

THE INFLUENCE OF AGE OF CASTRATION ON THE GROWER OF PIG GROWER PHASE

by Mien Lapian 6

Submission date: 27-Jun-2023 02:23PM (UTC+0700)

Submission ID: 2123370410

File name: The_Influence_of_Age_Castration.pdf (777.66K)

Word count: 3282

Character count: 15190

6
THE INFLUENCE OF AGE OF CASTRATION ON THE GROWER OF PIG GROWER PHASE

Mien. Theodora, Rossesthellinda Lapian, I N. Widana, AJ Podung.
Faculty of Animal Husbandry, Sam Ratulangi University, Manado, 95115
mienlapian@unsrat.ac.id

ABSTRACT

3 This study was made to determine the effect of castration age on the growth of pigs. 7 The method used in this study was a completely randomized design (CRD), namely castration age as treatment and castration pigs as replicates. The variables of this study are the increase in body length, increase in chest circumference and increase in body weight. The average daily body length gain from 2 weeks of castration is average 0.3180 cm 3 weeks of age is the average 0.2894 cm and at 4 weeks of age ie 0.2440 cm. The results of the daily increase in chest circumference from 2 weeks of castration are average 0.3027 cm 3 weeks old ie 0.2894 cm and at 4 weeks of age ie 0.2579 cm. The results of daily weight gain from 2 weeks of castration are average 0.3206 kg at 3 weeks of age that is an average of 0.3108 kg and at 4 weeks of age that is an average of 0.3087 kg. From the results of growth by measuring body length, chest girth and weight, it can be seen from the results, namely at the age of 2 weeks castrated piglets have good growth because they have the highest growth average.

Keywords: swine, castration, growth

ABSTRACT

6 **EFFECT OF CASTRATION AGE ON THE GROWTH OF PIG GROWER PHASE.** 3 This study was conducted to determine the effect of castration age on the growth of pigs. 7 The method used in this study was a completely randomized design (CRD), namely castration age as treatment and castration pigs as replicates. The variables of this study were the increase in body length, increase in chest circumference and increase in body weight. The result of daily body length increase from 2 weeks of castration age is an average of 0.3180 cm at 3 weeks of age, which is an average of 0.2894 cm and at 4 weeks of age 0.2440 cm. The results of the daily increase in chest circumference from the age of castration 2 weeks is an average of 0.3027 cm at the age of 3 weeks, namely 0.2894 cm and at the age of 4 weeks, namely 0.2579 cm. The result of daily weight gain from castration age 2 weeks is an average of 0.3206 kg aged 3 weeks, which is an average of 0.3108 kg and at the age of 4 weeks is an average of 0.3087 kg. From the results of growth measurements through body length, chest circumference and body weight, it can be seen from the results that at the age of 2 weeks, castrated piglets have good growth because they have the highest average growth.

Keywords: pigs, castration, growth

INTRODUCTION

Pigs have great potential for development, namely having the advantage of a fast growth rate, prolific nature, good carcass percentage and good quality pork as a source of animal protein (Jehemat, 2020).

Castration is an act that is deliberately carried out to eliminate the function of the reproductive organs by killing male sex cells so that they are unable to produce offspring (Amiruddin, 2015). Castration carried out on livestock aims to accelerate growth, make livestock more docile, facilitate livestock management because they are placed in group cages, besides that it is possible to obtain good carcass value for meat. Castrated cattle will show a fatter, rounder body and are easier to manage, especially on a large farm (Grandin, 2015).

Cattle that are not selected as males are better castrated so they do not marry females and have offspring. Losing the function of livestock as males will eliminate the desire to mate, because removing the spermatozoa-forming organs (testes) has two functions, namely to produce spermatozoa and androgen hormones so as to reduce the chances of disease transmission, especially diseases that are transmitted through marriage (Kuswati et al. 2016).

Castration is widely known in the world of animal husbandry, especially livestock aimed at fattening with the aim of controlling the growth rate of livestock, efficiency of livestock body weight gain and improving meat quality, the time of castration has an effect on performance during fattening and carcass characteristics (Marti S. 2014).

Research purposes

1. Knowing the age of good castration in pigs.
2. Analyzing the effect of castration age on the growth of castrated grower phase pigs at different ages.

MATERIALS AND RESEARCH METHODS

Place and time of research

This research was carried out on pig breeders owned by Mr. Komang Tunas in Amertha Sari Village, Dumoga Timur District, Bolaang Mongondow Regency. This research was conducted for 127 days consisting of 7 (seven) days of preparation and 120 days of data collection.

Research Materials

This study used 18 male piglets from crosses of Landrace and Duroc pigs. aged 2, 3 and 4 weeks from 4 sows. The feed is given in the form of CP 550 granules consisting of water content (14%), crude protein (19%), crude fat (7%), crude fiber (4%), Ca (0.9-1.2%), P (0.6 -1 %), EM (3000 KCal/Kg). The cages used were group cages measuring 2x3 consisting of 4 units made of concrete and equipped with places to eat and drink and cleaned 2 times a day, in the morning and evening. The equipment used is a scale with a capacity of 5 kg (sensitivity level of 1 gram) to weigh the growth of piglets and after weaning use a scale with a capacity of 300 kg.

Research methods

This study used a completely randomized design (Elvinus et al, 2016) which consisted of 3 treatments of castrated piglets (age 2, 3 and 4 weeks) and 6 replications, consisting of:

T1 = 2 weeks old piglet (6 castrated male piglets).

T2 = 3 weeks old piglet (6 male piglets castrated)

T3 = 4 weeks old piglets (6 male piglets castrated)

If in several treatments the results show a significant difference, then proceed with the BNJ test (honestly significant difference) (Made Susilawati, 2015).

Research variable

Body Length Gain (PPB)

The increase in body length is obtained by measuring the distance from the first thoracic vertebra to the end of the ischii tubercle (sitting bone) through the back line using a measuring tape and the animal to be measured must stand upright. The increase in body length of pigs per head per day was obtained by calculating the final body length minus the initial body length and then dividing it by the study time (T1 divided by 98 days, T2 divided by 91 days and T3 divided by 84 days).

Increase in Chest Circumference (PLD)

Chest circumference is obtained by wrapping a measuring tape around the chest (the long axis of the body) just behind the elbow and the animal to be measured must stand straight. The increase in the chest circumference of pigs per head per day is obtained by calculating the final chest circumference minus the initial chest circumference then dividing it by the time of study (T1 divided by 98 days, T2 divided by 91 days and T3 divided by 84 days).

Body Weight Gain (PBB)

Body weight is obtained by weighing livestock using a scale. The gain in body weight of pigs per head per day was obtained by calculating the final body weight minus the initial body weight and then dividing it by the time of study (T1 divided by 98 days, T2 divided by 91 days and T3 divided by 84 days).

RESULTS AND DISCUSSION

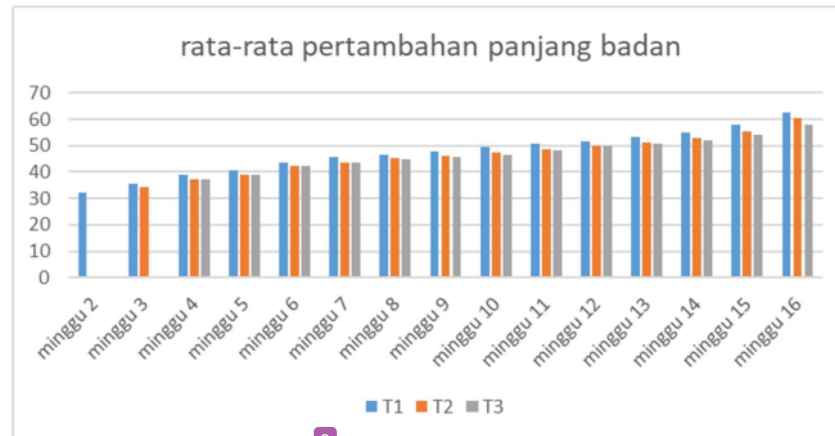
Effect of Treatment on Body Length Gain

The average observed data for the effect of treatment on body length of each treatment during the study can be seen in Table 1.

TEST	TREATMENT			TOTAL
	T1	T2	T3	
B1	0.3061	0.2747	0.2500	0.8308
B2	0.3367	0.2857	0.1905	0.8129
B3	0.3163	0.2857	0.2381	0.8401
B4	0.3469	0.2747	0.2143	0.8359
B5	0.3163	0.3077	0.2738	0.8978
B6	0.2857	0.3077	0.2976	0.8910
TOTAL	1.9082	1.7363	1.4643	5.1087
AVERAGE	0.3180 (bc)	0.2894(b)	0.2440(c)	

From the data in (Table 1), it shows that the highest body length gain was in the T1 treatment with an average of 0.3180 cm while the lowest was in T3 of 0.2440 cm.

The results of the analysis of variance showed that the effect of castration age treatment was highly significant ($P < 0.01$) on body length gain. The results of this study were continued by the BNJ test showing that T3 (castration at 4 weeks) was significantly different ($P < 0.05$) with T2 (castration at 3 weeks) and T1 (castration at 2 weeks) while the T1 and T2 treatments had the same body length gain.



9
Figure 1. Diagram of the effect of treatment on body length gain

8
The diagram above shows that piglets of different castration ages have different body length gains from 2 weeks of age to 16 weeks of age, it can be seen that the 2 weeks of castration (T1) of 62.5 cm has the highest length gain. from the castration treatment of 3 weeks (T2) 60.5 cm and 4 weeks (T3) 58 cm, the results of this study were higher than the results of the study (Redempta Wea and Theresia Koni, 2019) In the age range of 4-5 months, body length ranged from 36 .5-40 cm with an average of 38.08 cm. from the results of this study T1 which shows the highest increase in body length. Body length is affected by bone growth which grows earlier than other components such as muscle and fat. In addition, piglets that were castrated at 2 weeks of age did not feel too much stress during the castration. According to Marti et al. (2017), age can play a major role in the rate of post-castration wound healing in younger pigs, wound healing is faster, reducing stress and disease risk, in this case castration at 2 weeks old has the fastest wound healing compared to other treatment

Effect of Treatment on Increase in Chest Circumference

Data on the average observed results of the effect of the chest circumference treatment from each treatment during the study can be seen in Table 2.

Table 2. Mean Effect of Treatment on Daily Chest Circumference Per Head Per Day (Cm)

TEST	TREATMENT			TOTAL
	T1	T2	T3	
B1	0.3061	0.2967	0.2262	0.8290
B2	0.2959	0.2637	0.2024	0.7620
B3	0.3163	0.2967	0.2857	0.8987
B4	0.3367	0.3187	0.2738	0.9292
B5	0.2755	0.2857	0.2738	0.8350
B6	0.2857	0.2747	0.2857	0.8462
TOTAL	1.8163	1.7363	1.5476	5.1002
AVERAGE	0.3027(bc)	0.2894(ab)	0.2579(a)	

From the data in (Table 2), it shows that the highest increase in chest circumference was in the T1 treatment with an average of 0.3027 cm while the lowest was in T3 of 0.2579 cm. The results of this study were higher compared to research from Yasa, et al. (2019) obtained an average increase in chest circumference of 0.2386 cm.

The results of the analysis of variance showed that the effect of castration age treatment showed significantly different results ($P < 0.05$) on the increase in chest circumference. The results of this study were continued with the BNJ test, showing that the T3 and T2 treatments were the same while T1 and T3 were significantly different ($P < 0.05$) on chest circumference. This can be explained that castration at 4 weeks of age (T3) is 0.0448 cm lower in chest circumference than castration at 2 weeks of age (T1). This is because castration at an older age will experience higher stress, causing disturbances in growth (Hay et al. 2003).

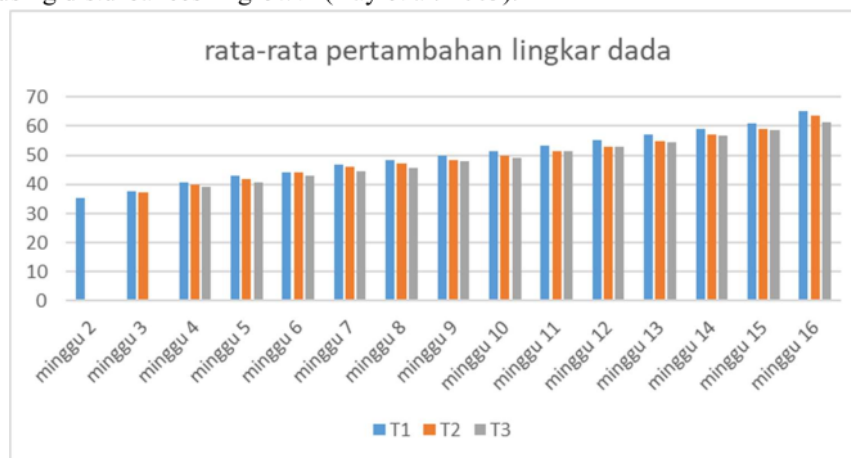


Figure 2. Diagram of the effect of treatment on increasing chest circumference

From the diagram above, it shows that piglets of different castration ages have different increases in chest circumference from 2 weeks of age to 16 weeks of age, it can be seen that the 2 weeks of castration (T1) of 65 cm has the highest increase in chest circumference of castration treatment 3 weeks (T2) 63.6 cm and 4 weeks (T3) 61.5 cm, the results of this study were higher than the results of the research of Redempta Wea and Theresia Koni, (2019) in the age range 4-5 months chest circumference ranged from 41-50 cm with an average of 46.00 cm. According to Budaarsa, (2012) the sequence of growth begins with the formation of bones (skeleton), tendons (muscles) or meat, fat. In this study, T3 had the lowest girth increase. In the T3 treatment, piglets experienced stress during castration and wound healing took longer than 2 weeks of castration. Gunanti et al. (2021) The process of wound healing in castrated piglets is influenced by internal and external factors. Internal factors are age, anemia, congenital disease, nutrition, obesity, and stress. External factors, namely drugs and hygiene.

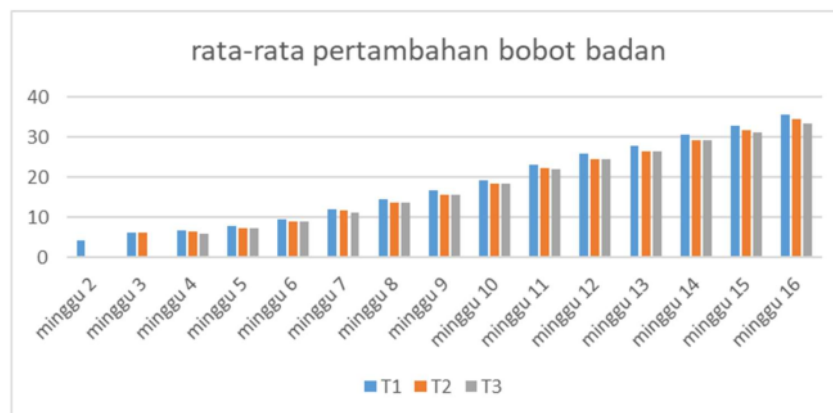
13
Effect of Treatment on Body Weight Gain

Data on the average results of observations of the effect of treatment on body weight of each treatment during the study can be seen in Table 3.

22
Table 3. Mean Effect of Treatment To Increase in Daily Body Weight Per Head Per Day (Kg)

TEST	TREATMENT			TOTAL
	T1	T2	T3	
B1	0.3122	0.3022	0.2976	0.9121
B2	0.3214	0.3011	0.3000	0.9225
B3	0.3255	0.3242	0.3190	0.9687
B4	0.3337	0.3231	0.3179	0.9746
B5	0.3224	0.3121	0.3167	0.9512
B6	0.3082	0.3022	0.3012	0.9116
TOTAL	1.9235	1.8648	1.8524	5.6407
AVERAGE	0.3206	0.3108	0.3087	

From the data in (Table 3), the average of each treatment in terms of body weight gain in the results of the study was a T1 sequence for 2 weeks (0.3206 kg) T2 for 3 weeks (0.3108 kg) and T3 for 4 weeks (0.3087 kg). From the data in (Table 3), it shows that the highest body weight gain was in the T1 treatment with an average of 0.3206 cm while the lowest was in T3 of 0.3087 cm. This figure is within the range of daily body weight gain of growth phase pigs reported by NRC (1979) in Pardosi, (2015) which states that pig weight gain is 0.3-0.6 kg/head/day. the results of this study are almost the same as Saulan and Sri, (2010) the overall average daily weight gain is 0.3250 kg. The results of the analysis of variance showed that the effect of castration age was not significantly different ($P>0.05$) on body weight gain.



13
Figure 3. Diagram of the effect of treatment on body weight gain

8
From the diagram above, it shows that piglets of different castration ages have different body weight gain from 2 weeks to 16 weeks of age, it can be seen that the 2 weeks castration treatment has the highest body weight gain of the other treatments, namely at 16 weeks of age the average T1 is 35.6 kg, T2 is 34.4 kg, and T3 is 33.4 kg. at the age of 8 weeks the T2 treatment had a high body weight gain as can be seen in (Figure 3) above. In the T3 treatment, the body weight gain was low because piglets castrated at 4 weeks old had the highest stress, the castration wound took so long to heal and the bleeding was so heavy. Mader et al.

CONCLUSION

From the results of this study it can be concluded that castration at 2 (two) weeks of age has higher growth in terms of body length, chest circumference, while body weight gain is not significantly different, although the highest is found at 2 (two) weeks of castration.

REFERENCES

- Amiruddin. 2015. THE EFFECT OF PAPAYA FRUIT SAP (*Carica papaya* L.) AND POVIDONE IODINE ON CASTRATION WOUND HEALING IN MALE CAT (*Felis domestica*). *Journal of Medika Veterinaria* Vol. 9 No. 1
- Budaarsa, K. 2012. Balinese suckling pig from livestock, culinary, to offerings. Meaning Book. First Print.
- 7
Elvinus R. Persulesy, Ferry Kondo Lembang, Herman Djidin. 2016. TEACHING ASSESSMENT USING A COMPLETELY RANDOM DESIGN. *Journal of Mathematical and Applied Sciences* Volume 10 Number 1 Hal. 9 – 16.
- 14
Grandin, T. 2015. *Improving animal welfare* 2nd Edition. Colorado State University. USA.
- 2
Gunanti, Dwi Utari Rahmiati, Viyata Pratiwi Risk. 2021. The Effect of Balsamum Peruvianum Application on the Healing of One- and Two-Incision Open Castration Methods in Piglets. *ACTA VETERINARIA INDONESIA* Vol. 9, No. 2: 127-133
- 3
4

- 4 Hay M, Vulin A, Genin S, Sales P and Prunier A 2003 Assessment of pain induced by castration in piglets: behavioral and physiological responses over the subsequent 5 days. *Applied Animal Behavior Science* 82:201-218
- Jehemat, A. 2020. *Pig Agribusiness From Concept to Application*. Yogyakarta: Andi
- 16 Kuswati, Ravenska, Nareswara Hapsari, Aulia Puspita Anugra Yekti, and Trinil Susilawati. 2016. Effect of castration on production performance of Wagyu Cross Cattle based on different ages. *Journal of Animal Husbandry Sciences* 26 (3): 53 – 58
- Made Susilawati. 2015. *Experiment Design*. Faculty of Mathematics and Natural Sciences, Udayana University. BALI.
- Mader, TL, MS Davis & BTM Brown. 12 2006. Environmental factors influencing heat stress in feedlot cattle. *Journal of Animal Science*. 84; 712- 719.
- 5 Marty, S. CE Realini, A Bach, M Perez-Juan, M Devants. 2014. Effect of castration and slaughter age on performance, carcass, and meat quality traits of Holstein calves fed a high-concentrate diet. *J. Anim. Sci.* 2013.91:1129± 1140.
- 2 Marti S, Genswein KS, Janzen ED, Meléndez DM, Gellatly D, Pajor EA. 2017. Use of topical healing agents on scrotal wounds after surgical castration in weaned beef calves. *Can Vet J*. 58:1081-1085
- 20 Pardosi, U. 2015. The effect of giving concentrate on the performance of pigs aged 5-6 weeks. *Research Results Report*. Research institutions. HKBP Nommensen University Medan.
- Redempta Wea and Theresia Koni. 2019. Linear body size of Timor male local pigs that are cared for extensively. *Partner*, Year 19 Number 1, Pages 33-42
- Sauland Sinaga and Sri Martini. 2010. The Effect of Various Doses of Curcuminoid on Pig Rations in the Starter Period on Feed Efficiency. *JOURNAL OF ANIMAL SCIENCE*, VOL. 10 NO. 2.95-100
- Yes sa. IG W., K. Budaarsa, and I G. Suranjaya. 2019. The Effect of Providing Sente (Homalomena Cordata Scoot) Supplementary Feeding on Body Weight Gain and Body Dimensions of Mixed Race Pigs. *Journal of Tropical Animal Husbandry* Vol. 7 No. 3, 1179–11

THE INFLUENCE OF AGE OF CASTRATION ON THE GROWER OF PIG GROWER PHASE

ORIGINALITY REPORT

17%

SIMILARITY INDEX

13%

INTERNET SOURCES

9%

PUBLICATIONS

%

STUDENT PAPERS

PRIMARY SOURCES

1	www.researchgate.net Internet Source	4%
2	journal.ipb.ac.id Internet Source	2%
3	M. Zawacka, D. Murawska, M. Gesek. "The effect of age and castration on the growth rate, blood lipid profile, liver histology and feed conversion in Green-legged Partridge cockerels and capons", animal, 2016 Publication	1%
4	core-cms.prod.aop.cambridge.org Internet Source	1%
5	Lambertz, Christian, Antje Farke-Röver, Eva Moors, and Matthias Gauly. "Comparison of the effects of weaning and castration when conducted separately or in combination on the behaviour of crossbred beef cattle", Applied Animal Behaviour Science, 2014. Publication	1%

6	www.e-afr.org Internet Source	1 %
7	www.neliti.com Internet Source	1 %
8	Moreng, R. E., and W. A. Whittet. "The Response of Chickens and Turkeys to Dietary Dried Brewers Yeast Containing Added Carbon," Poultry Science, 1962. Publication	1 %
9	Aleksandra Łukasiewicz. "Juvenile diet quality and intensity of sexual conflict in the mite <i>Sancassania berlesei</i> ", Research Square, 2020 Publication	1 %
10	Steenfeldt, S.. "Enzyme supplementation of wheat-based diets for broilers", Animal Feed Science and Technology, 19980930 Publication	1 %
11	M A V Manese, N M Santa, E P Bukanaung. "Contribution of pig farming to household in Tenga Subdistrict, South Minahasa District", IOP Conference Series: Earth and Environmental Science, 2021 Publication	1 %
12	pesquisa.up.com.br Internet Source	<1 %

13	Shiying Wu, Wanxin Cui, Qingqing Zhou, Ying Liang, Danli Wu, Yang Xu, Ping Li, Qing Gu. " Phenyl lactic acid alleviates infection in C57BL/6 mice ", Food & Function, 2023 Publication	<1 %
14	etd.repository.ugm.ac.id Internet Source	<1 %
15	garuda.kemdikbud.go.id Internet Source	<1 %
16	worldwidescience.org Internet Source	<1 %
17	jurnal.fp.unila.ac.id Internet Source	<1 %
18	123dok.com Internet Source	<1 %
19	Patrie-Hanson, L.. "Humoral immune responses of channel catfish (Ictalurus punctatus) fry and fingerlings exposed to Edwardsiella ictaluri", Fish and Shellfish Immunology, 199911 Publication	<1 %
20	sinta.unud.ac.id Internet Source	<1 %
21	www.science.gov Internet Source	<1 %

22

Andrew E. Filderman. "Antitumor and Toxic Effects of Combination Chemotherapy With Bleomycin and a Phenothiazine Anticalmodulin Agent¹", Journal of the National Cancer Institute, 1988

Publication

<1 %

23

Marti, S., J.A. Jackson, N. Sloomans, E. Lopez, A. Hodge, M. Pérez-Juan, M. Devant, and S. Amatayakul-Chantler. "Effects on performance and meat quality of Holstein bulls fed high concentrate diets without implants following immunological castration", Meat Science, 2017.

Publication

<1 %

Exclude quotes Off

Exclude matches Off

Exclude bibliography Off