

INTRAUTERINE ARTIFICIAL INSEMINATION OF FROZEN SEMEN: TIC OR SURGICAL?

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Cryopreservation (semen freezing) and subsequent thawing for use diminish semen quality and longevity post thaw, necessitating special insemination technology. Frozen thawed semen has to be placed close to the site of fertilization (fallopian tubes) for acceptable conception rates; intrauterine insemination is highly recommended. The process and resultant quality of canine cryopreservation have improved with time; insemination techniques remained challenging until endoscopic intrauterine access was developed. Data supporting the benefit of intrauterine deposition of frozen thawed semen exists (40-90% conception rates). We extrapolate that better conception rates will occur with intrauterine insemination of chilled, extended, or otherwise compromised (subfertile) semen as well.

The normal anatomy of the vagina and cervix in the bitch hampered transcervical access to the canine uterus until rigid cystourethrosopes were developed and adapted for vaginoscopy. Historically, intrauterine insemination required an invasive procedure (laparotomy or laparoscopy) in the bitch. In addition to its invasiveness, laparotomy (surgically opening the abdomen as done for a spay) requires general anesthesia, which many clinicians and clients find objectionable for an elective procedure such as artificial insemination. Laparoscopic approach to the canine uterus has been used infrequently, especially in the practice setting, because of its relative invasiveness (multiple incisions, insufflation) and because it requires special equipment, expertise, and anesthesia. In some countries, elective surgeries such as these are not considered ethical.

Transcervical insemination is becoming more common, with techniques developed in Scandinavia and New Zealand. The Norwegian catheter is a 20- to 50-cm steel catheter with a 0.5- to 1-mm tip with a protecting nylon sheath, and is used with a 6- to 20-mL syringe (Fig. 56-15). Transcervical catheterization is accomplished by passage of the Norwegian catheter through the vagina and blindly into the cervix by palpation and manipulation of the cervix through the abdominal wall. This technique requires training and expertise. Perforation of the uterus or vagina could occur, and

introduction of vaginal flora into the abdomen is possible. Good success rates have been reported using this technique.

Transcervical insemination with fiber optic visualization of the caudal cervical os (opening) permitting catheterization is optimal. Following visualization, a polypropylene catheter is passed through the channel of the scope, through the cervical os, and then into the uterine lumen. Visualization of the cervix requires manipulation of vaginal folds and scope, and catheterization of the cervix takes expertise and requires practice. Sedation is usually unnecessary and actually undesirable. This technique has a steep learning curve. Once practiced enough to gain expertise, it is highly rewarding and often can be performed in a matter of minutes. Transcervical catheterization for intrauterine insemination is best accomplished with the estrual bitch standing on a nonskid surface under light restraint and with gentle support of the abdomen to inhibit sitting. The scopes were developed to be used in the standing bitch. The operator should work from a sitting position, with the arms raised to the level of the vulva to minimize muscle fatigue. An adjustable examination table and chair can facilitate operator comfort. Participation of the breeder client for restraint and observation is generally rewarding. Concerns surrounding potential introduction of vaginal flora into the uterine lumen using transcervical insemination have not been realized thus far and are unlikely, given recent knowledge that normal vaginal flora can be found in the uterus during proestrus and estrus. Certainly vaginal flora is introduced into the uterine lumen with natural breedings; the uterus has an inherent ability to normalize its bacterial content under natural conditions. As with all reproductive procedures, the success is greatly influenced by the accurate timing of ovulation in the bitch and the quality of the semen from the male. An increased number of inseminations (not limited by anesthesia and invasive surgery) may improve conception and is now feasible with this equipment and technique.

How to decide?

PROS of Surgical Insemination

Semen injected into the uterine lumen if performed properly

Surgeon can visualize the condition of the uterus for normalcy

CONS of Surgical Insemination

Requires anesthesia (drugs)

Requires surgery (hemorrhage, potential for infection, stress)

Requires handling of the uterus (release of prostaglandins?)

Post operative pain (stress, drugs to treat)

Stress of hospitalization, IV catheterization, induction of anesthesia, waking up from anesthesia in clinic, post operative nausea.

Increased costs associated with pre op blood work, anesthesia, surgery, drugs.

PROS of TCI

Minimal discomfort

Usually a quick outpatient procedure

Evaluation of vaginal crenulation easy

Multiple inseminations possible

No drugs

Less stress

Less expense

Easy to have owner participation

CONS of TCI

Bitch has to be trained to stand still

Failure of operator to place semen in lumen of uterus properly

No visual evaluation of uterus

Potential for damage to cervix, vagina or uterus if not performed properly

Potential of need to go to surgery if the cervix cannot be catheterized

No studies exist comparing the success of frozen semen breedings via TCI vs surgery. A study evaluating this would be inherently difficult (cannot compare the exact same semen handled the exact same way used in exactly equivalent bitches one surgical and one TCI). Huge numbers of breedings would be required to reach any statistical significance. Both techniques have successes and failures. DONE

CORRETLY, SEMEN ENDS UP IN THE SAME PLACE WITH BOTH TECHNIQUES. In the end, the breeder/owner must decide which technique after careful consideration and consultation with their veterinarian. Because frozen semen breedings have less success than any other type of breeding, I asked myself (and advise my clients to ask themselves)

"How will I feel if the breeding fails? Will I feel worse if I did a surgical AI that failed or a TCI that failed?"