



Delivering a Birth Safely – Case Reports of Perineal Infection Prevention among Pregnant Women Living Around Ex-landfills

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Abstract

Background: Pregnant women living around ex-landfills have a higher risk of infection due to slum milieu, poor nutritional status, and fetal head pressure on the perineum during labor which can cause it to tear. **Objective:** This research aimed to emphasize the importance of limiting prophylaxis antibiotics for the 1st and 2nd degrees of perineal tears due to their negligible risk of infection. **Case presentations:** This is a report of two primigravid women aged 19 years old (cases 1 and 2) and multiparous women aged 29 and 30 yo (cases 3 and 4) who managed to give birth safely in Puskesmas (Indonesian primary healthcare facilities), despite having low blood pressure and non-adherence to antenatal care. All of them suffered from 2nd degree of perineal tears and received analgesics, iron, vitamin B complex, and vitamin A tablets. The subjects attended puerperium care on days, 14, and 42 postpartum at Puskesmas. **Discussion:** In March 2020, Puskesmas' healthcare team performed a new 1st and 2nd-degree perineal tears prevention without antibiotics following normal vaginal birth. Standard care consists of personal hygiene, perineal wound care, and education on the importance of nutritious food and adherence to maternal supplementation. All subjects presented with complete perineal wound healing without infection at day-42 postpartum. **Conclusion:** It can be concluded that 2nd-degree perineal tears infection following normal vaginal birth could be prevented without antibiotics. It is strongly suggested to control the maternal nutritional states, potentially interfering with the maternal ability to heal the perineal wound.

Keywords: perineal wound, infection risk, prevention, antibiotics, covid-19

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INTRODUCTION

This report describes the cases of pregnant women with low social, and economic class and education living around the ex-landfills. People who live near former landfills typically make a living as collectors of abandoned things, such as used bottles and cardboard stacked around their homes. This pile of used goods causes the house's surroundings to become a slum and is a source of infection transmission, which could endanger pregnant women who have a higher risk of infection due to their immunocompromised condition.

At term, the uterine contractility would become more frequent with a narrower time interval along the peripartum period causing escalating pain in the mother. During normal vaginal delivery, the perineum, vaginal, and anal tissue were possibly torn, increasing the risk of infection. The female perineum is the diamond-shaped inferior outlet of the pelvis, bordered by the pubic symphysis anteriorly and the coccyx posteriorly (Goh *et al.*, 2018). Perineal tears are classified into 4 degrees, ranging from the 1st degree of laceration of the vaginal mucosa or perineal skin only to the 4th degree of obstetric anal sphincter injury, also known as OASI. (RCOG, 2015; WHO, 2015).

The first degree of perineal tear is considered minor and could be healed without treatment, while the 2nd-degree one that requires suturing has a higher risk of infection. These two kinds of perineal tears can be treated at Puskesmas, while the major 3rd and 4th degree must be referred to the hospital due to the need for wound repair in an operating theatre. Thus the 3rd and 4th degrees of perineal tears surgery required prophylaxis antibiotics to prevent surgical wound infection (RCOG, 2015; WHO, 2015).

The former local policy for preventing infection of perineal tears that require suturing at Puskesmas was to administer amoxicillin 500 mg three times a day and mefenamic acid 500 mg three times a day for three days postpartum. Thus, there are increasing concerns about the risk of resistance due to antibiotics overuse to prevent minor infection of 1st and 2nd degree of perineal tears following normal vaginal delivery. This research aimed to emphasize the importance of limiting the use of prophylaxis antibiotics for the 1st and 2nd degrees of perineal tears due to their negligible risk of infection.

MATERIALS AND METHODS

This is a case report about implementing infection control without antibiotics in four pregnant women with 2nd degree of perineal tears, which require to be sutured

after normal vaginal delivery at Puskesmas Keputih. This Community Health Center is located near Surabaya's ex-landfills surrounded by middle-low income and low-educated population.

In March 2020, there was a round table discussion about 1st and 2nd perineal infection prevention strategies without antibiotics use which was assisted by obstetricians from tertiary care hospital and attended by the head of Puskesmas, pharmacist, and midwives. This research collaborated with the maternal healthcare team of Puskesmas to implement the new prevention strategies. This research protocol complied with all relevant national regulations and institutional policies and is following the tenets of the Helsinki Declaration (as revised in 2013) and has been approved by the Ethics Committee of the University of Surabaya. This research holds informed consent from all the patients.

The pregnant women who delivered their babies through normal vaginal birth between March – April 2021 and had received sutured on the 1st- or 2nd-degree of perineal tears and standard care for preventing perineal wound infection were included in the study of this research. Pregnant women prescribed prophylaxis antibiotics were excluded. After informed consent was given, we measured the self-filled validated questionnaire on maternal knowledge about perineal wound care and infection prevention, prophylaxis analgesic and antibiotics used for the particular case of perineal tears, and drug adherence upon recruitment. 'patient's knowledge is considered as "low", "medium", and "high level of knowledge" if there was consecutive $\geq 75\%$, $>75 - 90\%$, and $>90\%$ correct answer to the questionnaire. Before and after standard care, the questionnaire was administered to identify maternal education needs to prevent perineal wound infection without antibiotics and administer maternal supplementation.

Then the healthcare team serves all pregnant women with new standard care without antibiotics for perineal tears infection prevention, which is consisted of education and training about:

1. personal hygiene,
2. adequate nutrition during pregnancy and 42 days postpartum (puerperium period),
3. perineal wound care,
4. early initiation of exclusive breastfeeding during the first six months of the baby's life.

Ten tablets of mefenamic acid for prophylaxis pain of perineal tears plus maternal supplementation during puerperium care consist of 2 tablets of vitamin A, 20

tablets of vitamin B complex, and iron tablets given to the mother tablets given vaginal delivery. Pharmacists carried out education about medication administration and their important indication related to mothers' health during the puerperium period. Mother adherence to analgesic dosing regimes and maternal supplementation was observed during the puerperium period. Due to the Covid-19 pandemic societal constraints to comply with Covid-19 health standards, the same questioning technique could not be used during the postpartum visit to the Puskesmas. Since then, information has been acquired through WhatsApp conversations and phone calls. During the Covid-19 epidemic, postpartum checkups were changed from three-day intervals to seven-, fourteen-, and forty-two-day intervals.

CASE PRESENTATIONS

Case 1.

A 19 years-old primiparous woman attended the routine visit to the maternal clinic at Puskesmas on February 10, 2020. The 'patient's weight was 68.5 kg and proportional to the 35-36 weeks of gestational period, while the blood pressure was 100/60 mmHg. The past medical history was nausea, vomiting, and headache, while other clinical conditions were in the normal range. The patient managed to deliver a normal vaginal birth on April 2, 2020. The patient was in good clinical disease (80 scores on the Karnofsky scale) and could perform simple daily activities by herself. The only symptom was pain whenever the patient was trying to sit in a chair (pain score of 4 on a 1-10 numeric pain rating scale). The mother and baby were all in perfect health condition so that they could leave Puskesmas on April 3, 2020. The patient was prescribed mefenamic acid 500 mg three times a day for three days, two tablets of vitamin A once daily, 20 tablets of vitamin B complex, and iron supplementation. The patient attended her first postpartum (puerperium) care (day 7) on April 9, 2020 – her blood pressure was 100/60 mmHg and her body weight of 67 kg. The appearance of the perineal wound was wet and had not been unified yet, and the major complaint of pain on sitting (pain score of 3), but the patient managed to urinate and defecate normally. The patient was prescribed mefenamic acid 500 mg three times a day for another three days and vitamin B complex twice a day for seven days. 'patient's baseline knowledge of perineal wound care and infection prevention, as well as prophylaxis analgesic and antibiotic use for the specific case of perineal tears, and drug adherence was low (50% correct answers).

Pharmacists re-educate the patient about the importance of drug adherence. The patient was 100% adherence to all medications, and the perineal wound had been drying without infection at her 2nd postnatal care visit (day 14) on April 16, 2020. Her blood pressure was slightly raised to 110/70 mmHg, and her body weight of 67 kg. The complete wound healing was achieved right after the 2nd visit (day-14) and persisted until 42 days postpartum.

Case 2.

Another 19 years-old primiparous women had never attended antenatal care at the 'Puskesmas' maternal clinic, but the patient delivered a normal vaginal birth at 3.37 AM April 3, 2020. The patient's weight was 65 kg, blood pressure was 110/70 mmHg, pulse = 50x/minute, and body temperature was 36° C. The patient got bleeding during labor, but otherwise was in a good clinical condition (80 scores on the Karnofsky scale) and could perform simple daily activities independently. The only symptom was pain. The mother and baby were all in perfect health condition so they could leave Puskesmas on April 4, 2020. The patient was prescribed mefenamic acid 500 mg three times a day, two tablets of vitamin A and iron tablets of 20 administered once daily. The patient attended her 1st postpartum (puerperium) care on April 11, 2020 – her blood pressure was 100/70 mmHg, a pulse of 50 times/minute, and bodyweight of 65 kg. The appearance of the perineal wound was wet, and the patient complained of slight pain whenever the patient tried to get up from the chair (pain score of 2 on a 1-10 numeric pain rating scale), so the patient was prescribed mefenamic acid 500 mg three times a day for another three days. The patient's baseline knowledge of perineal wound care and infection prevention, as well as prophylaxis analgesic and antibiotics used for the particular case of perineal tears, was at a medium level (85% correct answers). However, the healthcare team counselled the patient due to non-compliance with antenatal care, and her low pulse could lead to a propensity to fall. Pharmacists educate the patient about the importance of drug adherence. The patient had 100% adherence to all medications, and the perineal tears were healed and dry at the 2nd puerperium care visit (day-14) on April 19, 2020. The 'patient's blood pressure was 110/70 mmHg. The complete wound healing persists until 42 days postpartum, with no sign of infection.

Case 3

A 30 years-old multiparous woman had been married for 12 years. The 'patient's past medical history

was genital candidiasis, managed with ketoconazole 2 x 1 tablet. The patient's baseline knowledge of perineal wound care and infection prevention, as well as prophylaxis analgesic and antibiotics used for the certain case of perineal tears, was medium (85% correct answers). The patient attended a routine visit to the maternal clinic at Puskesmas on March 4, 2020, with no complaint, but her blood pressure was constantly around 100/60 mmHg (body weight was 60 kg). At the 32-33 weeks of the gestational period, the midwife found that her fetal presentation was not in a normal position, and the fetal pulse was 126 x/ minute. This high-risk pregnancy presented an unstable fetus position, and the patient had to be referred to the hospital. This fetal latitude position managed to be corrected weeks before the labor so that the patient was referred to Puskesmas and allowed to have a normal vaginal birth at term, and the patient managed to deliver a normal vaginal birth on April 22, 2020. The patient was in excellent clinical condition (90 scores on the Karnofsky_scale) and could perform simple daily activities independently. There was no other complaint. The mother and baby were all in perfect health condition so they could leave Puskesmas on April 23, 2020. The patient was prescribed mefenamic acid 500 mg three times a day for three days, methyl ergometrine one tablet three times a day, two tablets of vitamin A, and iron tablets of 20 administered once daily. The patient attended her first postnatal (puerperium) care (day 5) on April 28, 2020 – her blood pressure was 100/70 mmHg, and her body weight of 57 kg. The perineal wound was healed and dry, with no sign of infection, and the complete wound persisted until 42 days postpartum the patient turned out to have 100% adherence to all medications.

Case 4

A multiparous woman aged 29 years old had never attended a routine antenatal care visit to the maternal clinic at Puskesmas, but the patient managed to deliver a normal vaginal birth on April 22, 2020. The healthcare team trained the patient to give exclusive breastfeeding to her baby, puerperium nutrition consumption, perineal wound care, and personal hygiene. Patient baseline knowledge of perineal wound care and infection prevention and prophylaxis analgesic and antibiotics use for some instances of perineal tears was medium (80% correct answers), so the pharmacist counselled the patient about the importance of drug adherence to the 'patient's health. The patient was in good clinical condition (80 scores on the Karnofsky scale) and could perform simple daily activities by herself. The mother

and baby were all in perfect health condition so they could leave Puskesmas on April 23, 2020. The patient was prescribed mefenamic acid 500 mg three times a day for three days, two tablets of vitamin A and iron tablets of 20 administered once daily. The patient attended her 1st postpartum (puerperium) care on April 28, 2020 – her body weight was 55 kg, her blood pressure was 140/90 mmHg, and 15 minutes later, her blood pressure was 120/90 mmHg. The appearance of the perineal wound was wet, and the patient complained of slight pain (pain score of 3 on a 1-10 numeric pain rating scale), so the patient was prescribed mefenamic acid 500 mg three times a day for another three days. To avoid perineal wound infection, pharmacists re-educate the patient about the need for treatment adherence. Her perineal tears were healed and dried at the patient's second puerperium care visit on May 2, 2020. The patient took all these prescriptions exactly as prescribed. Her blood pressure was 120/90 mmHg at first, but 15 minutes later, it was 130/90 mmHg. The wound heals completely until 42 days after delivery, with no infection.

DISCUSSION

This paper reports cases of pregnant women with low (case 1) to medium (case 2-4) knowledge about perineal wound care and infection prevention, prophylaxis analgesic and antibiotics use for some instances of perineal tears, well as the importance of drug adherence. Due to the slum environment of the ex-landfills, lack of personal hygiene, and some medical risk factors, such as hypotension (cases 1-3), bradycardia (case 1), fetal latitude position (case 3) that was turned into a normal presentation at term, non-compliance with antenatal care (cases 2 and 4), and possibly an undernourished state based on maternal body weight, the patients had an increased risk of infection (case 3 and 4). More than 75% of pregnant women are affected by perineal tears during labor. The risk factors for developing perineal infection were primiparous women, fetal weight (> 4000 grams), instrumental and post-term delivery, heredity pelvic floor dysfunction, and/ or connective tissue deficiency, and maternal birth position (Jansson *et al.*, 2020). The other risk factors for perineal tears were ≤ 20 years of age, Asian ethnicity, vaginal birth after cesarean section, epidural or oxytocin use, and midline episiotomy (Goh *et al.*, 2018). Perineal tears could become the bacterial point of entry through the skin fissure. Perineal tears three-fold higher affected primiparous women than

multiparous. Healthy multiparous women who have experienced more than one time of normal vaginal birth were able to practice the proper technique of delivering the baby. Thus, intact perineum after normal vaginal birth was three-fold higher in multiparous women (Smith *et al.*, 2013).

Theoretically, cases 3 and 4 of multiparous women would not be affected by the wound tears and pain compared to cases 1 and 2 of primiparous ones. These were unique cases in which seemed parietal status did not serve as a risk factor for the perineal 'tears' incidence, for all four of these pregnant women experienced perineal tears pain, which ranged from "no pain" scored 0 to "pain" scored 3 on numerical pain rating scales. They all managed to have a normal vaginal birth, assisted by the physician and midwives. The woman in case 3 was the only person with no pain 'or any other complaint – even though her baby's latitude position complicated the normal vaginal birth. This temporary latitude position would be a fetal risk factor for perineal tears and a cesarean section indication. (Jansson *et al.*, 2020; Goh *et al.*, 2018). At the end of pregnancy, the latitude position was turned into a normal presentation so that the mother could give a vaginal birth safely. Perineal tears of this woman of case 3 were healed and dry at her 1st attendance of puerperium care (7 days after the birth). The patient had no pain according to the numeric pain rating scale nor any complaint. The numeric pain rating scale is a subjective measurement of an "awful sense or hurt of the body", thus, this tool could not serve as an objective measurement (Haefeli and Elfering, 2006). The woman in case 3 had a complicated pregnancy due to fetal shoulder dystocia during the last trimester. This fetal position was adjusted during labor and delivery, allowing the patient to have a normal vaginal birth safely with the physician's intervention at Puskesmas.

Emerging clinical evidence from a systematic review showed no statistical differences in the incidence of infection prevention with and without routine prophylaxis antibiotics after normal vaginal birth (Bonet *et al.*, 2017; Tandon and Dalal, 2018). A Cochrane intervention review concluded that antibiotics are not a substitute for infection prevention and control measures around childbirth and the postpartum period (Bonet *et al.*, 2017). Thus, antibiotics and analgesic prophylaxis should be administered to prevent pain and 3rd or 4th degree of perineal wound infection, while 1st and 2nd degrees of the perineal wound were unlikely to develop an infection in healthy pregnant women (RCOG 2015;

WHO 2015). All four cases of these pregnant women were prescribed mefenamic acid 500 mg three times a day for 3 days after giving birth, 2 of them got a pain score of 2 on a 1-10 numeric pain rating scale, and 1 of them had a pain scale of 3. Mefenamic acid 500 mg three times a day was prescribed for another three days on their 1st attend to the maternal clinic – which was seven days after giving birth. Despite 'patients' knowledge about preventing perineal wound infection without antibiotics and maternal supplementation administration being low to medium levels before normal vaginal delivery, pharmacist re-education activities seemed to improve 'patients' knowledge and drug-taking behavior. They adhered to medicines regimens and had no more prolonged pain on their 2nd attend the maternal clinic 14 days after the birth until the perineal tears completely healed without sign of infection on day 42.

The risk factors of developing bacterial infection were quite high among these four pregnant housewives due to the slum environment of the ex-landfills near their houses, lack of knowledge about personal hygiene, and perineal wound care. In the last trimester, pregnant women should attend the maternal clinic twice weekly, then weekly visits in the previous 2 weeks of pregnancy. The postpartum (puerperium) care should have been given to them at Puskesmas maternal clinic in 3 days intervals after giving birth. Instead, it had to be adjusted to days-7, days-14, and days-42 visits. The longer visit interval, combined with online monitoring through social media applications and telephone calls, theoretically leads to a higher incidence of perineal tears infections for these low education and social, and economic levels of the mother who just gave birth.

The strength of this research was the solid health care team that performed a counselling program that managed to overcome these obstacles by:

1. Identifying the problem of lack of knowledge about infection prevention and drug use based on questionnaires and interviews as early as an antenatal visit to the Puskesmas. Pharmacists could successfully overcome these problems by performing close supervision and routine-repeated education regarding drug adherence.

2. Motivating pregnant women to apply knowledge and training on perineal wound care who received stitches, take medication, and maintain postpartum nutrition intake during counselling into infection prevention behavior and medication adherence due to the lack of "face-to-face visits" during the pandemic; this information was acquired based on maternal self-

report via telephone and WhatsApp conversation during the postpartum period.

3. Reducing the risk of infection. There was no single incidence of suture wound infection based on doctors' and midwives' observation of maternal perineum condition in every Puskesmas visit during labor and puerperium.

Since May 2021, all pregnant women have been referred to the hospital for a compulsory RT-PCR test of SARS CoV-2 RNA materials and more comprehensive perinatal care due to the immediate and massive escalating Covid-19 pandemic in Indonesia. This situation led to the fundamental limitation of this research, which was (a) the outcome monitoring method had to be changed to more extended interval visits, (b) the delivery method of the counselling program, had to rely on the social media application and telephone calls could lead to a -sub-optimal outcome, and (c) there was only shortlisted number of patients included in this research, which might not be adequate to report it as a case-control study.

CONCLUSION

It can be concluded that 2nd-degree perineal tears infection following normal vaginal birth could be prevented without antibiotics. The effectiveness of the counselling program's delivery method, which relies on social media applications and telephone calls, must be validated.

We recommend to performed double-blind, randomized controlled trials for future research for more robust clinical evidence. It is strongly suggested to control the maternal nutritional states, potentially interfering with the maternal ability to heal the perineal wound.

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AUTHOR CONTRIBUTIONS

Conceptualization, F.O.H.P., A.P.; Software, A.P.; Methodology, F.O.H.P., A.P.; Validation, F.O.H.P.; Formal Analysis, A.P.; Investigation, L.H.; Resources, L.H.; Data Curation, A.P.; Writing - Original Draft, L.H.; Writing - Review & Editing, L.H., A.P.; Visualization, L.H.; Supervision, F.O.H.P., A.P.; Project Administration, F.O.H.P., A.P.; Funding Acquisition, L.H.

CONFLICT OF INTEREST

The authors declared no conflict of interest.

REFERENCES

- Bonet, M., Ota, E., Chibueze, C.E. & Oladapo, O.T. (2017). Antibiotic Prophylaxis for Episiotomy Repair Following Vaginal Birth (Review). *Cochrane Database of Systematic Reviews*; 2017; 1-27. doi: 10.1002/14651858.CD012136.pub2.
- Bonet, M., Ota, E., Chibueze, C.E. & Oladapo, O.T. (2017) Routine antibiotic prophylaxis after normal vaginal birth for reducing maternal infectious morbidity. *Cochrane Database of Systematic Reviews*; 11; 1-28. doi: 10.1002/14651858.CD012137.pub2.
- Goh, R., Goh D., & Ellepola, H. (2018). Perineal Tears: A Review. *Australian Journal of General Practice*; 47; 1-11.
- Haefeli, M. & Elfering, A. (2006). Pain Assessment. *Eur Spine J* ; 15; S17-S24.
- Jansson, M.H., Franzén, K., Hiyoshi, A., Tegerstedt, G., Dahlgren, H., & Nilsson, K. (2020) Risk factors for Perineal and Vaginal Tears in Primiparous Women – the Prospective POPRACT-Cohort Study. *BMC Pregnancy and Childbirth*; 20; 1-14.
- Murad, M.H., Sultan, S., Haffar, S. & Bazerbachi, F. (2018). Methodological Quality and Synthesis of Case Series and Case Reports. *BMJ Evidence-Based Medicine*; 23; 60-63.
- Royal College of Obstetricians and Gynecologists. (2015). *Management of Third- and Forth-Degree Perineal Tears*. Green Top Guideline No. 29. London: Royal College of Obstetrician and Gynecologist.

Smith, L.A., Price, N., Simonite, V., & Burns, E.E. (2013) Incidence of and risk factors for perineal trauma: a prospective observational study. *BMC Pregnancy and Childbirth*; 13 (59); 1-9.

Tandon, A.N. & Dalal, A.R. (2018). A Randomized, Open-labelled, Interventional Study to Evaluate the Incidence of Infection with or Without Use of

Prophylactic Antibiotics in Patients of Episiotomy in a Normal Vaginal Delivery. *The Journal of Obstetrics and Gynecology of India*; 68; 294–299
World Health Organization. (2015). WHO Recommendations for Prevention and Treatment of Maternal Peripartum Infections. New York: WHO Library Cataloguing-in-Publication Data.