

## Correlation between the initial-surgery age with the Hirschsprung's Disease patient stooling patterns in Ulin Hospital, Banjarmasin, South Kalimantan, Indonesia in 2012-2015

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### ABSTRACT

**Background:** Hirschsprung's disease may lead to gastrointestinal obstruction if not appropriately treated. The initial-surgery or colostomy is intended to decompress the large bowel, prevent enterocolitis, and the stooling-patterns can be measured after definitive surgery. **Objective:** To determine the correlation between initial-surgery age with stooling-patterns. **Materials and Methods:** We performed an analytic observational study in Ulin Hospital in Banjarmasin, South Kalimantan, Indonesia, from November to December 2015 with a total sample of 31 patients. The initial-surgery age was divided into before and after 30 days, while the stooling-patterns were divided into satisfied and not satisfied. **Results:** There was no significant correlation between initial-surgery age with stooling patterns. Most of the patients, 18/31 (58.1%), underwent initial-surgery after 30 days, and 23/31 (74.2%) had satisfied stooling patterns after surgery. **Conclusion:** No significant correlation between initial-surgery age and stooling patterns among Hirschsprung's disease patients.



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## BACKGROUND

Children and neonate health issues are one of the significant health problems in Indonesia. Children and neonates are one of the community group that is vulnerable and needs attention from the government and society. Gastrointestinal obstruction is common in neonates, which affects the morbidity and mortality rates and is included as an emergency in neonates. In this condition, the patients cannot digest the food and drink properly, while in neonates nutrition is a particular concern and

correlated with their growth-development status (Butler, 2013). Hirschsprung's disease loses the parasympathetic ganglion on the Auerbach and Meissner plexus in the colon (Taguchi, 2019).

Hirschsprung's disease occurs in 1:4400-7000 live births, while in Indonesia, the rate is not known certainly, but approximately 1 among 5000 live births. With a population of 200 million and a birth rate of 35%, it can be predicted that each year there will be 1400 babies with this disease. Hirschsprung's disease incidence could be increasing in familial cases and the incidence could be about 6% (2%-18%) (Zani, 2017). Surgical treatment of Hirschsprung's disease consists of initial and definitive surgery. Initial-surgery intended for temporary abdominal decompression with colostomy to prevent enterocolitis as a significant cause of death in Hirschsprung's disease. Definitive surgery was done for colorectal anastomosis and the colostomy closure (Langer, 2020).

Children with colostomy are crucial, especially for patients from rural areas who recorded more complications during this period. Due to limited facilities, it becomes a problem during diagnosis, surgery, and post-operative (Widyasari, 2018). Hirschsprung's disease surgical goal is to remove the aganglionic bowel and pull the normally innervated bowel through the anus to allow normal bowel movements. Stooling patterns can be measured as the parameter of Hirschsprung's disease patients' condition after the surgery (Oh et al., 2016). Ulin Hospital, Banjarmasin, South Kalimantan, Indonesia, is located in a wetland area. Children in wetland areas have specific microbe-patterns and are thought to affect the Hirschsprung's disease operation results. Early surgery is expected to give better results for preventing enterocolitis than later surgery. However, studies about the correlation between the initial-surgery age and stooling patterns are still limited.

## OBJECTIVE

The objective of this study was to determine the correlation between the initial-surgery age with the stooling patterns.

## MATERIALS AND METHODS

This study was an analytic observational study with a cross-sectional design to determine the correlation between the initial-surgery age with stooling patterns of Hirschsprung's disease patients in Ulin Hospital, Banjarmasin, South Kalimantan, Indonesia, in 2012-2015. We examined medical record data of 31 Hirschsprung's disease patients already performed initial-surgery and definitive surgery in 2012-2015. Incomplete data were excluded from this study. The early initial-surgery was determined as the surgery done before 30 days old, while the late initial-surgery was that performed after 30 days old. The degree of satisfaction was measured using Stooling-Grading-Sheet (Teitelbaum et al., 2000) via telephone in November-December 2015. The researcher explained the purposes of the study, voluntary to the subjects and guaranteed confidentiality. The Ethical Committee, Research Center, Faculty of Medicine, Universitas Lambung Mangkurat, Banjarmasin, Indonesia, had approved our study (No.114/KEPK-FK.UNLAM/ EC/XI/2015). The correlation between initial surgery and stooling patterns was analyzed using  $X^2$  (Chi-square) and SPSS 21.0.0 for Windows program with a significance of 0.05.

## RESULTS

Table 1 shows that the initial surgery age is divided into < 30 days and > 30 days, while the stooling patterns were divided into satisfied and not satisfied. The Chi-Square test revealed  $p > 0.05$ , not indicating significant correlation between initial surgery age with stooling patterns. Most patients of 14 (77.8 %) had satisfied stooling patterns in performed initial surgery after 30 days.

## DISCUSSION

Our study confirmed that most colostomy patients were satisfied, although it was not confirmed statistically. After surgery, conditions can be caused by many factors: surgical procedures, the surgeon's skill and experience, the types of Hirschsprung's disease, administering antibiotics, and post-surgery treatment (Taguchi, 2019). A high rate of colostomy complications may happen in the first year of their lives (Thakkar, 2017). Early diagnosis and treatment are needed as soon as possible. Late diagnosis may

worsen the condition and lead to death (Das, 2017). Enterocolitis and pre-operative treatment (antibiotics, intravenous fluid resuscitation, and admission to an intensive care unit) determine the results (Frykman et al., 2012., Gosain et al., 2017).

Unsatisfied stooling patterns in the patient was suspected to have correlation to enterocolitis. Enterocolitis involves a complex interplay between dysfunctional enteric nervous system, abnormal mucin production, insufficient immunoglobulin secretion, and unbalanced intestinal microflora (Frykman et al., 2012, Demehri et al., 2013). However, our study did not assess the factors that could contribute to the result and did the follow-up study.

Table 1. Correlation of the initial-surgery age and the stooling patterns of Hirschsprung's Disease patients

The age of initial surgery	Stooling patterns		Total
	Satisfied	Not Satisfied	
< 30 days	9	4	13
Count	69.2%	30.8%	100%
% within initial surgery			
> 30 days	14	4	18
Count	77.8%	22.2%	100%
% within late surgery			

Chi-square test : value = 0.689 ; p > 0.05

## CONCLUSION

Our study showed no significant correlation between the initial surgery age and Hirschsprung's disease patients stooling patterns.

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