

**Infertility in the Male Dog  
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### **Stud Dog Infertility**

Infertility is not as common in the male dog as it is in the female (ratio approx 1:10). Few fertile stud dogs develop serious infertility unless there is a history of injury or infection or abrupt hormone change. Infertility can be complete or reduced (smaller litter size, reduced conception rates). Once diagnosed, specific diagnoses and treatment can be difficult.

#### **Two broad types of infertility in the male:-**

1. Unable to achieve normal mating
2. Unable to achieve normal fertilization

### **Overview**

- True infertility is generally due to sperm abnormalities: abnormal shaped sperm, too low a production (lack of production of any of the seminal fluids can create a lowered fertility).
- Lack of production of hormones by the testicles can result in a secondary type of infertility, namely lack of libido or desire to mate.
- Age can be a limiting factor on sperm production as can the frequency of use to a limited extent.

To obtain a clear picture of a stud dog's infertility, many factors need to be taken into account:

### **Inability to Achieve Normal Mating**

#### **Lack of libido:-**

- Management practices,
- Age of the dog (too young/too old),
- Injuries and/or previous bad experiences,
- Systemic disease – illness, hypothyroid, etc.
- Drugs

#### **Physical defects:-**

- Inability to mount the bitch – arthritis, etc,
- Failure to achieve intromission (ejaculate into the bitch),
- Structural and physical abnormalities, congenital abnormalities of both the dog and bitch.

## Inability to Achieve Normal Fertilization

### Dogs can have normal libido, but decreased fertility due to:-

- Failure of or incomplete ejaculation
- Absence or reduction in number and/or quality of sperm (congenital and acquired defects)
- Abnormal seminal plasma (can be unrelated to the reproductive system eg. Urinary system, trauma etc)

Need to check colour of semen, infection (high white cell count) – the source of infection can be hard to locate.

## Investigation of Infertility in the Stud Dog

- History of past matings, as well as current medical history.
- Physical examination of the genitalia including the prostate.
- Collection and examination of semen – preferably with a teaser in season bitch.

## History of the Stud Dog

### 1. Age of the dog:-

- (a) **Too young** when there is insufficient live sperm present, inexperience on the dog's part or lack of developed sex drive.
- (b) **Too old** when again, insufficient live sperm is present, particularly if the older dog has not had a mating for six months or longer; lowered libido, prostatic infections, presence of testicular tumours etc.

### 2. Previous litters sired by the dog (if any):-

- **Litter numbers relative to the breed ?** If the breed average litter is eight, and the dog's past history is of litters of 2-3, then there is probably a problem of lowered fertility, often associated with higher than average percentage of abnormal sperm or a low sperm production.
- **When was a litter last sired ?** Some dogs may have had heavy usage when younger and then lose fashion for several years. Even if the dog has a rest for several years, the fertility does not drop off markedly. An initial ejaculate may show large numbers of dead sperm, but a check after several ejaculates will give a more accurate picture of the dog's fertility.
- **Number of litters sired ?** This is really relative to the number of bitches mated by the dog, which is further discussed in the following paragraph, so that a realistic assessment of the dog's fertility can be determined in the light of the bitches he has been put to.

### 3. History of the bitches that have gone to the dog:-

- **Previous litters of any of the bitches ?** What numbers, and when last conceived. An accurate picture of the bitch(es) put to a stud dog can often clear a maligned stud dog.

- **Problem bitches ?** Some problem bitches have a history of poor conception rates or muddled seasons, which can often damn a new stud dog as 'infertile', or 'a shooter of blanks'. Bitches can present problems as they may or may not be fertile. If two or three difficult bitches who have been mated to the dog in succession miss, it will be enough to have the stud dog owner on Valium\* or demanding weekly sperm counts.
- **Timing of mating ?** Ensure the bitches are ready at time of mating
- **Age of the bitch and immediate history ?** Has she travelled a long distance, has she been unwell? How many litters has she had without a break? What is her genetic relationship to the dog?

#### 4. Stud dog examination:-

- **Testicles: size, weight, consistency.** Small, soft testicles are usually a sign of diminished fertility.
- **Examination of the penis and prepuce.** Can it extend fully, is there bruising or any sign of infection or abnormalities?
- **Prostate.** History of problems associated with the prostate; for example, is the dog unwilling to mate?
- **History of matings and libido.**

#### 5. Collection of ejaculate and examination:-

- **Sperm.** Check for colour, motility, sperm shape and number of abnormal sperm as a percentage basis. The whiter the sperm fraction, the denser or higher the sperm count.
- The other fractions of the ejaculate should also be examined. There are three fractions all together: clearness, presence of blood or inflammatory cells in any fraction is not a good sign.

#### 6. Semen evaluation:-

Most veterinarians can examine and assess the colour, number of sperm, motility, percentage of live to dead sperm, presence of 'streaming', and can examine the sperm morphology (structure). This would be a generalised estimation as to whether the dog's sperm and ejaculate are normal or abnormal.

##### Low sperm counts/high percentage of dead sperm

- If a dog has not been used at stud for several months or more, there is often a high percentage of dead sperm. Low sperm counts can equally be seen when checking some of these inactive stud dogs.
- Always re check these dogs 1-2 weeks later to get a more accurate idea of the activity of the testicles. Many inactive stud dog's sperm counts may have a "miraculous" recovery at the next collection.
- Also, not all dogs will ejaculate fully when manually collected, again this can be misleading and two to three separate collections may be needed to differentiate the "temporary" infertile from the truly infertile.

Persistently low/poor sperm counts

Can be as a result of many different causes such as:-

- hypothyroid conditions,
- genetic abnormalities
- reduced sex hormone production.

Checks and treatment

- Routine checking of thyroid levels should be done on any dog with a low sperm count.
- If this level is low (or on the lower limit of normal), thyroid replacement is necessary and should be commenced as soon as possible.
- Once the thyroid level is back in the normal range, wait 6-8 weeks before re-checking the sperm count.
- If the sperm counts are still low, then specific hormone treatment may be required. This would apply to those dogs with low sperm counts and normal thyroid levels.
- The hormones used to stimulate spermatogenesis are gonadotropins (follicle stimulating hormones FSH), which act indirectly to stimulate sperm production and as a side effect, also produce natural testosterone which stimulates the libido.
- These hormones are given for 4-6 weeks and then the semen is re-evaluated. If this fails to sufficiently increase sperm production, the possibility of other hormone imbalances may need to be further investigated.
- **## Injections of testosterone are contra-indicated in fertility problems in the male.** Giving injections of testosterone directly to a dog will not stimulate sperm production and, in excess, can act as a contraceptive by lowering sperm production.

Abnormal sperm

Large numbers of abnormally shaped sperm, eg. kinked necks, double tails or heads, will cut down the fertility level of a stud dog. Levels of around 10% are considered reasonably normal, but over 40-50% is a real threat to having sufficient numbers to travel in the right direction to enable enough sperm to reach the fallopian tubes and achieve fertilisation.

If the ejaculate cannot be reasonably well evaluated by your veterinarian, the next possible action would be referral to a specialist or a university clinic.

### Hypothyroidism

- Equally affect males and females and is very common in certain breeds – notably Dobermanns, Golden Retrievers, Rhodesian Ridgebacks etc. It is more commonly seen in the slightly older dog, usually over 3 years of age.
- Hypothyroidism, where insufficient thyroid hormone is produced, is the most common endocrine hormone problem seen in the dog.
- Behavioural abnormalities include lethargy, mental dullness and commonly, obesity.

- Abnormalities in the coat vary considerably, but usually there is a thinning and loss of coat, and later on there may be thickening and scaliness of the skin.
- Heat regulation abnormalities occur where the animal cannot readily maintain its body heat and tends to become cooler and actively seeks heat.
- As the thyroid is one of the main regulator glands for the body, any upset in the production of thyroid hormone will have consequences in the reproductive capacity of the dog. In the male, abnormalities include lack of libido, testicular atrophy, and hypospermatogenesis (reduced sperm production).
- If there are signs that are consistent with hypothyroidism and there is associated infertility, there are blood tests available to determine the thyroid levels. Once diagnosed, there are tablets that can reverse most of these effects. If, however, the condition is difficult to stabilise, then the chances of returning a male dog back to normal fertility are not good.

### Summary

Once you have a comprehensive history for that dog, the veterinarian is in a far better position to make a qualitative diagnosis as to:

- Whether there is a problem.
- Where the trouble is to be found.
- Whether it can be treated.
- **## As a warning** – not all forms of male infertility can be treated successfully. The percentage of male dogs that have nil to low sperm counts returning to normal fertility despite treatment, are not high.
- Constant advances in knowledge of the reproduction process in various species may give some of these dogs a better prospect for improved fertility in the future.

### Breeding with Older Dogs

#### When to retire your stud dog ?

The decision to retire a dog at stud depends partly on the breed, the rate the dog is ageing and, most of all, the general state of health. The active stud life of a dog is much longer than the average breeding life of a bitch of the same breed.

#### The major problems associated with older dogs include:

1. Prostate Problems
2. Testicular Degeneration
3. Testicular Tumours

#### 1. Prostate Problems

- The prostate gland is wrapped around the base of the bladder and produces fluids that go to make up part of the seminal fluids upon ejaculation. As a dog gets older, he is far more likely to get infections, abscesses, and tumours of the prostate.

- The prostate gland sits just in front of the entrance to the pelvis and lies in a rather busy area with the rectum passing just over the top of it. The most common sign of prostatic trouble is constipation. When the prostate enlarges due to inflammation, there is pressure on the rectum, which narrows the passage of the faeces through the pelvis. Urine flow may be normal, with the occasional passage of blood at the beginning or end of urination.
- Symptoms: Low grade and chronic prostate problems usually present with a straining, constipated dog who has often been fed bones in the last 2-3 days. More severe infections present with dripping blood from the end of the penis, seen either before or after urination. Usually they have been near or around a bitch in season during the last 10-14 days.
- Many dogs that have low grade prostatic problems will not have any symptoms at all until they are fed bones.
- On internal examination, the prostate is found to be enlarged and painful.
- Treatment - Infections of the prostate can be almost impossible to cure and affected dogs often require repeated treatments of antibiotics and hormone therapy.
- Low grade prostatic inflammations tend to respond very well to an injection of female hormones (eg. Tardak\*), together with a course of antibiotics. The Tardak\* can have a temporary affect on sperm production, but it will return to normal within 6 weeks. The constipation is treated with liquid paraffin or other laxatives. Enemas are necessary to move the faeces in the worst cases.
- Signs of Chronic Prostate problems include recurrent bouts of constipation and/or frequent passing of bloodstained urine. Treatment may include:-
  - Periodic antibiotic treatment and injections of hormones such as Tardak\*, or castration. The hormones used in the injections are female so repeated injections will, over a period of time, lower fertility and libido (see end of Chapter).
  - Castration has the effect of removing the hormones that are affecting the prostate. If the constipation is becoming hard to control and the breeding life of the dog has finished, castrate the dog. He will settle down within a few weeks and should be trouble free afterwards.
  - Prevent constipation as a secondary problem to low grade prostatitis is never to give affected dogs large bones in the diet; this alone may solve the problem (along with avoiding in season bitches). Chronic cases of prostatitis may also need doses of oil 2-3 times a week to help keep their bowel motions regular.
- Signs of Prostatic Abscesses include:-
  - straining to defecate and urinate,
  - the presence of blood or pus in the urine.
  - The dog is usually very depressed and very tender in the abdomen.
  - On rectal examination, the prostate will be extremely painful and the dog will object strenuously to its handling.
  - The history usually includes recent exposure to in season bitches.
- Treatment - Again, hormones and antibiotics are used:-
  - This treatment may settle down the abscess, but if it recurs, castration may be advisable and possibly the removal of sections of the prostate gland.
  - Surgical removal of the prostate is a very difficult operation and is not done unless absolutely necessary. Surgical intervention to drain the abscess may be necessary.
- Prostatic Tumours:-
  - Tumours of the prostate can occur at any age but are rare under 5-6 years old.
  - The typical symptoms are constipation, straining to urinate and blood in the urine.

- Treatment depends on the severity of the condition, but the prognosis is not good. Castration and hormones may help, but in many cases the dog may eventually have to be put down.
- Managing a stud dog with prostate problems:-
  - Stud dogs that have recurrent bouts of prostate problems need to be managed extremely carefully.
  - Keep them well away from any bitch in season at all times. This applies particularly to dogs that are normally kennelled with or run with intact bitches. As soon as any bitch comes into season, she should be moved well away from the stud dog, to an area where the dog does not go at all. This includes where the bitches are let out to run, empty out etc during the day. At no time is the stud dog to be running in the same yards. Allowing stud dogs to sniff areas where bitches in season have been urinating or getting regular “whiffs” of bitches kennelled close by, can be sufficient to re-inflate a pre-existing condition.
  - These dogs are only presented to a bitch for mating when she is tested as being ready and only for limited matings (preferably one mating only per bitch). The dog should be watched carefully for a week afterwards for any signs of an inflamed prostate in case the dog requires treatment.

## **2. Testicular Degeneration**

- Infertility in a stud dog and degeneration of the testicles can occur as early as 2-3 years of age.
- Hormonal imbalances, particularly of the thyroid, can effectively render a dog infertile at a relatively young age.
- Chromosomal defects such as fragile X and XXY, can result in some dogs becoming infertile as early as 15-18 months of age.
- While genetic defects that affect fertility are generally uncommon, in some breeds there may be a higher incidence due to close inbreeding on a line.
- As dogs get older, the hormone production from the testicles gradually deteriorates like the rest of the body. As a result, there is a reduced production of sperm and a lower level of associated fluids that form the ejaculate.
- Decreasing the amount of hormones being produced by the testicular tissue, causes a reduction in libido (sex drive). This varies between individuals and between breeds. Many male dogs are still willing and able at 12 years of age.
- It is suggested that older dogs are used with caution as the dog's health and heart must be in satisfactory condition and the sperm count within acceptable limits (in other words, sufficient to warrant the mating in the first place).
- Reservations apply in using dogs over 12 years of age unless the dog is in very good condition. Artificial Insemination (AI) is a better alternative so as not to overstrain the dog's heart with a natural mating.
- Storage of Semen of older dogs:-
  - If you have a very valuable stud dog, it is advisable to have his semen stored in case of sudden death, reduced fertility or accidents.
  - The age of the dog when the semen is taken varies, but I strongly suggest that the semen is collected before he reaches eight years of age.

- After that time, the quality of the semen may not be as good, and therefore there may be a less successful result from the usage of his frozen semen.
- This does not rule out having semen collected and frozen after the dog is eight years old; it can vary with the individual dog.
- Unfortunately, the average dog owner waits until the dog is fairly decrepit before deciding that they must store some semen. By this time the dog's sperm quality has already deteriorated and after freezing and thawing, the viability of the sperm can be very poor.

### **3. Testicular Tumours**

- Dogs can develop tumours of the testicles, particularly if there is a retained testicle, i.e. one that does not 'drop' down into the scrotum.
- Retained testicles can become cancerous and have a much higher incidence of tumours than normally descended testicles. Testicular tumours (even of retained testicles), are rarely seen under 5-6 years; most testicular tumours are seen from 8-9 years onwards.
- Tumours of the testicles tend to be of a similar type where the testicle starts to produce excessive amounts of hormones (oestrogens), which creates a 'feminising effect'.
- The testicle will be enlarged, there may be some nipple enlargement, and the dog may become attractive to other male dogs. There is occasionally some increasing pigmentation on the belly and sides and, in more advanced cases, there may be bilateral hair loss on the flank area.
- The positive aspect of a testicular tumour is that it is nearly always confined to that testicle and it does not spread to other organs. The hormonal effects are reversible following the removal of the testicle.
- Treatment is castration:- If the dog is very valuable, removing only the affected testicle is usually sufficient, but keep an eye on the other testicle for the next six months. Dogs that have obvious feminising effects are often given a course of injections of testosterone following the removal of the tumorous testicle.

### **When to Stop Using the Dog at Stud**

- The average stud dog is seldom used past 9-10 years of age.
- If the dog is still in demand and is very healthy, I would suggest that one (maximum of two) bitch(es) a week is quite sufficient, and only one mating if there are two bitches.
- During the summer, the dog should only be studded in the cool of the evening and not at all during excessively hot weather.
- If the dog is over 12 years, it would in most cases be preferable to use artificial insemination (AI) so as to check the sperm quality and concentration prior to use.
- If the dog has concurrent medical problems, your veterinarian should check the older stud dog prior to use and assess whether it is safe to allow the dog to have a natural mating.
- Dogs with heart conditions are obviously candidates for AI, provided that the heart can take this amount of strain.