Ulceration of the skin over the point of the shoulder producing a “shoulder sore” is a common finding in indoor sows and gilts whilst being almost unknown in conventional outdoor systems.

It is regularly seen sporadically on farms and occasionally presents as apparent outbreaks. It represents not only a welfare problem in the individual but can be the cause of premature culling or even on farm euthanasia. Lesions can be bilateral or unilateral.

**Fig 1:** Typical shoulder ulceration

**Fig 2:** Protruding point of the shoulder arising from previous shoulder abrasion

**Fig 3:** Abrasion around the accessory digits can often accompany shoulder sores

**Fig 4:** Knee abrasion in piglets also points towards rough floors

**Causes**

Shoulder sores occur almost exclusively in the farrowing area but, once started, can continue in dry sow accommodation and there are a number of factors that can precipitate ulceration. These can be broadly split into abrasive factors and pressure necrosis.

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A. Abrasion tends to develop as lactation progresses due to:

1) **Protrusion of the point of the shoulder**, which is obviously related to the conformation of the animal. In sows which have suffered a previous deep ulcer, there may be a bony reaction (exostosis), which itself produces a protruding lump which is then vulnerable to further damage.

2) **Loss of protective fat cushion.** Sows are generally very lean nowadays and the thickness of subcutaneous fat over the shoulder is low. As the sow lactates, this limited fat reserve can be burnt up, allowing the underlying bone to
become more prominent and prone to damage. Nutrition of sow from the earliest stages as a maiden gilt - which will influence the starting point fat levels - through repeated pregnancy and lactation, is the key to maintaining fat cover and reducing the chances of ulceration.

3) Physical abrasion due to floors. Whilst many cases of shoulder sores are directly the result of rough abrasive floors, such as poor concrete or some metal slats - particularly those deliberately made rough to assist grip - ulceration can be a major problem on some floor types that would not be expected at first glance to be involved. This applies particularly to fully slatted moulded plastic flooring. The problem here seems to be the difficulty that the sow has in moving from the lying position to standing in that the slippery nature of the floor leads to considerable thrashing about as the back legs struggle to gain a grip. This might be exacerbated by the fact that many plastic floors are not firmly fixed to their supports and tend to "bounce".

Other parts of the body, particularly the lower legs may become abraded as well (fig 3).

B. Pressure necrosis.
The pregnant sow can weigh well in excess of 250kg. Sows farrowing in crates tend to spend large amounts of time in full lateral recumbency. Feeding once daily, which is typical for sows just entering the farrowing accommodation, have little stimulus or incentive to get up and down and turn over. The result is that the pressure builds up on the protruding point of the shoulder (influenced as above by conformation) and blood flow through the deeper tissues of the skin is compromise resulting in tissue necrosis and ulceration. This is an identical pathogenesis to bed sores in people. Ulcers of this type can occur on any type of flooring and the aforementioned instability of floors and slipperiness may discourage sows to stand exacerbating any abrasion that occurs as they struggle to rise.

Lesions resulting from pressure necrosis can occur within a few days on crating.

Remedial Action
Once a sow shows signs of ulceration of the shoulder, immediate remedial action must be taken. It is not acceptable to simply cover the ulcer with antiseptic or antibiotic spray.

Either:
1. If the ulcer is full skin depth, she should be removed from the crate to a loose box on deep straw and her litter cross-fostered.
Or:
2. In early stage ulcers before the lesion has penetrated full skin depth, a protective pad can be stuck to the shoulder - thick carpet stuck on with Evostick is very effective and plenty of bedding added to the pen if possible. Woven lattice nylon bags (builders bags) cut into 15-20cm squares can be highly effective covers for early stage ulcers allowing the wound to ‘breath ’ and heal.

Antibiotic treatment may be appropriate along with analgesic anti-inflammatory medicines.

Consequences of not acting quickly can be:-

a) Deeper ulceration leading to infection in the bone.
b) Cannibalism by piglets, particularly above 3 weeks of age.
c) Fly maggot infestation.

In all of these cases, this represents unacceptable welfare for the sow and may lead to euthanasia. Chronically affected sows are unsuitable for submission to slaughter and thus contribute to overall on farm sow mortality. Prosecutions on the grounds of causing unnecessary suffering have occurred and APHA officers have authority to fine a farm a percentage of their single farm payment where such non-compliance with welfare needs is identified as part of the cross-compliance requirements.

Prevention
To avoid the risk of shoulder sores, it is vital that sows start with and maintain sufficient body condition to act as a cushion over the shoulder. Nutritional advisors and veterinary surgeons can provide advice on how best to feed the sow throughout her life.

The sow must be fed as much as possible in the farrowing house - factors affecting nutrient intake will include:-

1) Specification of the diet
2) Palatability of the diet and pellet size
3) Frequency of feeding and levels offered
4) Room temperature
5) Water availability
6) Feed trough design

All should be reviewed.

Where rough concrete is present at the front of the crate, it can be improved by a coating of self levelling compound or thin latex bonded screed. Concrete surfaces must be fully degreased and acid treated to remove lime before repairs are undertaken and therefore sufficient time between batches is necessary. Rough metal slats can be smoothed off with an angle grinder.

Fully slatted moulded plastic floors tend to improve with age but they must be fully secured to the base with strong cross supports to stop bowing and bouncing under the weight of a mature sow (250-300kg). To help the sow
get up and down, safety matting - such as is used on floors in swimming pool changing rooms - laid across the back of the pen will help but will reduce the clearance of dung through the slats and risk hygiene related disease in the litter e.g. scour, joint ill. Conversely, failure to repair rough surfaces can additionally lead to abrasion of piglet feet and legs, again requiring treatment or euthanasia.

Where pressure necrosis is the underlying cause of the lesions there is a need to ensure that sows rise regularly and turnover - the sow naturally tends to rest in the lead up to farrowing. Physically encouraging them to get up, avoiding excessive temperatures and increasing frequency of feeding can all help. Deep bedding where appropriate will also help. Avoiding excess condition is essential

Avoiding crating sows too early should be a basic practice. Under current legislation, a sow must not be confined in the crate more than 7 days before expected farrowing but where shoulder sores occur this should be limited to no more than 3 days. (For economic reasons many farms only introduce sows to farrowing crates 24hrs or less prior to farrowing.)

The UK industry is undergoing constant change and over the last 5 years a number of systems have been trialed involving not confining them within a crate either for all or part of the lactation period but allowing a free farrowing approach. Such systems have yet to acquire universal acceptance (for reasons of cost and piglet mortality primarily) but claims are made that less shoulder sores are seen. They can however still occur.

Costs
It is very difficult to put a cost of shoulder sores on a herd. Premature culling or on farm euthanasia leads to loss of the sow’s value either as a breeding animal or for meat but in this case the costs to the animal in terms of its welfare are likely to exceed the economic costs.