

## **Patellar Luxation in the Boston Terrier**

### **WHAT IS PATELLAR LUXATION?**

The canine patella is the equivalent of the human knee. Dogs have a ligament called the patellar ligament which slides in the patella groove on the lower end of the thigh bone at the front of the knee joint (stifle). When it luxates you can feel a popping at the knee cap as it moves medially (toward the middle of the body). Then the dog's patella ligament may assume its normal position again. This is called "medial patella luxation".

After months or years of this dislocation movement when the dog walks, the edges of the groove may collapse and the dog may become lame and require surgery. Or, as the dog ages, it may become arthritic.

Patella surgery can be very expensive and cost for a single leg may exceed \$1000. This can be a real problem for breeders who guarantee their puppies. It can also be a heartbreaking problem for puppy purchasers. In recent years patella problems appear to be getting worse in Boston Terriers. It is a serious problem that Boston Terrier breeders should address now if we are going to have dogs with strong patellas in the future. Based on the recent Health Survey, as many as 10% of Bostons may have patellar luxation. Small dogs under 20 pounds are said to be twelve times more likely to be affected than medium, large or giant dogs.

### **GENETICS OF PATELLAR LUXATION**

There seems to be pretty general agreement among geneticists that patellar luxation is probably polygenic in its inheritance. Polygenic diseases are described as "threshold diseases". With "threshold" diseases it is thought that several genes are required to reach the level where the problem becomes evident in an animal. Different dogs may carry different genes for the problem. Only when a puppy inherits a certain number of these problem genes does he show the trait; the more "bad" patella genes he inherits the more severe his patella luxation is. Affected and non-affected dogs in the breed are thought to fall in a "normal curve" of distribution. Those dogs with none of these genes fall at the right end of the curve and represent a smaller number. The dog with a few of the genes that don't show the problem fall in the central portions of the curve. The affected dogs will represent those dogs that fall at the left hand side of the normal curve. If breeding takes place between dogs that have few or none of the deleterious genes, the offspring may be clear of the problem and the problem can be reduced in incidence in the breed. Breeding strategies are similar to those of autosomal recessive diseases in that affecteds should probably not be used for breeding. There are no "carriers" in the traditional sense, but there are dogs that carry some of the genes necessary to express this trait but do not show the trait.

### **REDUCING PATELLA PROBLEMS**

If breeders are to be successful in reducing patellar luxation in their lines they need to pay particular attention to certain breeding guidelines that have been suggested by canine geneticists: Dogs with strong OFA certifiable patellas should pass on their excellent genes to their offspring. When evaluating pedigrees for polygenic traits the breadth of the pedigree is more important than the depth of the pedigree in polygenic disease control. In other words, breeders should be monitoring all of the individuals in a litter as a measurement of the genes that are being selected for. Normal appearing dogs from litters with a high incidence of patellar luxation are expected to pass on many genes that will promote patellar luxation. By selecting breeding stock from litters with no patellar luxation a decrease in patellar problems can be realized. It has been suggested that a dog should not be bred if more than 25% of its littermates are affected by a polygenic trait such as patellar luxation. When selecting dogs for breeding, check OFA patella certification status of potential mates.

## **PATELLA EXAMINATION AND CERTIFICATION BY THE ORTHOPEDIC FOUNDATION FOR ANIMALS:**

Patellar luxation purpose The purpose of OFA patella examination is to identify those dogs that are phenotypically normal prior to use in a breeding program and to gather data on the genetic disease of patellar luxation.

### **Examination**

Each dog is examined awake (chemical restraint is not recommended) in an examination by your own regular veterinarian according to the application and general information instructions which are available from OFA. The veterinarian then completes the application form indicating the results of the dog's examination. The application can then be mailed to OFA. The attending veterinarian is encouraged to submit all evaluations, whether normal or abnormal, for the purpose of completeness of data. There is no OFA fee for entering an abnormal evaluation of the patella in the data bank.

### **Certification**

A certificate and breed database number will be issued to all dogs found to be normal at 12 months of age and older. The breed database number will contain the age at evaluation and it is recommended that dogs be periodically re-examined as some luxations will not be evident until later in life.

### **Preliminary examinations**

All dogs should be evaluated prior to breeding. Puppies can be evaluated as early as 6- 8 weeks but cannot be certified until at least 12 months. A certificate and breed registry number will contain the age at evaluation.

### **How patellas are graded:**

Only dogs examined and found to be NORMAL can receive CERTIFICATION. If patellar luxation is found it can be classified into 4 different grades according to severity. Grade 1 is the least severe. Grade 1 - The patella easily luxates manually at full extension of the stifle joint, but returns to the trochlea when released. Grade 2 -There is frequent patellar luxation which, in some cases, becomes more or less permanent. The limb is sometimes carried, although weight bearing routinely occurs with the stifle remaining slightly flexed. Grade 3 - The patella is permanently luxated with torsion of the tibia and deviation of the tibial crest of between 30 degrees and 50 degrees from the cranial/caudal plane. Grade 4 - The tibia is medially twisted and the tibial crest may show further deviation medially with the result that it lies 50 degrees to 90 degrees from the cranial/caudal plane. The limb is carried, or the animal moves in a crouched position, with the limb partly flexed. Some clinical signs Three classes of patients are identifiable: Puppies often show clinical signs of abnormal hind-leg carriage and function from the time they start walking; these present grades 3 and 4 generally Young to mature animals with grade 2 to 3 luxations usually have exhibited abnormal or intermittently abnormal gaits all their lives but are presented when the problem symptomatically worsens. Older animals with grade 1 and 2 luxations may exhibit sudden signs of lameness because of further breakdown of soft tissues as a result of minor trauma or because of worsening of degenerative joint disease pain.

### **Costs associated with Certification**

Dogs can be checked for patellar luxation at their regular annual examinations, and should always be checked prior to breeding. All dogs requesting certification need to have some form of permanent identification. If a dog is 12 months of age or older it can receive certification for a \$15 fee. Adult dogs may be resubmitted at no charge at a later date. (Occasional re-examinations are recommended as some luxations may not be evident until later in life.) There is a litter rate of \$30 for 3 or more applications submitted together. Affected dogs of any age are no charge.

