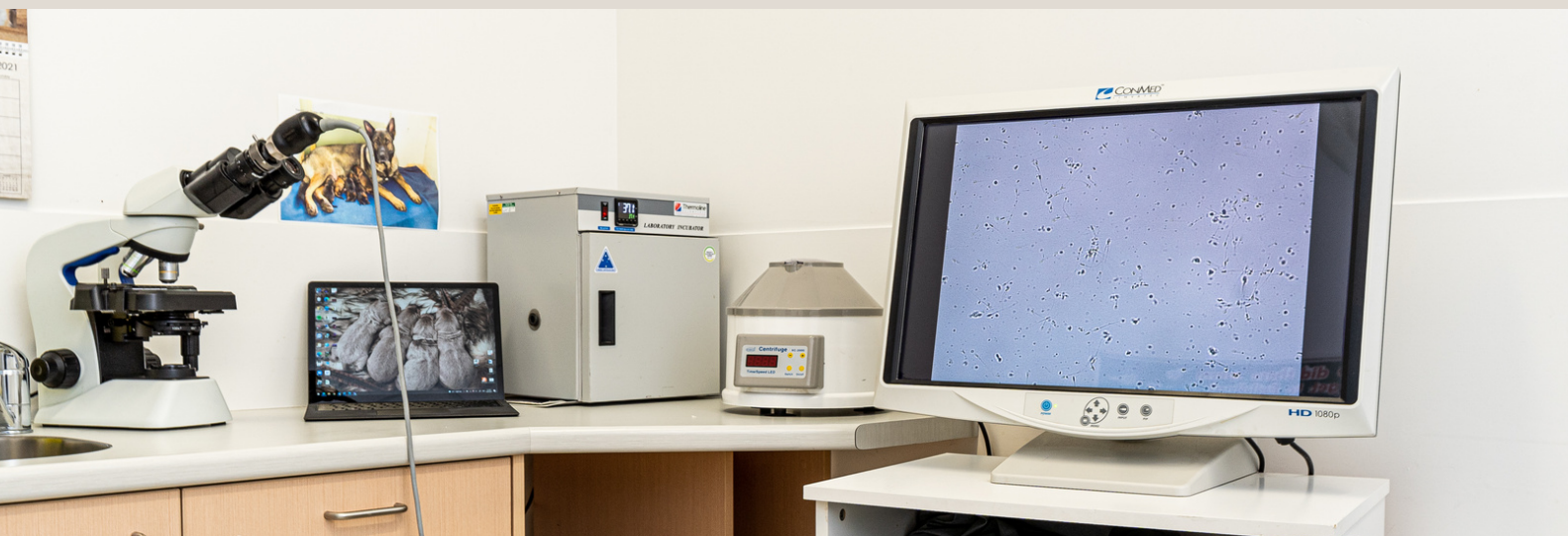


# Artificial Insemination – TCI vs Surgical AI

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## Introduction

The availability of frozen semen to improve and diversify genetics in dogs is especially important for geographically isolated countries such as New Zealand where the costs and availability of importing a live stud dog can be prohibitive.

Chilled semen can be very useful for domestic situations where the dog and bitch are located some distance from each other. Fresh semen AI is often done in situations whereby the bitch is dominant to the dog and won't allow mating, or there are other physical or behavioural issues preventing mating.

There are essentially three types of artificial insemination available in New Zealand. These are vaginal AI, trans-cervical AI (TCI) and surgical AI (SAI). Vaginal AI deposits the semen 'south of the cervix' so that the semen still needs to migrate through the cervical os and into the uterine body and horns.

TCI and SAI deposit semen 'north of the cervix' into the uterine body/horns and so that migration isn't required. For the shorter lived frozen and chilled semen, intra-uterine insemination is essential because sufficient numbers are unlikely to survive the transit time and conditions through the cervix and can be done much later in the bitches season, when the eggs are more likely to be fertile.

## Trans-cervical AI, TCI

Trans-cervical insemination is a minimally invasive procedure in which a rigid endoscope is used to guide a catheter into the cervix to deposit semen directly into the uterus. TCI is mostly performed with the aid of gentle restraint by the owner, or we can elect to use minimal sedation if the bitch is reluctant to stand still.

The procedure time is relatively short, typically taking much less than 30 minutes, and usually around 5 minutes. The benefits of TCI over surgical AI are numerous, including lower risk of complications, no postoperative pain, no recovery time, ability to repeat, ability to visualise the reproductive tract up to the cervix, and increased success rates.

However, this method requires expensive equipment and lots, and lots of practice! I have done over 1000 TCI procedures to date and there are still some that are a real challenge! If the operator cannot successfully pass the catheter through the cervical os then when using frozen semen, either the breeding should be delayed until her next season (if the semen has not yet been defrosted) or deferred to SAI as if deposited intra-vaginal the chances of success are extremely low.



## Surgical AI, SAI

*For both TCI and SAI the semen is essentially deposited into the exact same place in the uterus and migrates into both urine horns.*

Surgical AI is an invasive procedure which requires a general anaesthetic and surgical incision. While skill is still involved in ovulation timing and semen handling, any veterinarian who routinely performs surgical procedures can do a SAI.

An incision is made through the skin, and linea alba (the muscle layer). The uterus is located within the abdominal cavity and brought to the surface of the incision typically using a finger or spey hook.

The semen is then deposited into the uterus with the use of a needle, or more commonly, catheter. The bitch is then sutured up and woken from anaesthetic.

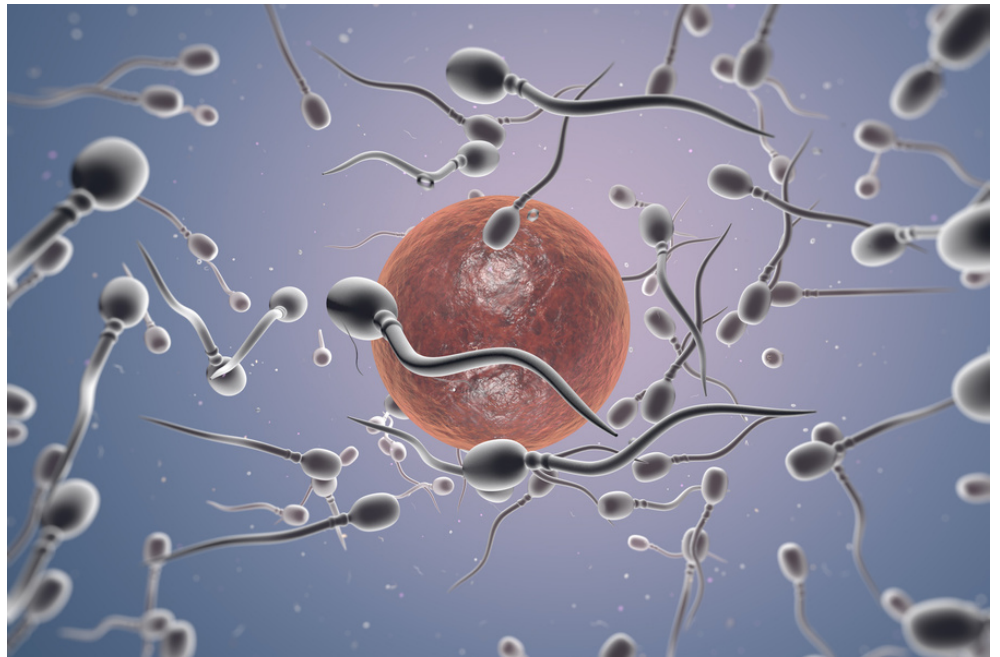
SAI allows the operator to view the external structure of the uterus, and if necessary, the ovaries however internal visualisation of the reproductive tract is not possible as it is for TCI.

**TCI has a higher success rate!**

Multiple studies have shown that TCI has either a higher, or equal success rate to SAI in both conception rate and litter size.

It is important to understand that many factors contribute to determine the success rate of an AI procedure regardless of the method used.

Ovulation timing, semen quality and handling, and inherent fertility of the dog and bitch all contribute to the outcome.



**TCI Puppies**

A small selection of #TCIPuppies by frozen-thawed TCI AI @ TCI GlenBred.

For more check us out on [Facebook](#)



**Advantages of TCI vs Surgical AI**

**Lower Risk of Complications**

The endoscopic technique has a lower risk of complications compared to surgical insemination. In surgical AI, a laparotomy is required, which is a major surgical procedure that requires general anaesthesia, an incision and associated postoperative pain. The incision also creates a risk of infection and adhesion formation, which can lead to reduced fertility. Additionally, if the bitch requires a caesarean section in 9 weeks-time, often the surgeon is cutting through sutures and incompletely healed tissue.

**No Postoperative Pain**

The postoperative pain associated with surgical AI can be significant, as the procedure involves a major surgical incision. In contrast, TCI is minimally invasive, and when performed correctly the procedure involves no significant trauma to the reproductive tract.

**Faster Recovery**

The recovery time for dogs undergoing TCI is significantly shorter than those undergoing surgical AI. With surgical AI, the incision site needs to heal, and dogs require a longer period of rest and postoperative care. In contrast, TCI requires minimal post procedure care, and dogs can resume normal activity within a few hours.

**Ethics of Surgical AI - Overseas**

Surgical AI has been banned in the UK since 2019. It is prohibited under the UK Animal Welfare Legislation 2019 Animal Welfare Act Prohibition of Mutilations.

The Australian Veterinary Association (AVA) has recently updated its policy on surgical AI in Dogs to state that: "Surgical artificial insemination (AI) must not be performed in dogs. Welfare considerations indicate that only non-surgical artificial insemination may be performed. All states and territories in Australia should adopt the prohibition of surgical AI in dogs, in their respective Animal Welfare Acts".

The AVA have recommended that veterinarians phase out the use of surgical AI by 1 January 2024 and that dog breeders and clubs should be educated on the welfare issues associated with surgical AI in dogs, and the benefits of TCI.

In Norway, surgical AI is prohibited except in rare circumstances where there is a medical need, and it has been deemed the best option for the dog's welfare.

In Sweden, surgical AI is allowed only if it is deemed necessary by a veterinarian and performed under appropriate anaesthesia and analgesia.

# Artificial Insemination

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## Other Countries ctd..

In Finland, surgical AI is allowed only under the supervision of a veterinarian and with appropriate pain management. Denmark, on the other hand, allows surgical AI in dogs under certain circumstances, such as when non-surgical (endoscopic) AI is not possible, but it is subject to strict regulations and can only be performed by licensed veterinarians.



## Conclusion

Surgical AI using fresh semen, is in almost every situation entirely unnecessary. The welfare implications to the bitch using semen which can survive passage through the reproductive tract from vaginal AI if TCI is not available, are significant, and it is difficult to see any reasons where this would be necessary or advantageous for both the bitch and the reproductive outcomes.

Surgical AI would be helpful for those rare cases where the bitches cervix cannot be catheterised when using frozen or chilled semen, or if the ovaries or uterine horns need to be visualised due to ongoing fertility issues where ultrasound exam is inconclusive

Endoscopic artificial insemination has numerous benefits over surgical insemination. There is a growing body of evidence to support it being a superior technique to SAI in both benefits to the bitch, and reproductive outcomes.

TCI is a minimally invasive procedure that has minimal risk of complications, eliminates postoperative pain, eliminates recovery time, and increases success rates. The benefits of TCI make it a more attractive option for dog breeders looking to improve breeding efficiency, overcome reproductive problems, and enhance genetic quality.

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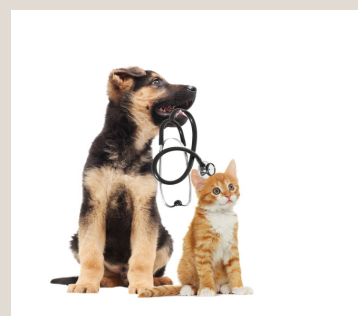
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