

# Heterotopic mesenteric bone: An unexpected cause of mesenteric torsion in a sow

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**Summary:** A sow that died suddenly was diagnosed with a mesenteric torsion as the cause of death. The mesentery was twisted around a heterotopic bone that had served as a fulcrum, allowing a full 360° torsion.

Mesenteric torsion occurs sporadically as a cause of sudden death in pigs but “outbreaks” can occur in individual herds periodically.<sup>1</sup> Gas produced in the colon by highly fermentable substrate distends the colon, which displaces and twists the mesentery.<sup>1</sup> Mesenteric torsions occur in grower and feeder pigs more commonly than in sows, whereas gastric and splenic torsions are more likely to occur in sows.<sup>2,3</sup> We report here an unusual case of mesenteric torsion in a sow.

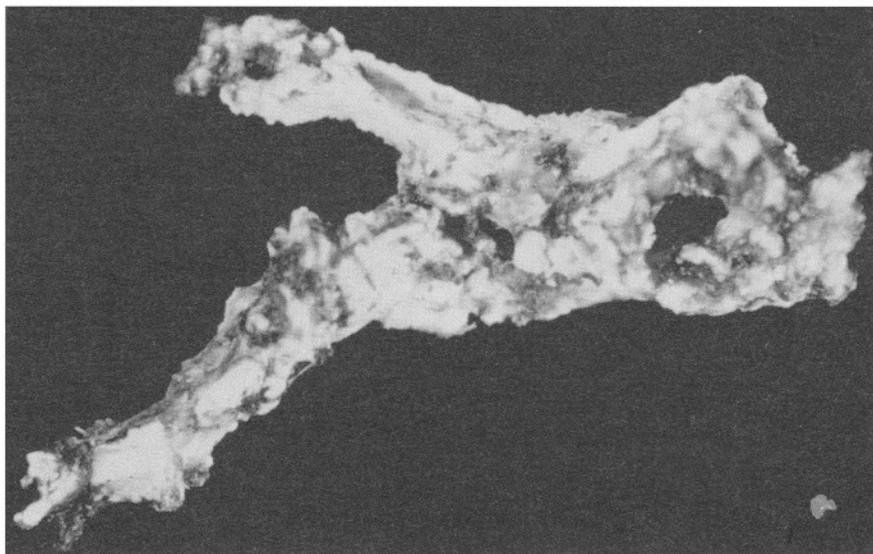
## Case History

A 3-year-old, fourth-parity sow died suddenly and was submitted to the Huron Park Diagnostic Laboratory for necropsy. This was the fifth sow to have died suddenly within the past 6 weeks on this farm. Three of these sows, which had been examined previously, were diagnosed with gastric torsion, gastric ulcer, and acute gastric dilatation (bloat), respectively. The herd, a 400-sow, farrow-to-finish operation, had undergone depopulation/repopulation 3 years previously. All sows that died were from the oldest (i.e., 3-year-old) repopulated stock, and this sow was the fourth submitted for necropsy.

The submitted sow weighed 155 kg and was in good physical condition. The gravid uterus contained 17 mid-gestational fetuses. The jejunum was twisted 360° counterclockwise around the long axis of the caudal half of the mesentery. At

the fulcrum of the torsion, buried within the mesentery, was a roughly Y-shaped bone (Figure 1). The base of the bone measured 3 cm in length; the two arms of the “Y” were of irregular lengths and were 2.5 cm and 4 cm long, respectively. This mesenteric bone lay in a plane almost horizontal to the vertebral column with the arms of the “Y” pointing caudad. The cause of death was diagnosed as mesenteric torsion around heterotopic bone formed in the caudal mesentery.

Figure 1



“Y”-shaped heterotopic mesenteric bone found in the center of the mesentery in a 3-year-old-sow that died due to mesenteric torsion.

Heterotopic (ectopic) ossification is defined as the production of normal bone in an abnormal location. Heterotopic bone can form in many tissues and is usually of no pathologic significance.<sup>4</sup> Heterotopic bone may develop by osseous metaplasia of proliferative fibrous tissue, or by endochondral ossification of cartilaginous tissue. Ectopic bone may also form in lesions that have been mineralized for a long time. In lesions that have been mineralized, cells of the connective tissue have probably redifferentiated to produce metaplastic bone.<sup>4</sup>

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Although rare, widespread ectopic ossification of soft tissues occurs in most species, but little is known of its cause.<sup>4</sup> Ossified surgical scars, frequently observed in the peritoneal cavity of pigs, is believed to be a sequela of hemorrhage and tissue trauma.<sup>4,5</sup> In humans, heterotopic bone is believed to form as the result of repeated minor traumas that cause hematomas.<sup>6</sup> Bone has been found in hematomas.<sup>7</sup>

Heterotopic bone formed in the mesentery has been reported in pigs and some researchers believe it is the result of a previous inflammation.<sup>5</sup> Usually an incidental finding seen at postmortem in mature pigs, heterotopic mesenteric bone can occasionally predispose the animal to other conditions, and can even cause the animal to die.<sup>8</sup> For example, heterotopic mesenteric bone can necrose the intestine if that organ is obstructed by adhesion surrounding the bone, if the bone perforates the intestine, or if it interferes with intestinal movement, causing intractable constipation.<sup>8</sup>

We postulate that this sow had experienced several episodes of gastric dilatation, gastrointestinal twisting and/or near complete torsion in the past. These conditions may have repeatedly traumatized the root of the mesentery and its associated vasculature. Hemorrhage, inflammation and even hematoma formation would all be likely sequelae, thus stimulating the bone to form. The heterotopic bone acted as the fulcrum for the final, complete 360° torsion of the mesentery.

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