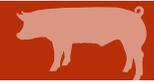


Animal Welfare



Shoulder Lesions in Sows: Identification, Treatment and Prevention

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Objectives

1. Describe shoulder lesions, and when and how they develop.
2. Describe the various causes of shoulder lesions.
3. Outline the consequences for production and animal well-being.
4. Describe methods for identification, prevention and treatment.

What Are Shoulder Lesions and How Do They Happen?

Shoulder lesions are wounds that can occur in lactating sows. They are also known as shoulder sores, ulcers or abrasions, and appear as a circular sore on the upper shoulder. Figure 1 shows the typical location of shoulder lesions. These lesions typically develop during the first weeks after farrowing due to pressure on the shoulder while lying. After farrowing, sows will often spend over 90% of their time lying laterally. The sores are analogous to human pressure ulcers (bed sores). Once they have developed they are difficult to treat and will often return in the next lactation.

The shoulder blade of the sow has a bony spine which ends in a large bump, or tuber, that is covered by fat and skin. Lying laterally during nursing puts pressure on this area, and prolonged lying can restrict blood flow and result in local tissue damage.

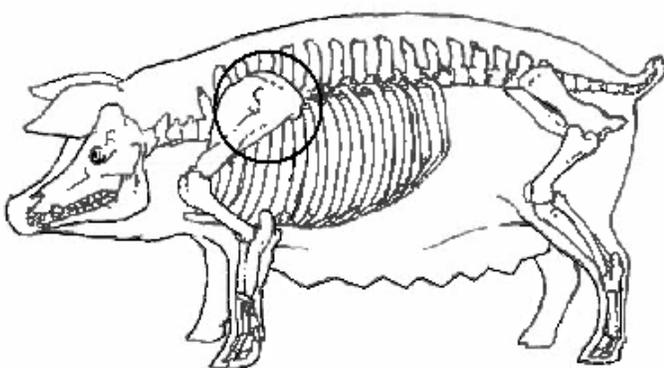


Figure 1. The skeletal system of the sow, with circle highlighting the site of ulcer formation on the scapula. (Drawing: J. Brown)

This appears first as reddening of the skin, which if untreated can quickly progress to an open ulcer. In extreme cases, the underlying bone can be exposed. Sows with severe shoulder lesions should be euthanized on-farm. Studies on the prevalence of shoulder lesions in sows have reported on-farm levels from 10 to 50%, with significant variation from farm to farm.¹ A 2006 study of over 3,000 cull sows at two Midwest packing plants found shoulder lesions on 12% of cull sows.²

Causes of Shoulder Lesions

Body condition is considered the most important factor related to shoulder sores. Sows that are thin entering farrowing have a much greater likelihood of developing this condition than fat sows. This is because thin sows have less fat covering the shoulder, so there is less cushioning between the farrowing crate floor and shoulder blade. Many other factors can also contribute to ulcer formation, including sow size, flooring type, heat and moisture. Slatted floors can cause problems as they provide less support and more pressure is placed on the shoulder compared to solid floors. Higher temperatures can result in sows spending more time lying, and high moisture levels can soften skin and also results in slippery floors with sows being less willing to stand and change postures. Breed effects have also been found, with a Canadian study showing higher prevalence in Landrace and Duroc sows than in Yorkshires.³

Consequences for Sow Production and Well-Being

Shoulder lesions cause pain in sows and can have a significant impact on herd productivity and culling. The prevalence of shoulder lesions is associated with higher weaning weights, suggesting that higher producing sows are more susceptible to this condition.³ Thus, it is important to prevent and manage shoulder lesions in order to keep these sows in the herd. Once a lesion occurs, it may heal during breeding and gestation, but is more than likely to recur in the next lactation. Careful management is needed to ensure adequate body condition, and use of a rubber mat is recommended, as discussed below. If a severe lesion develops, timely culling or on-farm euthanasia is recommended. The time and materials required for treatment, loss of high producing sows due to culling, and cost of replacement sows represent significant economic costs to producers. The proper management of lactating sows will therefore benefit sow well-being and productivity of the herd.

Identifying Shoulder Lesions On-Farm

Shoulder lesion scoring can be included as a routine management practice at 3 weeks post-farrowing, or as sows exit the farrowing room. A simple three point scale has been developed for on-farm identification of shoulder lesions.³ Each sow is visually scored on each side using the criteria in Table 1.⁴

Table 1. Scoring system for on-farm monitoring of shoulder lesions.⁴

Score	Description
1. None	No change, or lesion under 0.75 inches (2 cm) in diameter
2. Mild	Lesion 0.75 inches (2 cm) or more in diameter, but not severe
3. Severe	Lesion greater than 2 inches (5 cm) in diameter, with callus

Sows in farrowing should be checked at feeding when sows are standing. Particular attention should be given to thin sows, or large sows which may have difficulty standing. This information can be used for selection and management, helping to identify sows 'at risk' and monitoring the effectiveness of prevention and treatment strategies. Other classification systems can be used, but are generally more complicated and result in less consistent scoring by different assessors.

Prevention and Treatment

As with many problems, the prevention of shoulder sores is much more effective than treatment. However, due to the many factors that contribute to the problem it may be hard to eliminate them completely.

Body Condition: Maintaining sows in good body condition is key to reducing shoulder lesions. The goal is to maintain sows at a body condition score (BCS) of 3. Proper training and regular assessment of BCS, with adjustment of feed quantity and

diet will result in a more even BCS across the sow herd. In hot weather, many sows will reduce feed consumption in farrowing. Thus it is important to assess BCS and implement feed or dietary changes in late gestation, so that sows entering farrowing will be at their proper body weight. After farrowing, it is important to provide adequate feed during lactation. Providing multiple meals per day will encourage feed consumption and allow staff to monitor consumption and check for the development of shoulder lesions.

Increasing Activity: Regular changes in posture are needed to prevent the development of shoulder ulcers. Prevention measures should encourage sow movement, and address factors that reduce or limit sow movement. Feeding multiple meals per day will encourage sows to stand more frequently. In summer it may help to have staff get sows up twice per day. Using a drip system and air flow in farrowing to cool sows can be useful to increase activity, however sows should be observed closely as moisture can contribute to lesion formation. Having good flooring in farrowing important; floors should provide adequate support, be smooth and not abrasive, and have a non-slip surface. The prophylactic use of NSAIDs at farrowing is another tool to improve sow comfort, reduce body temperature and encourage movement.

Sows entering farrowing should have sound feet and legs, and be in good physical condition. Sows that do not meet these criteria should be treated during gestation so they can withstand the demands of lactation, or be culled before breeding. The farrowing crate should also provide enough room to allow the sow to readily stand and lie down. Adjustable crates should be open when sows enter farrowing, but should be narrowed at farrowing and during the first 2 days to minimize crushing, and then widened to encourage movement in the sow. Larger sows may be crowded in farrowing, resulting in less movement and placing them at increased risk for shoulder lesions.

Use of Mats: Rubber mats are effective at preventing shoulder sores, and can also improve healing when sores occur. Sows or gilts of BCS 1 or 2, and sows that have had shoulder sores in a previous lactation should receive a rubber stall mat when entering farrowing. Sows in farrowing should be checked regularly on both sides for the appearance of shoulder lesions. If heat or redness is observed in the shoulder area, sows should be immediately given a mat, before the problem develops. The presence of flies on the shoulder is another early warning sign of skin damage. The rubber mat provides a cushioning effect during lying, and can be reused multiple times. Soft, perforated mats are most effective and aid in removal of moisture.

Wound Care: When lesions appear, they should be washed with soap solution, rinsed thoroughly and an antibiotic ointment or spray applied. Affected sows should be monitored daily. A treatment protocol for moderate or severe lesions should be developed in conjunction with the farm veterinarian.

References:

¹Rioja-Lang, F., Seddon, Y. and Brown, J. 2014. A comprehensive review on the development, treatment and prevention of shoulder lesions in sows. National Pork Board Final Report.

²Stalder, K. and Karriker, L., 2006. Evaluation of sows at harvest to determine the incidence of abnormalities that could lead to culling of breeding herd females. National Pork Board Final Report. Accessed June 18, 2014, at: <http://www.pork.org/FileLibrary/ResearchDocuments/04-127-STALDER-ISU-ABS.pdf>

³Zurbrigg, K., 2006. Sow shoulder lesions: Risk factors and treatment effects on an Ontario farm. *J Anim Sci*, 84:2509-2514.

⁴Danish Pig Research Centre, 2011 Annual Report, p. 44. Accessed June 18, 2014, at: http://eng.vsp.lf.dk/~media/Files/PDF%20-%20Aarsberetning%20VSP%20English/Aarsberetning_UK_2011.ashx

Other Fact Sheets Available:

BPEX Knowledge Transfer Bulletin 17: Shoulder sores. Accessed on line October 31, 2014 at: <http://www.bpex.org.uk/downloads/296436/299774/KT%20Bulletin%2017%20Shoulder%20Sores.pdf>

Pig Research Centre, 10 point plan for handling of shoulder ulcers. Accessed on line October 31, 2014 at: http://vsp.lf.dk/~media/Files/Folier/skuldersaar_10pkt_uk.ashx

NOTE: Pictures should be included showing shoulder lesions matching the scores in Table 1, and the use of rubber mats in farrowing.

Ten Tips for Prevention and Treatment of Shoulder Lesions:

1. Monitor body condition and feeding programs for sows and gilts regularly. Strive to maintain BCS of 3 to 3.5. Body condition when entering farrowing is especially important.
2. Provide rubber mats in farrowing to animals with BCS 1 or 2, and to sows with previous history of lesions- BEFORE any lesions develop.
3. Check farrowing pen floors to ensure they are non-slip, dry and even.
4. Farrowing crates should allow sows to readily stand up and lie down. For adjustable crates, set them at the widest setting when sows enter, and restrict movement only at farrowing and the first 2 days to minimize crushing, then open the crate to encourage sow movement.
5. Identify sows at risk and monitor their condition closely during the first 2 weeks in farrowing. At risk animals include: thin sows, sows with previous history of lesions, large or old sows, ill sows, lame sows and those with hoof problems.
6. Observe sows daily in farrowing (both sides) during the first two weeks of lactation for signs of redness and/or flies. Provide a rubber mat to affected sows- BEFORE any lesions develop.
7. Aim to maximize feed consumption during lactation to avoid loss of body weight and condition. Pay particular attention to sows during the first days after farrowing.
8. Monitor the environment to reduce moisture levels under the shoulder and encourage regular movement in farrowing.
9. Sows with mild shoulder lesions should be provided with rubber mats in farrowing, or weaned early and moved to a hospital pen. Lesions should be cleaned regularly and antibiotic ointment or spray applied. A treatment protocol should be developed in consultation with the herd vet.
10. Sows with severe shoulder lesions should be euthanized on-farm.