DANBRED

The Management of Newborn Piglets for the Prevention of Umbilical Outpouching Development

Ashley Norval

(Master Thesis Study)

Background and Literature Review

- A true umbilical hernia is defined as having a hernia ring, sac and intestinal contents. Other conditions can be misdiagnosed as an umbilical hernia, including abscess, scar tissue or cyst, with post mortem the only accurate diagnosis.
- There is a possibility of genetic association in umbilical hernia development- though no definitive links have been found which would assist in removing umbilical hernia as a genetic defect. The estimated heritability is also very low (0.06)
- Antibiotics have been shown to have an influence on reducing umbilical outpouching development. From this, the theories around reducing the infection pressure the piglet is exposed to have been formed. If antibiotics have an effect on reducing umbilical outpouching prevalence then it makes logical sense that the hygiene of the environment which the piglet is raised in can have an effect also.
- Management of the piglet in early life stages is the factor which could have the biggest impact on reducing umbilical outpouching development with the knowledge that we currently have.

Aims of the study

- Evaluate the effect of cutting the umbilical cord in newborn piglets either wet or dry to reduce the development of umbilical outpouchings. In addition, if disinfection of (either) wet and dry umbilical cord had an effect on the development of umbilical outpouchings.
- Identify further risk factors for the development of umbilical outpouchings.
- Develop guidelines for pig producers to use to reduce the prevalence of the condition in their herd.

Study Design

- Classic experimental design
- Four treatment groups
  - A: Wet umbilical cord, cut to 3 cm
  - B: Wet umbilical cord, cut to 3 cm, sprayed with chlorhexidine and dipped in Stalosan F®
  - C: Dry umbilical cord, cut to 3 cm
  - D: Dry umbilical cord, cut to 3 cm, sprayed with chlorhexidine dipped in Stalosan F®

Data collection at farrowing

- Piglets assigned to treatment group at day one
- Individually ear tagged with ID number and colour (for easier identification at weaning)
- Individual weights taken at birth
- Birth sow and litter data recorded

Data Collection at weaning

- Weight, presence of outpouching (manipulatable or not), pen location and sow data recorded at weaning
- All pigs were both visually inspected and palpated for umbilical outpouching presence.
- Outpouching recorded if width and height was greater than 0.5 cm, otherwise it was listed as ‘scar tissue’.
- If the outpouching was able to be manipulated back into the abdomen, and/ or a hernia ring could be felt, it was recorded as a hernia.
- Piglet deaths recorded throughout study (date and suspected reason).

Descriptive analysis of results- treament

	Number of live piglets	Total Hernia	Non Manipulatable Outpouching	Total Umbilical Outpouchings	Recorded Deaths
Umbilical cord cut wet	370	38 (10 %)	23 (6.2 %)	**61 (16.2 %)**	22 (5.6 %)
Umbilical cord cut wet + disinfection	370	32 (8.6 %)	18 (4.9 %)	50 (13.5 %)	21 (5.3 %)
Umbilical cord cut dry	360	36 (10 %)	7 (1.9 %)	**43 (11.9 %)**	24 (6.2 %)
Umbilical cord cut dry + disinfection	376	34 (9 %)	18 (4.8 %)	52 (13.8 %)	23 (5.7 %)
Total	1,476	140 (9.5 %)	66 (4.5 %)	206 (14.0 %)	90 (5.75 %)

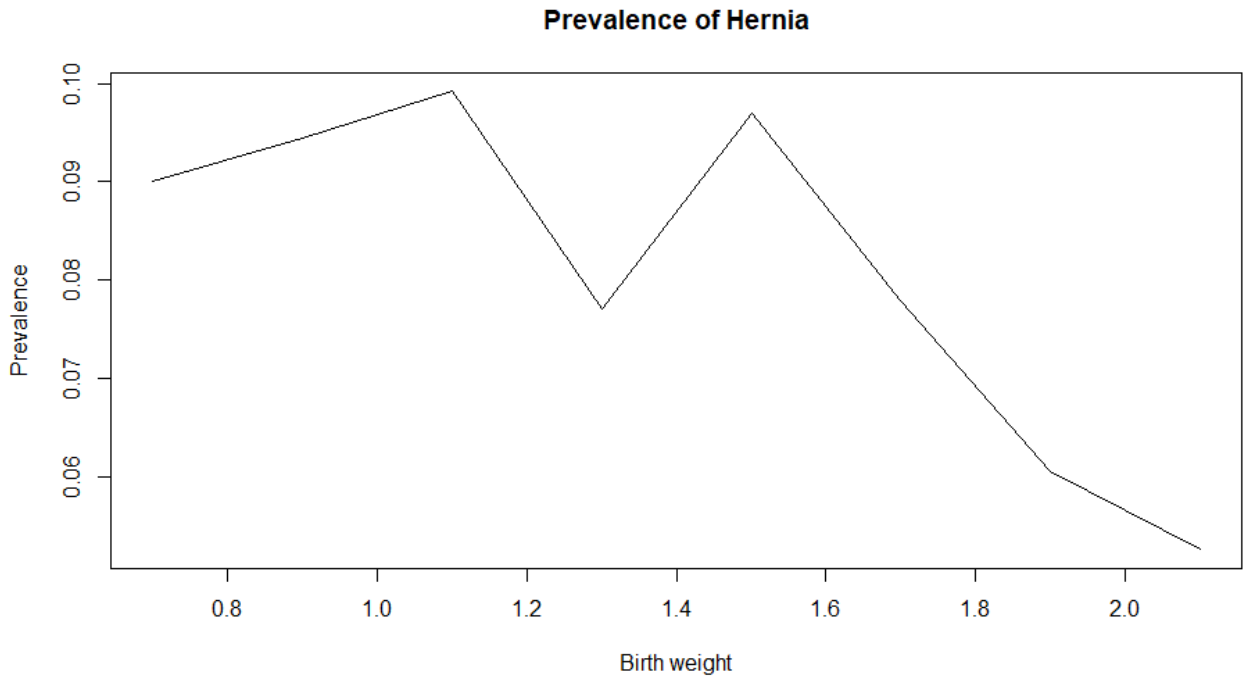
DANBRED

Descriptive results- additional risk factors

	Number of Piglets	Total umbilical outpouchings
Movement		
Piglet weaned in birth pen	217	18 (8 %)
Piglet moved from birth pen	1,206	185 (15 %)
Gender		
Male	751	72 (10 %)
Female	725	134 (18 %)

Results

- There was no effect of treatment on umbilical outpouching development ($P > 0.05$), although there was a 4.3 % difference between treatment groups cut wet and cut dry.
- Although it appears that heavier piglets at birth had a lower outpouching prevalence, there was no statistical significance found in the relationship ($P = 0.471$).



Results (additional risk factors)

- Male piglets had significantly lower odds of developing an umbilical outpouching than the female piglets (OR = 0.45).
- If a piglet was weaned in its birth pen, it was found to have a significantly lower odds of developing an umbilical outpouching (OR = 0.49).
- A low average daily gain was found to have a significant relationship to the development of an umbilical outpouching (*P* = < 0.001).

Relationship to Average Daily Gain

- Further analysis of ADG, modelled as an outcome to determine causal relationship to umbilical outpouchings
- Piglets with an umbilical outpouching had a loss of 37g/day
- Causal relationship: Umbilical outpouching → Low ADG
- 2.9 g/day increase in ADG with every 100g birthweight interval

Conclusion and Recommendation to Producers

- This study was not large enough to show a statistically significant effect of treatment on umbilical outpouching development. There are tendencies that indicate cutting a cord when dry is better.
- Male piglets were found to have significantly lower odds of developing an umbilical outpouching than a female piglet.
- Piglets which were weaned in their birth pen had significantly lower odds of developing an umbilical outpouching than piglets which were moved from their birth pen.
- Umbilical outpouchings have a significant effect on ADG.
- ***Recommendation to producers: When selecting piglets to move for fostering, move the largest males as they have the lowest chance of developing the condition. Cut umbilical cord when dry and do not move piglets unnecessarily.***

Acknowledgements

- Heinemosegård (Research site)
- Anders Ringgaard Kristensen (Primary supervisor)
- Tina Birk Jensen (Industry supervisor)
- DanBred (funding)
- Mia Helena Holst Garner, Anna Ærenlund and Janni Hales Pedersen (data collection)