



VET CHAT

Transcervical Intrauterine Insemination (TCI) in bitches

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With surgical intrauterine insemination (SAI), a banned procedure in the UK as of 2019, the technique of transcervical insemination (TCI) is at the forefront of frozen semen insemination in bitches. This non-invasive, ethical and quick technique deposits semen in the same location as SAI and generates equal conception and pregnancy results.

An introduction to the female reproductive anatomy and physiology is required for understanding of all insemination techniques. In **Diagram 1** you can see the locations of semen deposition during vaginal insemination (or natural SAI mating) versus intrauterine insemination (TCI or SAI). When mature eggs are ready for fertilisation they are sitting in the tiny tube next to the ovary called the 'oviduct'. The sperm need to swim to the eggs for fertilisation to occur. Therefore it makes sense that sperm deposited closer to the ovaries have a better chance of reaching the ready eggs and therefore an increased likelihood of conception.

It is recognised worldwide that placement of **frozen** semen must occur into the uterus (or 'Intra-uterine'). TCI therefore requires the veterinarian to pass a catheter all the way through the cervix to the tip of the uterine horns. Whilst this may sound easy, the canine vagina is deceptively long. In fact, the distance from external (the vulva) to the cervix ranges from 12-36cm depending on breed! It also has a protruding bulge of tissue from the roof called the Dorsal Median Fold, obscuring vision and making passage very technical.

Equipment

A rigid scope, as pictured in **Image 1** (page 16), is used to visualise the journey through the vagina, with a tiny camera located at the end of the scope.

Advantages of TCI

- Anaesthetic risk – free
- Non-invasive and surgery-free
- Speed
- Low stress
- Consecutive day inseminations

Once the cervix is visualised, the camera then allows us to pass a flexible catheter (**Image 2**) through the cervix and into the uterus for semen to be injected (**Image 3**).

Image 2 (below):
Passage of catheter through the cervix.

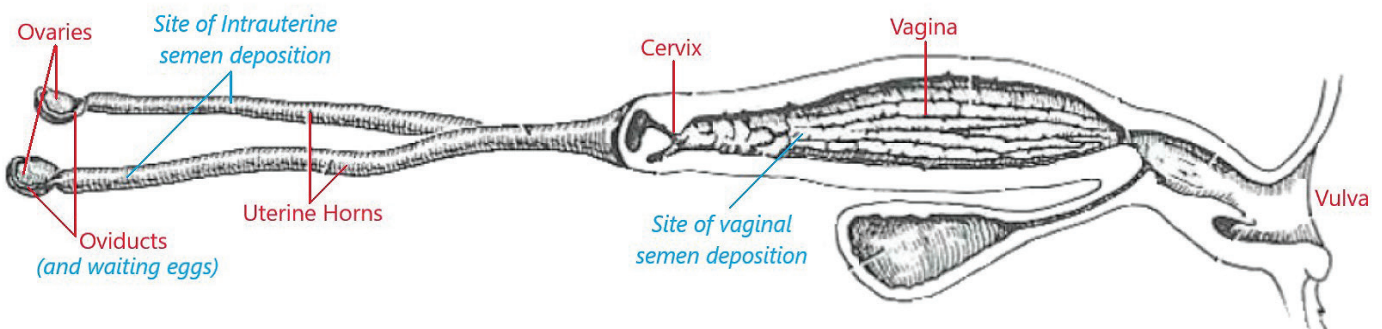
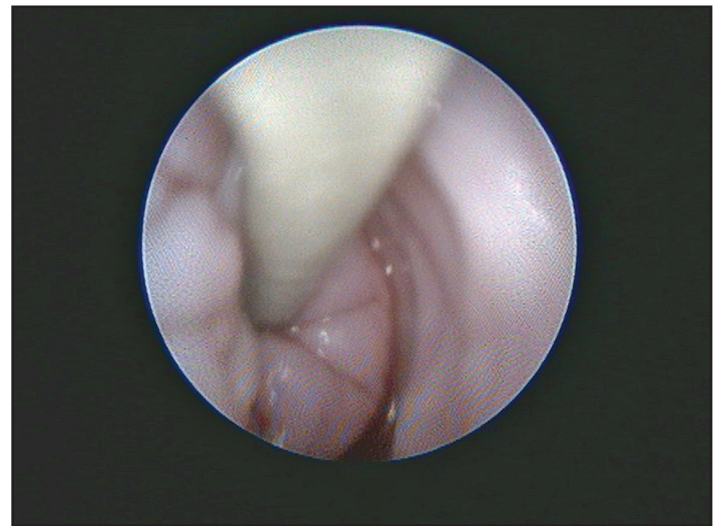


Diagram 1: Female reproductive anatomy & semen deposition sites



Image 1: TCI Scope & Catheter

Seemingly simple, the technique of TCI requires a lot of training to become proficient, confident and fast at the procedure. Difficulties lie in the long vagina, presence of the dorsal median fold obscuring view, and most importantly the mobility of the cervical opening. This mobility means that internal manipulation of the cervix is required to be able to pass the flexible catheter through the opening. It is somewhat like being very good at a novel video game! I was lucky enough to be trained by the team that developed the TCI technique in NZ and at VRC inseminations are usually completed within 5 minutes.

The conjunct ability to perform visualisation of the vaginal lining (termed '**vaginal endoscopy**') is another distinct advantage of TCI. The appearance of the vaginal lining changes through the estrous cycle from pink and moist, to pale and crenulated. Therefore this provides us with additional, accurate information in confirming prior progesterone timing.

A common question asked is how do bitches tolerate the TCI procedure. At VRC we do not perform inseminations without the prior use of breeding timing tools, including Progesterone blood testing and vaginal cytology (further

explanation of these will be saved for another time!). This means that at the time of insemination the bitches and their vaginas are perfectly ready to stand for the boys and the procedure is rarely an issue, with bitches often not even noticing what's going on!

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**Image 3:
 Semen
 deposition
 through
 catheter**

Success factors

Remembering that as semen is deposited in the same location as with surgical insemination, success rates between the two are comparable. However, success with any breeding is affected by many factors, some within and some outside the confines of our control including:

- **Semen quality** including sperm numbers (the international minimum number of sperm required for intrauterine insemination is 100 million motile)
- **Semen type** (fresh, chilled, frozen)
- **Male and female fertility**
- **Age and parity** of the bitch at time of insemination
- **Veterinarian experience**
- **Timing of insemination**