PENS WITH TEMPORARY CRATING: A VIABLE ALTERNATIVE HOUSING SYSTEM TO IMPROVE THE WELFARE OF LACTATING SOWS - REVIEW

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Abstract

Farrowing pens with temporary confinement over the first few days post-partum have been developed as a compromise between conventional farrowing crates and pens to better satisfy the needs of the sow and of the piglets during lactation. From the sow standpoint, temporary confinement may increase sow welfare by allowing pre and post-partum natural maternal behaviour and improve (physical) comfort, which are drastically compromised in crates. From the piglet standpoint, temporary confinement of the sow during the first days after farrowing may be a way to ensure piglet survival, which may be more at risk in loose housing conditions due to crushing. This paper reviews the current knowledge on pens with temporary crating for lactating sows and shows that, even though more research is needed, this system appears to be a beneficial alternative to farrowing crates and may constitute an intermediate step preceding implementation of permanent loose-housing environment.

Key Words: Lactating sows, housing, welfare, piglet performance, behaviour

Crates and farrowing pens

Housing of lactating sows is becoming a sensitive topic in regards to pig welfare under commercial production. It presents unique challenges as it has to accommodate the welfare of both piglets and sow. Farrowing crates have been the predominant farrowing environment over the last 50 years ago primarily because they contribute to reduce piglet mortality due to crushing, save space and investment costs and ensure easy handling management of the animals, compared to loose housing. However, this system raises serious welfare concerns as it drastically reduces pre- and post-partum sow welfare by restricting its movements thus compromising natural maternal behaviour (nest-site selection and building, interaction with piglets, no withdraw from demanding piglets) and (physical) comfort (Weber et al., 2007; Baxter et al, 2011). Detrimental effect of space restriction has been amplified by genetic selection that has produced longer, larger and heavier sows with larger litters making crates too. Theses welfare problems have put pressure to find non-confinement alternatives. Few European countries (Switzerland, Sweden, and Norway) have already banned crating farrowing systems by law and a general ban by the European Union legislation is to be expected in the near future. For instance, Denmark plans on having 10% free farrowing accommodation by 2022, while Austria will phase out crates by 2033.

Loose-housing farrowing pens may contribute to better sow welfare due to the absence of confinement. However, they may be problematic as according to some studies; they may decrease piglet welfare by reducing their survival due to crushing and sow aggressiveness during the first week of lactation (Marchant-Forde, 2002). The increased piglet mortality but also higher labour and housing costs have limited the implementation of free farrowing pens by pig producers. Therefore, no large-scale commercial uptake of loose-housing farrowing systems has occurred, other than in countries where farrowing crate is banned.

Temporary crating

Farrowing pens with temporary crating have been developed as a compromise between conventional farrowing crates and pens to better accommodate the needs of the sow and of the piglets. The sow is only confined over the first few days post-partum in order to protect piglets

from crushing during the critical period for their survival. Piglet mortality peaks during first 24 h after parturition and almost all piglet crushings occur during the first 3 days after farrowing. After this time, the danger of crushing is reduced and consequently the crate can be open. Opening of the crate provides more space for the sow to freely move around in the pen, to contact her piglets more and may also give her better control over nursings, later during lactation.

Opening time

The confinement period is one of the most critical moments of temporary crating of lactating sows. Sow should be allowed to move freely and exhibit normal maternal behaviour as soon as possible but, at the same time, the crushing risk should already be low. The highest probability of sow crushing piglets was reported during the first three days post-partum independently from the housing system (Marchant et al., 2000; KilBride et al., 2012).

Some studies have reported no difference in piglet mortality between sows housed in crates and those loosed-housed as early as 3 to 4 days post-partum (Kilbride et al., 2012; Hales et al., 2015; Chidgey et al., 2016a; Condous et al., 2016; Singh et al., 2017). Other studies have found a higher pre-weaning piglet mortality in pens where sows were loose-housed after the first 4 to 7 days post-partum compared to those permanently crated until weaning (Moustsen et al., 2013; Hales et al., 2014; Chidgey et al., 2015; Chidgey et al., 2016b). However, it is worth noticing that in those studies either mortality was comparable to industry average, or attributed to not using a proper pen design (size, absence of protection for piglets).

An important factor on piglet crushing might also be the time period before farrowing. Reduction of mortality seems to only occur when sows are crated few days before farrowing as well, not only after farrowing (Moustsen et al., 2013; Condous et al., 2016). Other studies, however found higher mortality in sows confined before parturition compared to sows confined after parturition only (Hales et al., 2016). Confinement during parturition can increase stillborn number but decreases live-born piglet mortality (Condous et al., 2016). The explanation might be that sows that are confined before farrowing have time to get used to the confinement unlike the sows confined after farrowing. However, there still is a need for scientific background to determine how long sows should be crated in order to limit the impact on sow welfare but also maximise piglet survival.

Weaning weight of piglets

Weaning weight have been found to be the same (Condous et al., 2016; Moustsen et al., 2013; Lambertz et al., 2015; Singh et al., 2017) or greater (Chidgey et al., 2015) in piglets from sows housed in pens with temporary crating compared to those raised by sows housed in farrowing crates. Weight gain differences between farrowing systems might be due to a better udder access and longer milk ejection in free pen systems (Pedersen et al., 2011).

Behaviour of the sow and piglets

Farrowing environment may influence the way a sow and her piglets interact with each other. Behavioural displays of sows in farrowing crates are limited, whereas pen-based alternatives enable a greater range of behaviours, including interacting more with piglets (Chidgey et al., 2017). Behavioural studies have shown an improvement in piglet and sow welfare (i.e. more play in piglets, more sow-piglet interactions) in loose pens from the removal of confinement on day 3 to the end of lactation post-partum compared to farrowing crates (Singh et al., 2017).

Farrowing system also influences the activity of the sow. Some studies report that postural changes are more frequent once the sow is loose (Chidgey et al., 2016b). When lying down, sows in pens have been observed to be twice as active as those in crates (Blackshaw et al., 1994). Even though an increased crushing risk due to more postural changes may be expected, some studies reported that sows changed postures more carefully by exhibiting more pre-lying down behaviour (Chidgey et al., 2015).

Low activity after parturition may be a behavioural adaptation that reduces accidental crushing of piglets. The activity level of sows is generally low over the first days of lactation (Baxter et al., 2011) and increases significantly

after the first week post-farrowing (Valros et al., 2003). These findings suggest that sows are not motivated to be particularly active soon after parturition; therefore confinement during 3-4 days post-farrowing may not compromise the sow's welfare to the same extent as confinement in later lactation. This could support the use of temporary confinement in crates as a mean to address concerns for sow welfare whilst reducing piglet mortality relative to non-crated systems (Moustsen et al., 2013).

Management

Animal handling and cleaning management of pens with temporary crating is comparable with permanent loose housing which might be more challenging than permanent crating systems (Baumgartner et al., 2007; Hales et al., 2013). As aggressive behaviour is a part of sow´s natural maternal behaviour, it might be another important aspect of temporary crating management. By allowing better mother-offspring relationship, temporary crating system may decrease aggressive behaviour directed toward piglets in comparison to traditional crate housing (Ison et al., 2015). Similarly, stockman-directed aggression was reported to be lower for free moving sows as well (Marchant-Forde, 2002). Therefore, opening the crate after first few days post-partum may decrease aggression directed toward piglets and human. However, for piglet handling (veterinary treatment, weighing, ear tagging) it might be needed to close the sow in the crate or to close the nest to prevent potential danger coming from protection of the piglets.

For most farmers, implementing loose housing for farrowing and lactating sows will require a period of adaptation until they have acquired an understanding of the systems and the management procedures. In such a learning process, an option of confinement can help minimize the consequences of insufficient management routines. Temporary crating might also be useful for transitional period to loose-housing systems.

Conclusion

Temporary crating for a short period post-partum may be a safe alternative to permanent crating as it provides some freedom of movement to the sows which can then express a wider range of behaviour. Similarly, by protecting the piglets during the most critical period of their lives, pens with temporary confinement may be a more commercially viable option than completely no-confinement pens. Further research is needed to check whether temporary crating is suitable to ensure high level of sow and piglet welfare in designed farrowing pens for big litters as piglets may be weaker/lighter and more human assistance may be required. Further research should also consider other factors such experience, social and maternal behavioural qualities of the sow, confinement status before and during farrowing and management strategy as they may play a significant role in the successful implementation of this housing system.

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