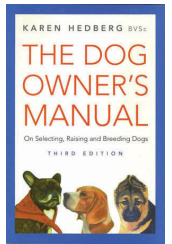




An extract from **The Dog Owners Manual** by Dr Karen Hedberg BVSc

Available for purchase from Dogs NSW for \$63.60 + p/h



# Congenital Abnormalities

*Congenital means occurred during development in the uterus. Inherited means it is a genetic problem within that breed. Inherited tendency means seen more frequently within a breed.*

Abnormalities can be both congenital and inherited, or can be seen in a higher frequency in some breeds due to construction and other inherited problems across a breed and/or family line.

## Intestinal Abnormalities

Puppies with life-threatening abnormalities usually die within two days. An example of this would be an intestinal 'mistake' such as achalasia, where the gut is not continuous and there is no straight passage for food through the intestine. Lack of an anus can occur as well, seen more commonly in the screw and or bob tailed breeds where an excessively short tail may be present.

## Skull types

**Brachycephalic (short headed) breeds** - the selection for a shorter head, particularly a shorter muzzle, increases the incidence of cleft palates and the associated hare lip.

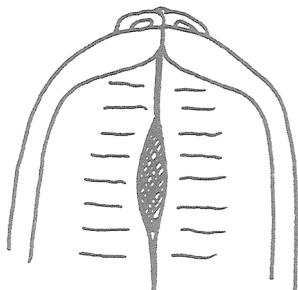
**Dolichocephalic (long headed) breeds** - this can be associated with a flatter skull, flatter skulls usually result in a higher incidence of eye defects and an associated increased incidence of "small eye" (microphthalmia). Seen also in cats.

## Midline Defects

Midline defects are the most common defects seen. This is a rather large collection of defects that can occur as the foetus develops, with various tissues as they develop and migrate out from the central neural tube. These defects can occur anywhere in the midline, be it the vertebral column along the back, the roof of the mouth or the midline of the abdomen.

## Midline Head Defects

**Cleft palate** - occurs where the two sides of the roof of the mouth failed to join during development. It is either noticed at birth or within 2-3 days as the puppy cannot suckle as no pressure can be applied to the teat because the roof of the mouth is open to the nasal cavity, and milk comes out the nose. The roof of the mouth (the hard palate) should have continuous horizontal ridges - any break or line going vertically down the middle of the palate is a problem and should be examined by your vet.



Puppies with cleft palates are generally euthanased at birth. Where the defect is considerable, the repair is unsatisfactory in the vast majority of cases. Several breeds are more prone to cleft palates, notably the shorter headed breeds, e.g. Papillons, Chihuahuas; so check the roof of the mouths of newborn puppies, particularly if they are failing to thrive or are passing milk out through their noses.

**Clefts or splits in the soft palate** (right down the back of the throat) are less common and cause fewer problems. Some of these puppies will pass milk through the nose, but will be able to suckle - they often show up with minor problems when they are being weaned. To diagnose these early on, you may need a cotton bud down the back of the throat to see the affected area. Feed these puppies fairly liquid food in a slightly elevated position until surgically repaired. These can be repaired in virtually all cases once the puppy is old enough.

**Hare lips** are where the lips fail to seal down below the nose. These can be minor or can connect directly to cleft palates. If the hard palate is intact, these puppies will be able to suckle and the hare lip repaired at a later date (4-6 weeks usually depending on the breed).

*Not all puppies that have milk coming out of their noses have cleft palates - they may just be drinking too much milk too fast!*

## Midline Spinal Defects

### Short/Screw/Stumpy Tails

The selection of a shortening of the tail whether straight or screw tail is selection for a spinal defect as opposed to a straight, normal length tail. This similarly affects Manx cats.

Selection for excessive shortness of tail is associated with an increased incidence of spinal dysraphism. It would be expected to eventually increase the incidence seen of anal atresia (no anus). This is a separate condition to spinal abnormalities. Various breeds are dominant for screw tails e.g. English and French Bulldogs, Boston Terriers. Natural bob tailed genes exist in a few breeds e.g. Australian Stumpy tailed Cattle dog.

**Spinal dysraphism** refers collectively to a group of abnormalities involving the spinal cord, vertebral column and the skin subsequent to faulty closure of the neural tube (developing spinal cord). This results in a group of 5-6 different conditions of varying severity of which Spina bifida and Hemi vertebrae are the most commonly seen defects.

**Spina bifida** is a condition where the neural tube (spinal cord) had not fully closed over so that the spinal cord is exposed along a section of the back. In these puppies the vertebral column arch has not closed, neither has the skin. These puppies are euthanased at birth.

**Hemi vertebrae** are very short/malformed vertebrae that can by their abnormality of shape severely distort the spinal cord in affected individuals causing hindquarter paresis/ abnormal gait. Severely affected puppies are usually diagnosed by 6 months of age due to increasing pressure on the spinal cord. With the screw tail breeds this can be seen, particularly with the very short backed individuals, with an increased incidence of hemi-vertebrae. This defect is usually associated in combination with brachycephalic (short headed) breeds e.g. English and French Bulldogs.

### **Walrus Puppies** (*Anasarca or oedema puppies*)

Puppies can on rare occasions be born as “monstrosities”. These puppies are bloated with fluid both under the skin and in the abdominal and thoracic cavities. Because of their bloated size they block up the bitch when she is trying to whelp and almost invariably the bitch will require a caesarean in order to deliver the puppy. These puppies are euthanased at birth as they will not survive. Often these puppies have further abnormalities particularly cleft palates.

While this is not in itself a vertebral column defect, it is most commonly seen associated with a combination of vertebral column defects. It appears that various combinations of two or more of the following:- brachycephalic head, short body length and/or abnormal tail length, leads to a higher than incidence of walrus “fluid” (anasarca) puppies. This abnormality is more commonly seen in the brachycephalic (short headed) and screw tailed breeds ie. British and French bulldogs, less frequently Pekingese.

In breeds where there are high incidences of walrus puppies, a simple recessive inheritance pattern has been postulated but not yet proven. Walrus puppies can still appear randomly in more “normally shaped” breeds but the incidence is usually very low.

Giving additional zinc and folic acid all the way through pregnancy can minimise the incidence of cleft palates, hare lips and anasarca puppies.

### **Kinky Tails**

Some puppies are born with kinky tails but these defects are usually mild and will often grow out to a large extent so it is not as noticeable. Occasionally there is a severe kink such that the tail will catch on objects and/or interfere with defecation. With the tail docking ban now in place, the only tails that can be docked are those where there is severe damage and/or severe birth defects. Tail docking should always be done by a veterinarian and the tails are stitched usually with a dissolving suture. These must be noted at the time by the veterinarian.

Smaller kinks can occasionally be straightened out with gentle manipulation in the first few days of life as the bones and ligaments are very soft. I generally splint the straightened tail with paper masking tape as it is fairly light and rigid. The tape is lightly wrapped around the section

of tail that needs to be stabilised/straightened and gently compressed from side to side – never tight as it is easy to cut off the circulation and lose the tail altogether. This “splint” needs to be changed every 3-4 days as the puppy is growing so rapidly. Usually you only need to lightly splint the tail for 7-10 days.

Bad kinks should be shown to your vet who will advise you of possible treatment. Kinked tails are considered inherited and dogs with severe kinks should not be used for breeding.



### **Midline Skin Defects**

#### **Dermoid Cyst/Sinuses**

The selection for an abnormal pattern of skin lay along the back as seen in the Rhodesian Ridgeback is actually selection for a midline defect and carries with it an increased risk of dermoid sinuses/cysts. Dermoid sinuses are a neural tube defect resulting from incomplete separation of the skin and neural tube during development. The sinus of skin tissue runs to attach onto the tip of the vertebrae and in some cases especially posterior locations (pelvic regions) may attach directly to neural tissue. This is considered to be inherited in an autosomal recessive mode.

Puppies in the breed are checked within 4-5 days of birth for this defect and are generally euthanased if found to be affected. Smaller sinuses that are missed can often be successfully operated on at a later date. Affected dogs corrected in this way should not be bred from.

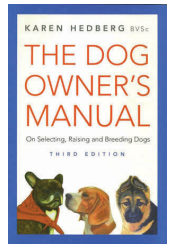
### **Midline Muscle Defects**

**Umbilical Hernias** are not uncommon and occur where the muscles have not fully closed over the abdominal cavity during development. These hernias can be anywhere from very small to extremely large where the abdominal walls have failed to close early enough that the intestines have developed largely outside the abdominal cavity.



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Where the defect is small, many of these will self correct by 3-4 months of age. Where they are large but the skin is sealed, but the hole in the muscle wall is large enough to allow loops of gut to protrude from the abdominal cavity, only covered by a thin layer of skin, they need to be repaired. Ideally this should be done before leaving the breeder at around 8 weeks of age.

Umbilical hernias are considered to be inherited and care should be taken if breeding with affected puppies. Very small hernias can occasionally occur because the bitch is too rough with the umbilical cords during the whelping, and should not be considered inherited. Occasionally deciding between the two causes can be difficult, but if one has to have a small fault it is an easier one to deal with than many other conditions. In breeds with high incidences of umbilical hernias, efforts should be made to breed away from the problem, particularly the larger hernias.

**Inguinal/Scrotal Hernias**, while not midline defects, are easier to discuss here.

Inguinal hernias occur where the muscles of the abdomen do not completely close around the incoming blood vessels (femoral artery) from the hindlegs. Ideally this should not be too tight or there would be a restriction of blood flow. Equally the testicles and their accompanying blood supply come out of the abdomen at this spot so a small hole for blood vessels etc is desirable, a large one isn't.

Larger holes allow loops of intestines to protrude from the abdomen under the skin creating the hernia, which are often bilateral. The loop of intestine can usually be easily manipulated back into the abdomen. In the case of male puppies, these can create "scrotal hernias" where the loop of intestine may extend down to the scrotum, creating a very well endowed affect.

Inguinal hernias can if small, often self correct by 3-4 months of age. Larger hernias need to be repaired, usually done around 2-6 months of age.

Inguinal hernias are highly inherited and affected puppies should not be bred from.

### Leg Deformities

Leg Deformities are usually developmental or congenital abnormalities. Puppies are occasionally born with leg deformities. The most common would involve those of the back legs where one can see instability of the tarsus (hock joint), followed by carpal and elbow luxation. Some of these can be successfully splinted but the success rate can vary depending on the number of legs affected and/or the joint involved.

**Hindleg abnormalities** (generally respond quite well to treatment, splinting etc.)

**Hock Joint/tarsal instability** These puppies are born with

the hock bending backwards ie. the wrong way. These can be usually be taped into a forwards position, creating a right angle at the hock by using thin strips of elastoplast in a figure of 8 pattern – we call them "booties". These tapes should not be tight, but supportive in trying to stabilise the hock joint. Tapes need to be changed every 3-4 days due to rapid growth but usually work very well. Taping is usually needed for 10-14 days.

Occasionally these abnormalities are not noticed until the puppies start to crawl around the box and the problem becomes more noticeable (ie. around 10-18 days). These can still be taped but the taping may be required for slightly longer. Weight bearing (ie. standing up), helps to set the joint in the correct angle/position. Taping is done for 2-3 weeks, depending on the puppy. Usually both hocks are affected but occasionally it may only affect one hock.

### Front leg abnormalities

These abnormalities are much harder to fix as the front legs are far more used at all stages – finding the teats, working through the other puppies etc. These are much harder to stabilise, and rarely will correct sufficiently to allow the puppy to survive.

**Elbow luxation** is reasonably uncommon and unfortunately not often recognised until around 3 weeks when failure to get up on the front legs is noticed. The front legs are rotated laterally at the elbows. Usually both elbows are affected. These cannot readily be corrected and the puppy is usually put down.

**Carpal dislocation** usually affects both wrists. These puppies should be euthanased. If only one wrist is affected and it is not of a heavy or giant breed, these puppies usually have a very good outcome as backyard pets. *The development of carpal luxation or instability when the puppies are older is a different condition.*

### Single leg deformities

Occasionally a puppy will be born with a shortened limb, an abnormal foot etc. If the puppy is quite normal in the other 3 legs and is not of a large heavy breed, it can cope extremely well with 3 good legs in a pet situation.

### Heart Defects

Puppies with severe heart defects will often survive quite well for 2-3 weeks, but then start to fall behind the others. If concerned, pick the puppy up and put its chest next to your ear. A bad defect of the heart sounds like a washing machine instead of a clean beating sound. If you suspect a heart defect, take the puppy to your veterinarian for examination.

Minor defects or defects that cause constriction to valves as the puppy grows may not be detected until they are older – often at time of vaccination. Minor defects can often self correct by 12-4 weeks of age.