

## Time Difference Test for Achieving Bromage Score 0 Post-Caesarea Sectio Using Method Eracs and Non Eracs to Women Abandoned at Simpang Lima Gumul (SLG) Kediri Hospital

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### ABSTRACT

**Background:** The assessment criteria used in determining the readiness of a patient under spinal anesthesia to be discharged from *the recovery room* is *the Bromage score*. Delays in moving patients can cause additional treatment costs *recovery room*, hypothermia, and anxiety in patients.

**Purpose:** This research aims to determine differences in achievement time. *Bromage scored 0 post-cesarean sections* with the ERACS method and not ERACS for mothers giving birth at RSUD SLG Kediri.

**Method:** This research uses a design *true experiment* with a type *posttest-only control group*. With *purposive sampling* A sample of 60 respondents was obtained, divided equally between experimental groups and methods ERACS and the control group with the Non method ERACS, and statistical tests were carried out by *Mann-Whitney*.

**Results:** The results of research from 60 respondents showed that the majority of patients who used the ERACS method reached a *bromage score* of 0 within 26-35 minutes after spinal anesthesia. Meanwhile, the majority of patients who use non-methods ERACS reach a *bromage score* of 0 in 126-135 minutes. Statistical test analysis *Mann-Whitney* The significance results obtained were  $p \text{ value} = 0.000 (<0.05)$ , meaning that there was a significant difference in time to achievement *bromage score 0* in patients *with cesarean section* method ERACS and non-RACS.

**Conclusion:** Achievement time *Bromage score 0* post spinal anesthesia methods ERACS an average of 30.00 minutes faster than the Nonmethod ERACS. Based on this time difference, the anesthetist can provide information regarding the duration of the achievement time *Bromage score* and estimated patient transfer time.

**Keywords:** bromage score, ERACS, sectio caesarea

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**BACKGROUND**

Delivery method ERACS Currently, it has become a phenomenal method in society, especially for pregnant women. The things that make up the method ERACS caught people's attention because the ERACS method is claimed to reduce post-operative pain and enable a faster mobilization process (Ratnasari & Yatsi Tangerang, 2022).

Cesarean section recovery is often more challenging than recovery from a vaginal delivery. Cesarean section has a long history and the risk of infection has historically led to many fatalities. However, advancements in technology have significantly reduced this risk, making cesarean sections safer. Therefore, the use of cesarean sections for childbirth is increasing (Prihartini & Iryadi, 2019). Cesarean section is preferred by pregnant women over the vaginal delivery method. The vaginal birth process is considered a difficult and possibly dangerous birth process, so public interest is increasing in Caesarean section cases (Tika et al., 2022).

The World Health Organization (WHO) states that Sectio Caesarea (SC) deliveries must be within the ideal limit set, namely 10-15%. Currently, there are more than 21% of all births. Sectio Caesarea is also increasing in Latin America and the Caribbean region (40.5%), Europe (25%), Asia (19.2%), and Africa (7.3%) (Sulistianingsih & Bantas, 2018). The birth rate using the Sectio Caesarea method in Indonesia is 17.6% total is 78,736 births. In East Java Province, the number of deliveries using the Sectio Caesarea (SC) method in 2019 was 124,586 cases out of 622,930 cases (Purnaningrum & Surayawati, 2023).

Coverage of delivery assistance by health workers for East Java Province in 2020 reached 97.03%. This figure has increased compared to 2019 which reached 97.00% (East Java Provincial Health Service, 2020). Data from the SLG Kediri Regional Hospital records that 583 people underwent surgery cesarean section with method ERACS (325 people) and not ERACS (258 people) from May to October 2023 with a monthly average of 97 patients. Method ERACS and not ERACS carried out according to the patient's request and adjusted to the patient's clinical condition at the hospital. Surgical action cesarean section This is done using spinal anesthesia unless there are contraindications for spinal anesthesia.

Childbirth process cesarean section with spinal anesthesia techniques will continue to increase as a final measure for various birth difficulties such as long labor to obstructed labor, fetal distress, and large fetuses (Ratnasari & Yatsi Tangerang, 2022). The increasing number of births can lead to the risk of complications(Tika et al., 2022).

Enhanced Recovery After Cesarean Section (ERACS) is a holistic recovery program following a cesarean delivery. It includes pre-surgery preparation, intraoperative and post-operative care, and the patient's discharge. ERACS builds upon the Enhanced Recovery After Surgery (ERAS) concept, originally used in digestive surgery. ERAS has been proven to reduce hospital stays, minimize postoperative complications, and enhance patient satisfaction. (Ratnasari & Yatsi Tangerang, 2022). Method ERACS It is also useful in helping patients to mobilize early because it can improve lung function, increase oxygen flow to tissues, improve insulin resistance, reduce the risk of thromboembolism, and reduce the length of hospital stay (LOS) by around 7.8% (Liu et al., 2020).

The patient cesarean section who has undergone surgical procedures will be transferred to the chamber recovery room (conscious recovery room). Long patient in the room recovery room depends on the patient's condition, this can be seen through several factors, for example, surgical technique, type of anesthesia, amount of bleeding, duration of anesthesia, and complications that can occur in the patient (Cahyani, 2021). Delays in moving patients can cause additional costs for in-patient care recovery rooms, hypothermia, anxiety that can occur in patients, and a decrease in the level of patient

satisfaction with the services provided by the hospital (Adiningrum, 2022).

Patients who experience delays in moving will remain in the room recovery room until fully recovered from the effects of anesthesia. The assessment criteria used to determine the readiness of a patient under spinal anesthesia to be removed from the room recovery room is a Bromage score. Bromage score is an indicator of motor response after spinal anesthesia. The Bromage score is calculated from the time the patient is injected with local anesthetic until the patient can move his legs again. The patient is said to have recovered from the effects of anesthesia if he reaches a bromage score of 0 (Sardimon et al., 2022).

Different results were found in research conducted by (Rahma & Kamsatun, 2018) which stated that the small number of respondents who carried out early mobilization so that they got a good category were 3 people (9.7%). Meanwhile, the majority of respondents did not carry out early mobilization well, so they were categorized as not good with 28 people (90.3%). The conclusion from this research is that most respondents did not carry out early mobilization well.

Previous research conducted by (Ratnasari & Yatsi Tangerang, 2022) states that the average implementation of mobilization for women giving birth after conventional SC is 20.41 hours after surgery, with the fastest mobilization being 15 hours after surgery and the longest mobilization being 27 hours after surgery. operation. The average implementation of mobilization for post-SC birthing mothers ERACS is 10 hours after surgery with the fastest mobilization being 8 hours after surgery and the longest mobilization being 13 hours after surgery. There is an influence of the SC method ERACS on the acceleration of mobilization of women giving birth after SC at Hermina Daan Mogot Hospital in 2022. Other research conducted by (Pujiwati et al., 2023) stated that the influence of the method ERACS frequency of mobilization time for post-sectio caesarea patients at Kartini General Hospital Jakarta in 2022 from 94 respondents (100%) based on the length of the mobilization process for post sectio caesarea patients of 0-12 hours as many as 42 respondents (44.7%) and the mobilization time of 13-24 hours as many as 52 respondents (55.3%).

Sectio Caesarea method ERACS has been proven to provide many benefits and positive impacts on patients' cesarean section This event needs to be investigated further because the impact of method ERACS on the achievement of the bromage score has never been studied and researched in the population in this study. Therefore, researchers are interested in conducting research with the title "Time Difference Test for Achieving Bromage Score 0 Post Sectio Caesarea with the Method ERACS and Non-ERACS to Mothers Giving Birth at SLG Hospital Kediri".

## **METHOD**

This research used quantitative methods this type of research is true-experimental. The design of this research is a posttest-only control group design, the researchers both conducted a post-test on the control group (non ERACS) and the experimental group (ERACS), but only the experimental group received treatment (Sarwono, 2016). his type of research is used to determine the difference in the time to achieve a Bromage score of 0 after a cesarean section by method ERACS and not ERACS in maternity mothers. The subject is a mother giving birth at RSUD SLG Kediri using the method ERACS and not ERACS. This research sampling technique uses Purposive Sampling. Purposive sampling is sample selection based on inclusion and exclusion criteria. The sample in this study amounted to 60 people, divided equally between the experimental class of 30 people and the control class of 30 people with an observation instrument. This research taken about a month and data analysis in this study used statistical tests Mann-Whitney.

**RESULTS****Variable Characteristics**

The independent variable in the research entitled "Time Difference Test for Achieving Bromage Score 0 Post Sectio Caesarea with the Method ERACS and Non-ERACS to women giving birth at RSUD SLG Kediri" is cesarean section method ERACS and cesarean section method non-ERACS. The number of samples used in this research was 60 respondents who were divided equally between the control class and the experimental class. The control class had 30 respondents and the experimental class had 30 respondents.

**Frequency Distribution of Sectio Caesarea Method on Achievement Time Bromage Score 0**

Table 1 Frequency distribution of the cesarean section method regarding the time to achieve a bromage score of 0 on January 8 2024 - February 10 2024 at SLG Hospital Kediri

No	Sectio Caesarea Methods	ERACS	
		f	%
1	ERACS	30	50.0
2	Non ERACS	30	50.0
Total		60	100.0

Based on the table above, it can be seen that out of 60 respondents (100%) respondents used the method ERACS as many as 30 respondents (50.0%) and cesarean section with the Nonmethod ERACS as many as 30 respondents (50.0%).

**Distribution of Time to Achieve Bromage Score 0 Post Sectio Caesarea by Method ERACS (intervention group)**

Table 2 Distribution of achievement times Bromage score 0 post cesarean section with method ERACS on January 8, 2024 – February 10 2024 at SLG Kediri Hospital

No	Bromage Score Achievement Time	ERACS	
		f	%
1	5-15 minute	0	0
2	16-25 minute	0	0
3	26-35 minute	11	36.7
4	36-45 minute	8	26.7
5	46-55 minute	9	30
6	56-65 minute	2	6.6
Total		30	100

Based on Table 4.2, the majority of respondents needed time to achieve Bromage score 0 in 26-35 minutes, namely 11 people (36.7%), 36-45 minutes for as many as 8 people (26.7%), 46-55 minutes as many as 9 people (30 %), and only 2 people (6.6%) needed 56-65 minutes to achieve Bromage score 0.

**Distribution of Time to Achieve Bromage Score 0 Post Sectio Caesarea by Method Non-ERACS (control group)**

Tabel 3 Distribution of achievement bromage score 0 pasca sectio caesarea with method Non ERACS on 8 Januari 2024 – 10 Februari 2024 di RSUD SLG Kediri

No	Bromage Score Achievement Time 0	Non ERACS	
		f	%
1	76-85 minute	1	3.3
2	96-105 minute	3	10
3	106-115 minute	3	10
4	116-125 minute	3	10
5	126-135 minute	5	16.8
6	136-145 minute	4	13.3
7	146-155 minute	1	3.3

8	156-165 minute	4	13.3
9	166-175 minute	2	6.7
10	176-185 minute	1	3.3
11	186-195 minute	0	0
12	196-205 minute	0	0
13	206-215 minute	1	3.3
14	216-225 minute	0	0
15	226-235 minute	0	0
16	236-245 minute	0	0
17	246-255 minute	0	0
18	256-265 minute	0	0
19	266-275 minute	0	0
20	276-285 minute	0	0
21	286-295 minute	2	6.7
Total		30	100

Based on table 4.3, the majority of respondents need time to achieve bromage score 0 at 126-135 minute namely as many as 5 people (16.8%), 76-85 minute for 1 person, 96-105 minute as many as 3 people (10%), 106-115 minute as many as 3 people (10%), 116-125 minute as many as 3 people (10%), 136-145 minute as many as 4 people (13.3%), 146-155 minute as many as 1 person (3.3%), 156-165 minute as many as 4 people (13.3%), 166-175 minute as many as 2 people (6.7%), 176-185 minute as much as 1 person (3.3%), 206-215 minute as many as 1 person (3.3%), and the longest time to achieve bromage score 0 was 2 people (6.7%) at time 286-295 minute.

**Distribution of the average value of achievement time bromage score 0 post Caesarean section with method ERACS and Non ERACS**

Table 4 Distribution of the average value of achievement time bromage score 0 post Caesarean section with method ERACS and Non ERACS on January 8 2024 – February 10 2024 at SLG Kediri Hospital

	Categories	N	Mean Rank	Sum of Ranks
Bromage Score 0	ERACS	30	15.50	465.00
	Non ERACS	30	45.50	1365.00
	Total	60		

Based on the table above, it can be seen that the average value of achievement time bromage score 0 by method ERACS namely 15.50 minute and non methods ERACS namely 45.50 minute.

**Normality test**

60 respondents who underwent the Kolmogrov normality test, obtained results for achieving a bromage score of 0 for the method ERACS with a Significant value (Sig.) 0.000 meaning it is smaller than 0.05 ( $0.000 < 0.05$ ) and the Non ERACS A significant value (Sig.) of 0.050 means greater than 0.05 ( $0.050 > 0.05$ ) so that the research data is not normally distributed. From the non-normal distribution of the data, the researchers carried out further non-parametric tests Mann-Whitney.

**Result Mann-Whitney**

Tabel 5 Results of non-parametric tests using the Mann-Whitney test on the Time Difference Test for Achieving a Bromage Score of 0 after Sectio Caesarea using the ERACS and Non-ERACS Methods for Mothers Giving Birth at SLG Hospital Kediri on January 8 2024 - February 10 2024

Test analytic	P-value
Mann-Whitney U	0.000

The results of the previous normality test found results for achieving a bromage score of 0 for the ERACS method with a significant value (Sig.) of 0.000, meaning smaller than 0.05 ( $0.000 < 0.05$ )

and for the *non-ERACS* method, a significant value (Sig.) of 0.050, meaning greater than 0.05 ( $0.050 > 0.05$ ) so the research data is not normally distributed. Because the data was not normally distributed, the researchers carried out further tests, namely non-parametric tests, to obtain appropriate research results. As for the results of the non-parametric test used using the Mann-Whitney method, the result was a  $p$  value = 0.000 or  $<0.05$ , meaning that there was a difference in the time to achieve a bromage score of 0 in caesarean section patients using the *ERACS* and *non-ERACS* methods at the SLG Kediri Regional Hospital.

## **DISCUSSION**

### **Achievement of Bromage score 0 post time cesarean section with method ERACS to mothers giving birth at RSUD SLG Kediri**

In this study the number of samples by method ERACS namely 30 patients. Most of the time it takes to reach scale bromage score 0 at 26-35 minutes namely 11 respondents (36.7%). The fastest time to achieve a bromage score is 0 by method ERACS namely at 26-35 minutes and the longest time is 56-65 minutes. The results of this research are supported by research conducted by (Adiningrum, 2022), that the achievement time Bromage score in patients after cesarean section with spinal anesthesia method ERACS shows that the majority of respondents need time to achieve it Bromage score at 5-15 minutes, namely as many as 79 people (79%), 16-25 minute 16 people (16%), 26-35 minute as many as 3 people (3%), and only 2 people (2%) took 36-45 minute to achieve early mobilization.

Draft Enhanced Recovery After Caesarian Surgery (ERACS) is a further development of the concept of Enhanced Recovery After Surgery (ERAS), where the ERAS concept was originally used in digestive surgery. The ERAS concept has been proven to shorten patient stays in the hospital, reduce postoperative complications, and increase patient satisfaction (Ratnasari & Yatsi Tangerang, 2022).

This statement is supported by research conducted by (Eff et al., 2010), which examined the effectiveness of spinal anesthesia using hyperbaric bupivacaine 0.5% 7.5 plus fentanyl 25 mcg compared with bupivacaine 0.5% hyperbaric 12.5 mg in cesarean section. The results of the study showed that spinal anesthesia using 7.5 mg hyperbaric bupivacaine 0.5% plus fentanyl 25 mcg was more effective than 12.5 mg hyperbaric bupivacaine 0.5% in cesarean section because it produced adequate intraoperative analgesia and more stable hemodynamics..

*Patient cesarean section with method ERACS can achieve a bromage score of 0 faster, so the sooner the patient can be moved from the conscious recovery room (recovery room) and can continue early mobilization exercises in the inpatient room. This is in line with research conducted by Macones et al., (2019) in research (Adiningrum, 2022), which stated that patients with a cesarean section with spinal anesthesia using the method ERACS can mobilize more quickly so that the patient can be transferred more quickly recovery room.*

Another research was conducted by (Purnaningrum & Surayawati, 2023), which stated the results of the analysis of differences in mobilization among postpartum mothers cesarean section conventional and method ERACS. Postpartum mobilization of mothers' cesarean section is conventional, namely 20.41 hours, while postpartum mothers' cesarean section with method ERACS shows the average implementation of mobilization is 10.00 hours. The difference between the post-mobilization cesarean section conventional and method ERACS is 10.41 hours, which is mobilization for postpartum mothers cesarean section with method ERACS faster to mobilize than post caesarean section conventional (non-ERACS).

**Achievement of a Bromage score of 0 after cesarean section using the non-ERACS method in mothers giving birth at SLG Hospital Kediri**

In this study the number of samples using the Nonmethod ERACS namely 30 patients. Most of the time it takes to reach a scale bromage score 0 at 126-135 minutes namely 5 people (16.8%). The fastest time to achieve a bromage score is 0 with nonmethod ERACS namely at 76-85 minutes and the longest time is 286-295 minutes. The results of this research are in line with research conducted by (Supriyatin et al., 2022), the research results obtained Time to achieve a Bromage score for spinal anesthesia at Ajibarang Regional Hospital, the average was 183.10 minutes.

Operation cesarean section with non-method ERACS (conventional) has a fairly long recovery time, this is due to the dose of anesthesia given before the procedure of cesarean section, namely spinal bupivacaine at a dose of 12.5 ml/gr. The number of doses given before the procedure affects the achievement time Bromage score 0 posts sectio caeasrea. This statement is supported by research conducted by (Roro Brilianti Chrisnajayantie et al., 2021), regarding differences in the length of time to achieve the scale bromage score between spinal anesthesia bupivacaine 0.5% 20 mg and bupivacaine 0.5% 15 mg in patients caesarean section at Muntilan Regional Hospital. The results of this study showed that in patients who underwent spinal anesthesia bupivacaine 0.5% 20 mg took longer to achieve bromage score compared to bupivacaine 0.5% 15 mg.

Despite the achievements Bromage scored 0 for quite a long time, the patient did it cesarean section with method non ERACS You still need to mobilize early to avoid complications such as pulmonary embolism and thrombophlebitis and is useful for normalizing circulation in the body. This is supported by research conducted by Dewi (2011) dalam (Liawati & Novani, 2018), stating that 37.5% of mothers after delivery by cesarean section experienced slow healing of perineal wounds because they did not mobilize early, while the mothers after delivery by cesarean section Those who mobilized early experienced faster healing by 52.5%.

**The difference in achievement time Bromage score 0 posts cesarean section with method ERACS and not ERACS to mothers giving birth at RSUD SLG Kediri**

Achievement time Bromage score 0 in patients ERACS post spinal anesthesia during surgery cesarean section i.e. mostly at 26-35 minutes namely 11 respondents (36.7%). The fastest time to achieve a Bromage score is 0 by method ERACS namely at 26-35 minutes and the longest time is 56-65 minutes, while the achievement time Bromage score is 0 in nonpatients ERACS post spinal anesthesia at 126-135 minutes namely as many as 5 people (16.8%). The fastest time to achieve a bromage score is 0 with the non-method ERACS namely at 76-85 minutes and the longest time is 286-295 minutes. Test results mann-whitney show value significance 0.000 is smaller than 0.05 ( $0.000 < 0.05$ ) so it can be stated that there is a significant difference in time to achievement bromage score 0 in patients section caesarea with method ERACS and not ERACS at SLG Hospital Kediri.

Method ERACS is a method that is widely used in Caesar surgery. This method is considered to have several advantages over non-methods ERACS (conventional), such as shortening hospitalization time, reducing the risk of infection, and reducing dependence on opioid drugs used to relieve pain after surgery. This research discusses differences in achievement bromage score 0 posts cesarean section with method ERACS and not ERACS. Anesthesia is used in the implementation of cesarean section with the method ERACS or not ERACS namely spinal anesthesia. ERACS using the anesthetic drug bupivacaine 7.5 ml/gr, morphine 100 mcg, and fentanyl 25 mcg. Meanwhile, non-patients ERACS using spinal bupivacaine 12.5 ml/gr.

In this study, differences were found in the length of time for achievement bromage score 0 between patients by method ERACS and not ERACS post spinal anesthesia in patients cesarean section Difference in achievement time bromage score 0 between ERACS and not ERACS namely

30.00 minutes. This is supported by research conducted by (Eff et al., 2010), which examined the effectiveness of spinal anesthesia using hyperbaric bupivacaine 0.5% 7.5 plus fentanyl 25 mcg compared with bupivacaine 0.5% hyperbaric 12.5 mg in cesarean section. The results of the study showed that spinal anesthesia using 7.5 mg hyperbaric bupivacaine 0.5% plus fentanyl 25 mcg was more effective than 12.5 mg hyperbaric bupivacaine 0.5% in cesarean section because it produced adequate intraoperative analgesia and more stable hemodynamics. This research is also supported by (X et al., 2021), the resulting research is the results of statistical tests using alternative tests mann-whitney It can be concluded that there is a significant difference between the length of post-operative care between groups of digestive surgery patients and those without the ERAS protocol ( $p < 0.05$ ).

Another research conducted by (Ni Putu Yusniawati et al., 2023) about incidence PONV (*postoperative Nausea and Vomiting*) of patient *sectio caesarea*, *Enhanced Recovery Surgery* (ERAS), regarding the incidence of PONV (postoperative Nausea and vomiting) in patients *sectio caesarea*, *Enhanced Recovery Surgery* (ERAS), and block anesthesia subarachnoid (SAB). The research results showed that the majority of participants were aged between 30 and 35 years, classified into the healthy weight group, and identified by a score of 1. Fifty participants did not experience nausea and vomiting after the procedure. Only seven of three participants reported mild or moderate episodes of nausea and vomiting after the procedure. Thus, method ERACS can be proposed as an effective and promising protocol for cesarean section.

Patients undergoing procedures for cesarean section with the method ERACS can return to movement and carry out early mobilization more quickly. This happens because of the method ERACS, administering the infusion and removing the catheter from the patient is carried out earlier compared to the cesarean section method non ERACS. In patients undergoing the procedure ERACS Catheter removal was carried out 6 hours after *sectio Caesarea*, while non-RACS was carried out 8 hours after *sectio Caesarea* (Habib, 2022). procedure cesarean section has several benefits, one of which is minimizing the use of opioids and post-operative enteral feeding, because the procedure differs from patient to procedure cesarean section method ERACS can carry out early mobilization more quickly (Sidharti et al., 2023).

Suitable for purpose ERACS namely to minimize physiological responses during surgery and optimize patient outcomes without increasing postoperative complications, so cesarean section with method ERACS is more recommended because it has been proven to be able to overcome pain in mothers, speed up mobilization, increase the emotional bond between mother and baby, reduce consumption of opioid drugs, and shorten the length of hospital stay. This statement is supported by research conducted by (Prayanangga & Nilasari, 2022). The results of this research show that the protocol ERACS may help reduce LOS ( $P < 0.001$ ) and decrease overall postoperative costs per patient ( $P < 0.001$ ). ERACS can also prevent greater than 60% of pregnancy-related mortality. By involving multidisciplinary, goals ERACS can be achieved and can reduce the risk of morbidity, mortality, and complications in patients.

## CONCLUSION

1. Achievement time bromage score 0 by method ERACS after spinal anesthesia during surgery section caesarea mostly at 26-35 minutes namely 11 respondents (36.7%). The fastest time to achieve a bromage score of 0 with the method ERACS namely at 26-35 minutes and the longest time is 56-65 minutes.
2. Achievement time Bromage score 0 with non-method ERACS after spinal anesthesia during surgery section caesarea mostly at 126-135 minutes namely as many as 5 people (16.8%). The



fastest time to achieve a Bromage score is 0 with the non-method ERACS namely at 76-85 minutes and the longest time is 286-295 minutes.

- Achievement time Bromage score 0 post spinal anesthesia by method ERACS faster than the Non-method ERACS with an average difference of 30.00 minutes. Test results Mann-Whitney shows a significance value of  $p$  value=0.000 or  $<0.05$  (significantly different), meaning that there is a significant difference in time to achievement bromage score 0 in patients section caesarea with method ERACS and Non ERACS at SLG Hospital Kediri.

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