Advantages of the Use of Chilled and Frozen Semen in Canine Reproduction

Dr Maarten Kappen DVM
March 23 2015
9th World Working Dog Congress

Who am I?

- Graduated 1984 Utrecht University
- Mixed Practice Eersel 1986
- Orthopedics/Surgery/ Medical Imaging/ Reproduction
- Companion Animal Clinic Eersel1995: Dogs
- Cryolab Eersel Semen bank 1997

Kliniek *voor*
Gezelschaps**dieren**
Eersel

Basic Problems in Canine Reproduction Today:

1   Inbreeding:
2   Reduced Fertility

Kliniek *voor*
Gezelschaps**dieren**
Eersel

Way Out:

1   Breeding with broad genetic basis
2   Registration and Exchange of genetic material all over the world

3   Use of optimal techniques to improve fertility
4   Use of optimal techniques to preserve genetic material

4 Myths in Male Canine Reproduction
hampering these better techniques:

1   Natural Breeding gives better results then Artificial Insemination
2   The use of chilled or frozen semen gives lower pregnancy rates
3   Surgical insemination is better then Trans Cervical Insemination
4   Shipping semen and storing semen both lead to a quality loss

#1 Natural breeding gives better results then AI

1   Natural breeding in the literature: average of 70-80% pregnancy rate
2   Much variation noted in the literature
3   Litter size is related to breed but can vary

Kliniek *voor*
Gezelschaps**dieren**
Eersel

Cryolab

#1 Natural breeding gives better results then AI

1   Male dog ejaculates in the anterior (deeper) part of the vagina: not in the uterus
2   Average 2 times in same heat
3   Mostly but not always with a tie

Kliniek *voor*
Gezelschaps**dieren**
Eersel

Cryolab
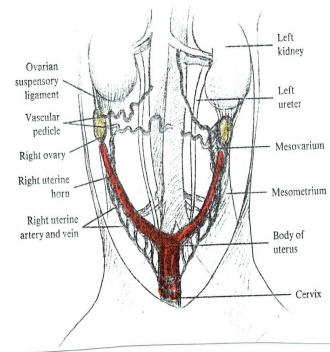
AI: 4 most commonly used methods

1   In the Vagina with flexible or rigid catheter, Foley catheter, Minitube

1   Intra Uterine with Norwegian Catheter

2   Intra Uterine by a surgical procedure

1   Intra Uterine with the Endoscope: Trans Cervical Insemination (TCI)
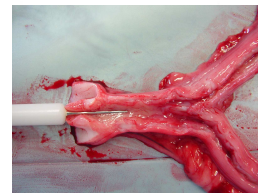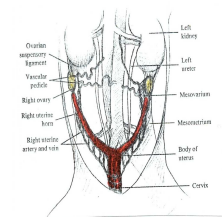
Kliniek *voor*
Gezelschaps**dieren**
Eersel

Cryolab

TCI basic equipment

Kliniek *voor*
Gezelschaps**dieren**
Eersel

Cryolab

Procedure: bringing the shunt in the vagina

Kliniek *voor*
Gezelschaps**dieren**
Eersel

Cryolab

'Closure' of the vagina by inflating the balloon tip of the shunt

Kliniek *voor*
Gezelschaps**dieren**
Eersel

Cryolab

Putting the guided wire flexibel catheter into the endoscope

Introduction of the endoscope with catheter through the shunt

Sliding the catheter through the cervix into the uterus

Slowly injecting the semen

Stimulating Uterine Contractions

Results TCI Fresh/Chilled/Frozen 2013/2014 KVG Eersel/Cryolab

1   Fresh – direct   TCI: 77   % pregnancy rate
2   Frozen semen TCI: 80   % pregnancy rate
3   Chilled TCI: 84   % pregnancy rate

Average **Total Motility**   drop by freezing is 30%
Average **VCL**   drop by freezing is 42%
Average **Concentration** drop by freezing is 64%


Contact freezer and Frozen Semen after thawing

Remarks

1 Most females (93%) were in the fertility program (scoping, progesterone, culture, ultrasound ovaries when needed)
2 Many different breeds, 85% > 10 kg BW
3 Majority of the female dogs used for chilled or frozen TCI had proven fertility (75%)

---

#3 Surgical Insemination is better then TCI
Surgical Insemination:

1 Old School: till recently the only possibility to pass the cervix
2 **Advantage**: easy to do by any regular vet with general surgery
3 **Disadvantages**: Anaesthesia, Surgical trauma and risk, Only once during optimal period, Unethical, Forbidden by law in some European Countries (also Netherlands)

Kliniek *voor*
Gezelschaps**dieren**
Eersel

Cryolab
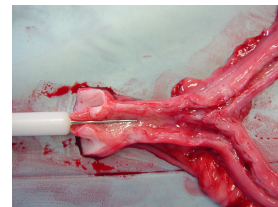
#3 Surgical Insemination is better then TCI
Trans Cervical Insemination:

1 Since 15 years
2 **Advantages**: easy to do and quick procedure
when experienced, well tolerated by bitch, no
trauma, *repeatable* in same heat (advantage
especially with frozen semen)
3 **Disadvantages**: Costs (instruments, tower,
disposable catheters), steep learning curve,
incidentally can be very difficult

Kliniek *voor*
Gezelschaps**dieren**
Eersel

Cryolab
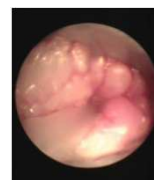
#4 Shipping semen and storing semen both lead to a
quality loss

1 Shipping chilled/frozen semen:
boxes and containers/
Disposable or Rented
2 Controlled environment for the
semen
3 Controlled and warranted
4 timeframe: Fedex/TNTexpress
/ DHL etc Specialized logistic
companies
5 Sanitary and customs
Regulations
6 Within optimum timeframe: no
quality loss

Kliniek *voor*
Gezelschaps**dieren**
Eersel

Cryolab

#4 Shipping semen and storing semen both lead to a quality loss

1   Storing: liquid nitrogen Dewar / container
2   Controlled Automatic filling
3   Tank tourism kept to minimum
4   Designated types of packaging: straws/ pellets /goblets / triangles
5   No quality loss!

Kliniek *voor*
Gezelschaps**dieren**
Eersel

Summary

1   Optimal Repro Techniques can help us getting / staying out of the inbreeding trap
2   No need for travelling long distances with animals for reproduction reasons anymore
3   Preserving valuable genetic material by means of frozen semen for the future is mandatory to preserve certain breeds and / or q···
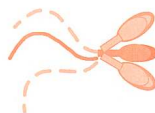
Thank you for your attention!

www.dierenkliniekeersel.nl
www.cryolab.nl