

# Pectus Carinatum

## and OTHER STERNUM and RIB ODDITIES

The puppy seems normal, but early in life, usually felt before seen, a bump appears at the end of the sternum. That's when it becomes clear than the sternum doesn't extend back enough between the legs, either. Since most tiny puppies do not have much length of sternum anyway, there may not be much to worry about, except for what is clearly a

protrusion at the tip. If all is not well by 12 weeks or so, you are probably dealing with *pectus carinatum*, a deformity found more often in dogs than one might think. Variations on the deformity are well documented in humans, but not much investigation has been done in the canine world. In humans it can be the result of poor nutrition or other

A 12-week Beagle puppy with *pectus carinatum*. Note the protruding xiphoid process.



outside factors during infancy, but there also appears to be a genetic link. Most certainly we can assume there is a genetic link for the deformity in dogs.

It is generally not life-threatening, but

### An Overview of STERNUM and RIB CONSTRUCTION

contributed by Samantha Goldberg, DVM

#### CHEST CONSTRUCTION

The chest in the dog is comprised of 13 pairs of ribs curving down from the thoracic vertebrae of the spine to join at the sternum. The last two pairs of ribs are not always joined to the sternum and may be so called floating ribs. The sternum is comprised of three bones joined together – the front is the *manubrium* which curves from the front of the ribs and upwards to the thoracic inlet (where structures such as the trachea and esophagus go into the chest cavity,) the middle is called the *body or keel* and is between the front legs, and the *xiphoid process* is at the back. The latter may project downwards in some dogs, often associated with a shorter rib cage.

#### PIGEON CHESTED

The manubrium's shape (the front part) gives the breed it's individually shaped forechest. In the beagle it should be a curve but *if it is pointed in the middle becomes pigeon-chested* and sticks out in an incorrect fashion. Again this may be associated with a short rib cage and thus a decrease in heart room.

#### HERRING GUTTED

Herring gutted is a phrase used to describe a dog with a small thin waistline. It is often associated with a sharply cut away rib cage and excessive tuck up. It is incorrect in a beagle being more often associated with sight hounds like whippets and greyhounds. In a beagle it would normally be associated with a short rib cage although in sight hounds a longer rib cage is observed.

#### SHORT RIBS

In breeding for a short back some breeders have become confused between having a correct short loin (the piece between the end of the rib cage and the start of the pelvis) and a dog that is short overall from the shoulders to the pelvis. A short back should be assessed as the loin only and the rib cage should be a decent length to allow heart room. Allowing a short rib cage can spoil the profile of a beagle shape and lead to the other constructional faults mentioned.

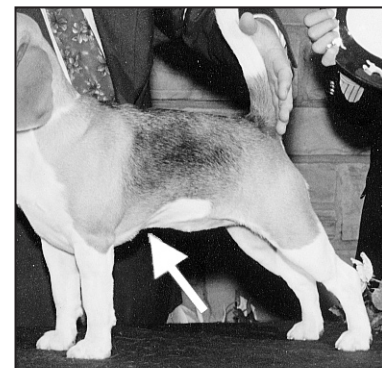


**SHORT RIBS**  
The ribs themselves, though attached to a relatively normal sternum, do not extend back adequately toward the loin.

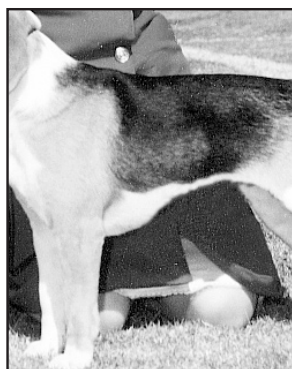


**SHORT RIBS & STERNUM**  
Note the sagging underline caused by little structural support from the ribcage.

**PECTUS CARINATUM**  
in an adult Beagle. The protrusion, though not as apparent at adulthood, is clearly present, with the usual short sternum and short ribs also apparent.



**PIGEON CHESTED**  
Note the protrusion of the manubrium. This bitch has a nice, long sternum and plenty of ribbing, but is long in loin.



**HERRING GUTTED**  
Deep chest with dramatic vertical rise to extreme tuck-up. This is often accompanied by a narrow ribcage which can impede air intake.

since the degree of the deformity can vary, there are cases where organ function is affected. Also known in dogs simply as "short sternum," when not presenting with the xiphoid abnormality, pectus carinatum is often also accompanied by "short ribs" or a "herring gut" both of which can affect bodily functions as well. With short ribs, though the sternum may be of appropriate length and structure, the ribcage does not extend back far enough, thus failing to provide structural support for the abdominal region.