

## **EFFECTIVENESS OF AMNIOTIC MEMBRANE ON WOUND HEALING IN CESAREAN SECTION PATIENTS**

Kiki Fatmawati<sup>1\*</sup>

<sup>1</sup> Student of Master of Nursing Study Program, Hasanuddin University, ID

\*Corresponden Author: kikifatmawatimuha19@gmail.com

---

### **Abstract**

**Background;** Sectio Caesarea (SC) surgery is increasingly popular as a method of delivery because it is considered more convenient and practical than normal delivery. SC, which is performed through incisions in the abdomen and uterus, can be performed in emergency or elective situations and the number of SC globally and in Indonesia continues to rise. Although SC has benefits in saving the lives of mothers and babies, the procedure also carries the risk of serious complications such as infection, hematoma, and slow wound healing; This study aims to evaluate the effectiveness of Amniotic Membrane (AM) in accelerating wound healing after SC. The focus of this research is on the benefits, effectiveness, and potential application of AM as a wound dressing compared to conventional methods. **Method;** The study used the PRISMA checklist to assess articles from PubMed, ScienceDirect, Scopus, Wiley, and Cochrane Library databases with related keywords from 2014 to 2024. Articles that met the inclusion criteria, such as those focusing on the use of AM in post-SC wound healing and those that were open access, were analyzed. Articles that are irrelevant, duplicate, or do not have full text are removed. **Result;** Of the 120 articles obtained, 37 articles were excluded for duplication, 76 articles after abstract sorting, and 7 articles were considered after reading the full text. Finally, 5 articles are analyzed in depth. These articles show that AM is more effective than conventional dressing in accelerating post-SC wound healing. **Conclusion;** The use of Amniotic Membrane as a post-SC wound dressing can accelerate wound healing better compared to routine treatment. AM is recommended as an effective intervention in the management of SC wounds. More research is needed to increase nurses' awareness of the benefits of AM.

**Keywords:** Amniotic Membrane, Wound Healing, Sectio Caesarean Section

## **BACKGROUND**

Sectio Caesarea (SC) surgery is increasingly chosen as a method of delivery because it is considered more convenient and practical than normal childbirth, both in emergency and elective situations. In Indonesia and globally, SC has become one of the most common surgical procedures, with the percentage of SC in Indonesia reaching 25.9%, exceeding the WHO standard that reports that more than 21% of births in 2021 were made through SC, and this figure is expected to increase to almost 29% by 2030.

Although SC offers benefits, such as saving the lives of both mother and baby, the procedure can also lead to serious postoperative complications, such as infection, hematoma, and slow wound healing. Therefore, optimal wound healing is essential to prevent prolonged infections, unaesthetic scars, and speed up recovery. The effective use of wound dressings can play a big role in speeding up the healing process and reducing the risk of complications.

In this case, Amniotic Membrane (AM) emerged as an interesting alternative for postoperative wound dressing. This membrane, which encompasses the embryo in the placenta, has biological components that can support wound healing, such as collagen and growth factors. Research shows that AM can speed up wound healing by up to twice compared to conventional dressings. This study aims to evaluate the effectiveness of AM as a postoperative dressing of SC, compare its benefits and effectiveness with standard dressings, and propose a wider application of AM to improve the quality of wound care.

## **METHODS**

In this study, we used the Preferred Reporting Items for Systematic Reviews (PRISMA) checklist to guide the analysis and interpretation, determination of the problem to be studied, and data collection. The search process was carried out to find articles that evaluated the effectiveness of the use of Amniotic Membrane in accelerating the healing of SC postoperative wounds. Searches were performed on PubMed, Science Direct, Scopus, Wiley, and Cochrane Library databases using keywords We used the following keywords in the search process: ("Amniotic Membrane" OR "amniotic membrane") AND ("wound healing" OR "wound healing process") AND ("Cesarean section" OR "C-section" OR "Section Caesarea") process") AND ("Cesarean section" OR "C-section" OR "Section Caesarea"), from 2014 to 2024. In addition, the references listed in all relevant articles were manually reviewed to find additional literature to ensure the completeness of the search for clinical trials aimed at evaluating the use of Amniotic Membrane and wound healing with appropriate tools. Study participants included women who used a variety of complementary treatment techniques to accelerate wound healing after SC surgery. The outcome measured was the rate of wound healing. Irrelevant, duplicate, overview, or letters to editors are removed. If the full text of the article is not available, the information from the abstract will be used, and if the abstract does not provide important information, the article will be excluded from the study.

| Heading<br>Author's Name<br>Year<br>Country  | Purpose   | Design  | Sample  | Intervention   | Result  |
|--|---|---|---|--|---|
| Benefits of the Amniotic Membrane as a Surgical Tool for Wound Dressing After Caesarean Section<br>I Nyoman et.al<br>Indonesia 2023  | - To discuss the use of the amniotic membrane in the healing of caesarean section wounds. - To evaluate the clinical effectiveness of the amniotic membrane in the healing of caesarean section wounds, as this is an area that is still limited in the literature. | This study is a double camouflage randomized clinical experiment. Woman who had a cesarean section took part in the study.                        | A randomized clinical trial study with 45 interventions with pads<br><br>amniotic membrane and 45 controls  | The treatment group received fresh amniotic membranes on the wound<br><br>control group gets standard wound covering gauze   | Results of this study indicates that the use of amniotic membrane pads can aids wound healing in the early phases after a cesarean section  |
| Effect of Immediate Nursing Intervention on Amniotic Membrane Insertion on Caesarean Wound Pain and Healing<br>Hanan Fawzy Elsayed <sup>1</sup> , Mervat Gaber Metwalli Zaghloul <sup>2</sup> , Sahar Ali<br>Egypt in 2024 | - Evaluate the effect of amniotic membrane installation on the healing of caesarean section wounds. - Evaluate the effect of amniotic membrane installation on the level of pain in cesarean section wounds.  | - Design of a quasi-experiment with a control group and a study group - Conducted in a delivery unit in Cairo, Egypt -                            | Purposive sample of 60 maternity mothers, 30 in the control group and 30 in the study group - Data were collected using a structured interview questionnaire, a REEDA scale to assess wound healing, and a pain assessment questionnaire. | Amniotic membrane dressing applied to the intervention group, standard dry gauze for the control group - All patients receive postoperative care   | The current study revealed a statistically significant improvement in wound healing of women who gave birth and lowered pain levels in the study group  |
| Use of Fresh Amnion Membrane on Caesarean Section Scar Incision<br>Syahredi Syaiful Adnan, Hafni Bachtiar  | - To find out the difference in the use of fresh amniotic membrane compared to standard bandage gauze in wound healing after cesarean section at Dr. Reksodiwiryio Padang Hospital.   | - Experimental research with post test control group design - The study population is all patients who undergo cesarean section in the hospital - | Using the Consecutive Formula sampling of two different test samples obtained an average of 72 people for each group of total samples of 144  | The treatment group received fresh amniotic membranes on the wound<br><br>control group gets standard wound covering gauze<br><br>Wound healing was observed for approximately 3 days of hospitalization | Average wound healing time difference statistically significant (p value <0.05) in the treatment and control groups. There is a difference that was very significant in the proportion of local infections on day 3 between the treatment and |

|  |  |  |   |  |
|--|--|--|---|--|
|  |  |  | using a questionnaire   | control groups (P value <0.05).  |
| Amniotic Membrane for Pain Control After Caesarean Section | - Assessing the effect of the amniotic membrane as a caesarean section wound dressing on post-caesarean section pain. - Conducting a double-blind randomized controlled clinical trial on 90 pregnant women who will undergo elective caesarean section. | Participants were divided into 2 groups of 45 people each. The wound was wrapped with amniotic membrane in one group and with simple gauze in the other group. Pain was measured and recorded in 2 groups with a visual analogue scale (VAS). The need for | Amniotic membrane dressing applied to the intervention group, standard dry gauze for control group - All patients received standard postoperative care and analgesics | The results showed no significant difference between the two groups regarding mean pain, 4 and 12 hours after surgery  |
| Fatemeh Mohseni et.al                                      |  | Receiving analgesics 24 hours after a cesarean section was also assessed and compared between the 2 groups.  |   | caesarean section (P=0.308 and P=0.628, respectively). However, significant differences were observed between the 2 groups, in this case, 24, 36, and 48 hours after operations (P=0.026, P=0.026, and P=0.004, respectively). In addition, patients in the amniotic membrane group require fewer analgesics |
| Iran, 2018   |  |  |   | compared to the control group 24 hours after the cesarean section (P=0.041)  |

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| Effect of Amnion Membrane on Caesarean Wound Healing: A Randomized Clinical Trial | The purpose of this study is to determine the effect of amniotic membrane bandages on the healing of cesarean wounds. | - A prospective, randomized, double-blinded clinical trial - Patients were randomly divided into an amniotic bandage group and a control group - Demographic data were collected using questionnaires - Wound healing was assessed using the REEDA scale - The investigators were unaware of the interventions performed by the surgeon | : This study is a prospective, randomized, double-blind clinical trial. The patients participating in this study were women who underwent Caesarean section at Amir-al-Momenin Hospital in Gerash, Iran | Patients were randomly divided into two groups (N = 45 for each group). In one group, the cesarean section wound was bandaged using the amniotic membrane; In the control group, the dressing was carried out by using a simple dressing. Wound healing is assessed by the Redness, Edema, Ecchymosis, Discharge, Approximation (REEDA) scale of 24 | The mean REEDA score, which reflects wound healing, differed significantly between groups 24 hours after a cesarean section, which was shown to be lower in the amniotic membrane group (0.00 ± 0.00 vs. 0.60 ± 1.30; P = 0.00 ± 0.00 vs. 0.60 ± 1.30; P = 0.00 ± 0.00 vs. 0.03). However, on day 8 after cesarean section, there was no significant difference between the groups (P = 0.078). |
| Zahra Molazem et.al. Iran in 2018 .   |   |   |   | 8 days after the cesarean section.  |   |

### Data extraction, analysis, and synthesis

Once an article is declared to meet the criteria for final inclusion, it will be analyzed using the form provided. The analysis results from the obtained articles will be exported to Microsoft Excel to collect the relevance data needed for further analysis. A single worksheet is used to collect information about the characteristics of the research, such as: the name of the author, the country where the study was conducted, the design of the study, the purpose of the study, and the sample. The inclusion and exclusion criteria for the review are specified at the outset

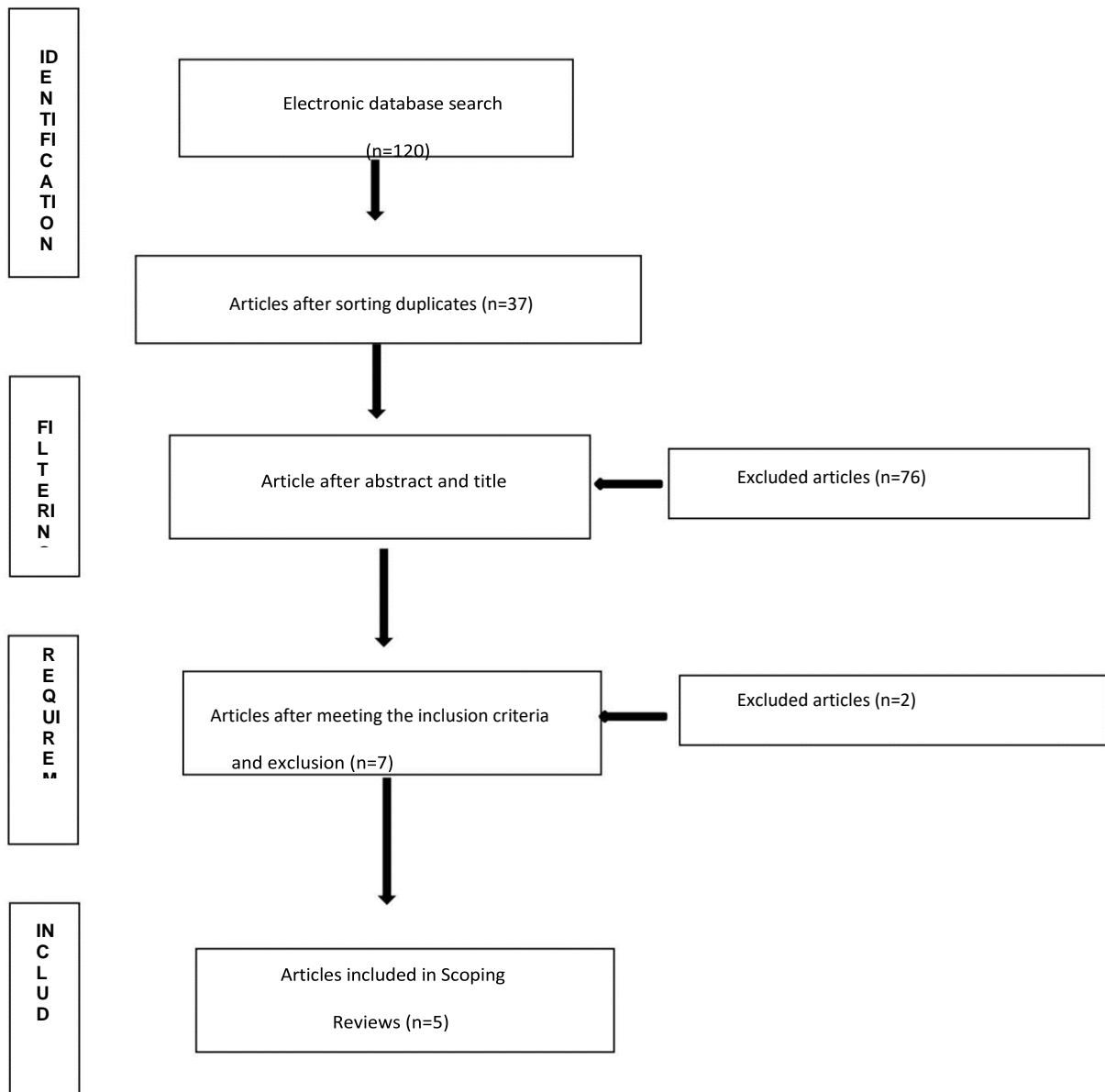
#### Eligibility criteria

##### Inclusion criteria

1. Articles focusing on Aminotic Membrane Uses
2. Article on Wound healing in SC Surgery patients
3. Articles Open Access
4. Articles that focus on humans
5. Articles in United Kingdom
6. Articles in English

##### Exclusion criteria

1. Articles that are beyond humanity
2. Published before 2014



## RESULTS AND DISCUSSION

This review process was carried out using *the mendley* and *elicit* methods to explore the effectiveness of the use of Amniotic Membrane in accelerating the healing of postoperative wounds in SC with a total of 120 articles that have been obtained as a source Search was conducted on PubMed, Science Direct, Scopus, Wiley, and Cochrane Library databases. Duplicate sorting caused 37 articles to be removed, continued Sorting abstracts and titles caused 76 articles to be removed, Filtering based on inclusion and exclusion criteria left 7 articles. 7 articles are considered after reading the full text, but there are 2 articles that can be opened, so there are 5 articles left to be included in the final analysis. The article has explored the effectiveness of the use of Amniotic Membrane in accelerating the healing of SC postoperative wounds. These articles discuss the use of Amniotic Membrane more effectively in wound healing after SC surgery

In this context, Amniotic Membrane (AM) emerged as an interesting alternative to postoperative wound dressing. AM is a thin membrane that surrounds the embryo in the placenta and has various biological components, such as collagen and growth factors, that can aid wound healing (Castellanos et al., 2017; Setiawan et al., 2023). AM offers a variety of benefits, including anti-inflammatory, anti-microbial effects, and the ability to reduce fibrosis as well as accelerate epithelialization (Liang et al., 2020). Research shows that AM can speed up wound healing by up to twice compared to conventional dressing (Sa et al., 2017).

## CONCLUSION

The current study concludes that, the use of Amniotic Membrane on caesarean section wounds as a dressing improves wound healing more than routine care. Recommended: The application of amniotic membrane The use of Amniotic Membrane in the management of SC surgical wounds is recommended as an effective intervention in wound healing among women who give birth. Further research: Raising awareness among maternity nurses about the effects of the application of Amniotic Membrane to manage SC surgical wounds.

## REFERENCES

- Castellanos, G., Bernabé-García, Á., Moraleda, J. M., & Nicolás, F. J. (2017). Amniotic membrane application for the healing of chronic wounds and ulcers. *Placenta*, *59*, 146–153. <https://doi.org/10.1016/j.placenta.2017.04.005>
- Garcia, C. (2016). *The Human Placenta in Wound Healing*. Taylor and Francis Inc. <https://www.taylorfrancis.com/chapters/edit/10.1201/b19620-4/human-placenta-wound-healing-carmen-garcía-insausti-josé-maría-moraleda-gregorio-castellanos-francisco-josé-nicolás>
- Ministry of Health of the Republic of Indonesia. (2023). *Indonesia Health Survey (SKI) 2023*. Ministry of Health, Directorate General of Health Services. <https://www.badankebijakan.kemkes.go.id/hasil-ski-2023/>
- Konlan, K. D., Baku, E. K., Japiong, M., Dodam Konlan, K., & Amoah, R. M. (2019). Reasons for Women’s Choice of Elective Caesarian Section in Duayaw Nkwanta Hospital. *Journal of Pregnancy*, *2019*. <https://doi.org/10.1155/2019/2320743>
- Liang, X., Zhou, L., & Yan, J. (2020). Amniotic membrane for treating skin graft donor sites: A systematic review and meta-analysis. *Burns*, *46*(3), 621–629. <https://doi.org/10.1016/j.burns.2019.09.010>

*The 2<sup>nd</sup> Nani Hasanuddin International Health Conference (NHIHC)*

*“Navigation The Future of Health Care Addressing Challenges and Embracing Innovation in Nursing, Midwifery, Nutrition and Pharmaceutical Profession”*

The STIKES Nani Hasanuddin, Makassar, August 10-11, 2024

Magro, M. (2023). Reducing Surgical Site Infections Post-Caesarean Section. *International Journal of Women’s Health*, Volume 15, 1811–1819. <https://doi.org/10.2147/IJWH.S431868>

Niazi, A., Moradi, M., Askari, V. R., & Sharifi, N. (2021). Effect of complementary medicine on pain relief and wound healing after cesarean section: A systematic review. *Journal of Pharmacopuncture*, 24(2), 41–53. <https://doi.org/10.3831/KPI.2021.24.2.41>

109532. <https://doi.org/10.1016/j.mehy.2019.109532>

Rohmah, A., & Rahmawati, I. A. (2023). *Incidence Rate and Factors Related to Post-Sectio Caesarean Surgical Wound Infection at Wonosari Regional General Hospital Incidence and Factors Related to Surgical Site Infection Post-Caesarean Section*. 1(2), 85–94. <https://doi.org/10.28885/bikkm.vol1.iss2.art4>

Sa, S., Bachtiar, H., & Obstetri, B. (2017). *The use of fresh amnion membranes on scar incision of caesarean section*. 1, 41–48.

Ismael, S. (2014). *Fundamentals of Clinical Research Methodology* (5th ed.). Sagung Seto.

Scheck, S. M., & Sircar, S. (2023). Experiences implementing hydrocolloid dressings after caesarean section. *Journal of Wound Care*, 32(4), 200–205. <https://doi.org/10.12968/jowc.2023.32.4.200>

Setiawan, W. A., Sanjaya, I. N. H., Suardika, A., Widiyanti, E. S., & Prilaksana Kalimantan, P. N. A. (2023). The Benefit of Amniotic Membrane as A Surgical Wound Dressing for Post Cesarean Section. *European Journal of Medical and Health Sciences*, 5(3), 49–54. <https://doi.org/10.24018/ejmed.2023.5.3.1675>

Sharon Sung, H. M. (2023). *Cesarean Section*. National Institute for Medical Research. <https://www.ncbi.nlm.nih.gov/books/NBK546707/>

WHO. (2021). Caesarean section rates continue to rise, amid growing inequalities in access. *WHO South-East Asia Journal of Public Health*. <https://www.who.int/news/item/16-06-2021-caesarean-section-rates-continue-to-rise-amid-growing-inequalities-in-access>