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Fernanda Mariane dos Santos

Caroline Veloso

Ana Lúgia Braga Mezzina

Ana Clara Rodrigues de Oliveira

Nadia de Almeida Ciriaco Gomes

Matheus Saliba Monteiro

Jose Alfonso Echavarría Martínez

Flávio de Aguiar Coelho

Rafaella Fernandes Carnevale

Laya Kannan Silva Alves

Francisco Alves Pereira

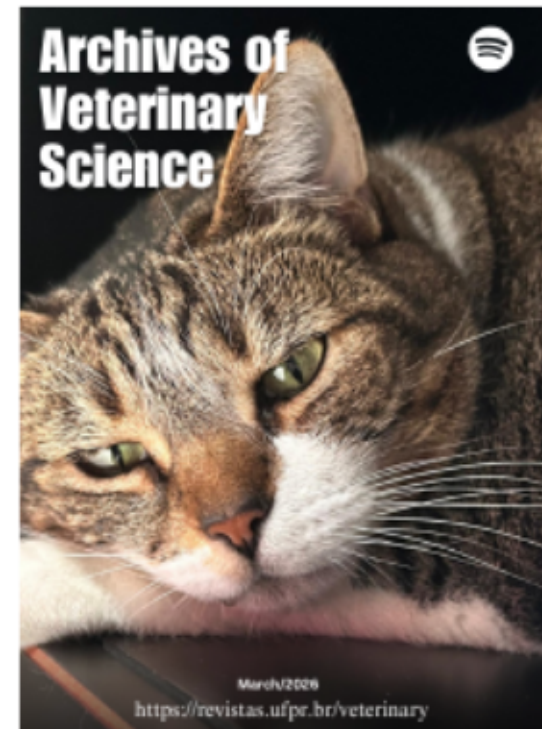
Cesar Augusto Pospissil Garbossa

AUTHOR FOR CORRESPONDENCE

Fernanda Mariane dos Santos

nandamarianes@usp.br

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Rate of umbilical healing in newborn piglets: the influence of neonatal practices and birth weight

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Fernanda Mariane dos Santos¹, Caroline Veloso¹, Ana Lígia Braga Mezzina¹, Ana Clara Rodrigues de Oliveira¹, Nadia de Almeida Ciriaco Gomes¹, Matheus Saliba Monteiro¹, Jose Alfonso Echavarría Martínez¹, Flávio de Aguiar Coelho¹, Rafaella Fernandes Carnevale¹, Laya Kannan Silva Alves¹, Francisco Alves Pereira², Cesar Augusto Pospissil Garbossa¹

¹Swine Research Laboratory, School of Veterinary Medicine and Animal Science, University of São Paulo, Pirassununga/SP, Brazil

ORCID: 0000-0003-3444-0066, e-mail: nandamarianes@usp.br

ORCID: 0009-0003-4724-1821, e-mail: carolineveloso@usp.br

ORCID: 0000-0002-0786-2231, e-mail: anamezzina@usp.br

ORCID: 0000-0003-3908-6107, e-mail: anaclara0904@usp.br

ORCID: 0000-0003-0758-9412, e-mail: nadiaciriaco@usp.br

ORCID: 0000-0002-1949-6697, e-mail: matheus.saliba.monteiro@alumni.usp.br

ORCID: 0009-0007-5902-0056, e-mail: jose.echavarría@usp.br

ORCID: 0000-0002-9907-3423, e-mail: flavioaguia Coelho@gmail.com

ORCID: 0000-0002-0722-6008, e-mail: rafaella.carnevale@usp.br

ORCID: 0000-0002-9534-6121, e-mail: lqyakannan@usp.br

ORCID: 0000-0003-3244-7184, e-mail: cgarbossa@usp.br

²DB Genética Suína, Patos de Minas/MG, Brazil,

ORCID: 0000-0001-8231-2355, e-mail: chicoal5338@gmail.com

Author for correspondence: Fernanda Mariane dos Santos – nandamarianes@usp.br

Abstract: This study evaluated the effects of different umbilical cord care techniques in newborn piglets. A total of 212 piglets from 15 sows were allocated in a randomized block design. Treatments included: No Intervention (NI) – no intervention was performed in the cord at birth; Tying and Cutting (TC) – the cord was tied onto itself and cut below the knot; and String, Cutting, and Iodine (SCI) – the cord was tied with string, cut, and immersed in 10% iodine solution. The following variables were analyzed: colostrum intake, hemorrhage incidence, healing time, umbilical hernia incidence, growth performance. No treatment effects were found for colostrum intake, performance, hemorrhage incidence, or umbilical hernia occurrence. Piglets in the TC group showed a slightly shorter healing time than those in the NI and SCI groups ($P = 0.035$). Birth and weaning weights were negatively correlated with healing time—lighter piglets exhibited slower healing, whereas faster-healing piglets achieved higher weaning weights. In conclusion, additional umbilical care, such as iodine application, did not improve umbilical healing and performance. Under the conditions of this study, additional procedures, such as iodine application, did not confer additional benefits over a simple tying technique.

Keywords: Hernia, Pre-Weaning, *Sus scrofa domestica*, Swine, Umbilical Outpouchings.

1. Introduction

In swine production systems, implementing management practices tailored to each production stage is essential to achieve optimal performance and reduce both productive and economic losses. The suckling phase, spanning from birth to weaning (typically 21-28 days of age), is considered one of the most critical stages of the production cycle, as it is associated with the highest mortality rate (Davidov et al., 2024). Previous research has shown that management practices during the pre-weaning period can influence performance traits, immune system development, and even meat quality later in life, ultimately impacting the overall profitability of pig production (Kwon et al., 2025). Given the vulnerability of neonatal piglets, producers place great emphasis on specific management practices—both preventive and therapeutic—implemented immediately after birth. These practices include ensuring thermal comfort and adequate colostrum and milk intake, as well as conducting health interventions such as iron supplementation, anticoccidial treatments, and vaccinations (Kumar et al., 2025).

Among these practices, umbilical cord management is particularly relevant. The umbilical cord connects the fetus to the placenta, enabling the transfer of nutrients and the elimination of waste during gestation (Manuel Barrios Arpi, 2019). It comprises essential vessels, such as the umbilical vein, the arteries, and the urachus, which connect the placenta to the liver, the aorta, and the bladder, respectively (Pinheiro et al., 2024). After birth, these vessels are expected to dry and close naturally, severing these connections. However, delayed healing can result in umbilical outpouchings (UO), which are primarily caused by hernias or abscesses with associated fibrosis (Hovmand-Hansen et al., 2021a).

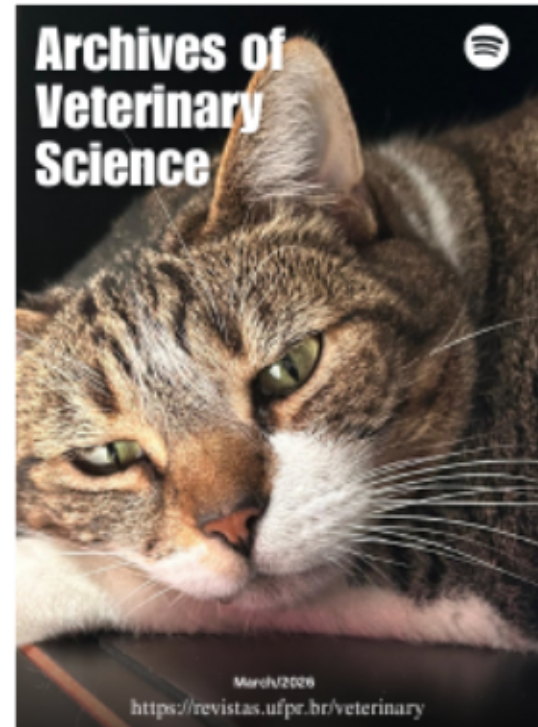
In commercial farms, this procedure commonly includes tying the cord with a string, cutting it, and disinfecting it with an iodine-based solution (Robinson et al., 2016). Nevertheless, recent studies have questioned whether alternative, more effective approaches to umbilical cord care exist or whether such management is even necessary in farms with high sanitary standards and low environmental contamination (Hansen et al., 2024; Robinson et al., 2016). Therefore, the objective of this study was to compare different umbilical cord care management techniques applied at birth and evaluate their effects on piglets' colostrum intake, incidence of hemorrhage, healing time, incidence of umbilical hernias throughout the productive lifespan, and growth performance.

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