative stress response in cats and dogs. It is to be hoped that the results of this doctoral project can be used to conduct further experiments on the complications that can arise after cats and dogs undergo surgery.

Provided by Norwegian School of Veterinary Science

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