VER
Vascular & Endovascular Review

Case Report of Complete Abdominal Wound Dehiscence After Cesarean Section at Dr. Soetomo General Hospital Surabaya, 2023-2024

Yuli Agustria[1,2*], Erry Gumilar Dachlan[1,2], Muhammad Ilham Aldika Akbar[1,2]

[1]*Department of Obstetrics and Gynecology, Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia*
[2]*Dr. Soetomo General Hospital, Surabaya, Indonesia*

Corresponding Author:
Yuli Agustria, Department of Obstetrics and Gynecology, Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia; Dr. Soetomo General Hospital, Surabaya, Indonesia
Email: yuisatrio@gmail.com

ABSTRACT

Background: Complete abdominal wound dehiscence (CAWD) is a serious post-abdominal surgery complication, including cesarean section, which although rare, is associated with high maternal morbidity and mortality. The increasing rate of cesarean sections makes this complication relevant for recognition, prevention, and optimal management. Case Report: Four cases of complete abdominal wound dehiscence following cesarean section treated at Dr. Soetomo Hospital Surabaya during 2023-2024 are reported. All patients had a history of previous cesarean section and underwent surgery with long duration and significant hemorrhage. Risk factors identified included anemia, hypoalbuminemia, obesity, history of abdominal surgery, and high-risk obstetric conditions such as placenta accreta. Dehiscence manifestations appeared on days 7 to 13 post-operatively. All patients were managed operatively with abdominal wall repair and a multidisciplinary approach, accompanied by culture-specific antibiotic therapy. Conclusion: Complete abdominal wound dehiscence following cesarean section is a multifactorial complication requiring high vigilance in early diagnosis and immediate management. Optimization of preoperative conditions, proper surgical technique, strict postoperative monitoring, and rapid and adequate surgical intervention provide good clinical outcomes.

KEYWORDS: Complete Abdominal Wound Dehiscence, Cesarean Section, Case Report

How to Cite: Yuli Agustria, Erry Gumilar Dachlan, Muhammad Ilham Aldika Akbar (2025) Case Report of Complete Abdominal Wound Dehiscence After Caesarean Section at Dr. Soetomo General Hospital Surabaya, 2023-2024, Vascular and Endovascular Review, Vol.8, No.9s, 426-433

INTRODUCTION

Management of obstetric and gynecological cases often involves surgical procedures. These surgical procedures, both in obstetric and gynecological cases, are often accompanied by complications, one of which is known as Surgical Wound Dehiscence (SWD), a condition where the surgical incision reopens after surgery. This reopened wound can be partial or complete. SWD can occur in all types of surgery but is most commonly reported after abdominal operations, such as caesarean section [1].

Cesarean section is the most common procedure performed in abdominal surgery. In several countries, the number of caesarean sections has increased, including in Indonesia. According to recent data, of 150 countries currently, 18.6% of all births occur through Cesarean Section (CS) with a range of 6% to 27.2% in the most developed and least developed regions. The Americas and Caribbean have the highest CS rate (40.5%) followed by North America (32.3%), Oceania (31.1%), Europe (25%), Asia (19.2%), and Africa (7.3%) [2]. Although considered safe to avoid maternal-neonatal complications, and despite increasingly better surgical and anesthetic technology, complete abdominal wound dehiscence as one of the complications of cesarean section still needs to be of concern because it can increase maternal morbidity and mortality rates. Complete abdominal wound dehiscence is a postoperative complication that can increase morbidity and mortality rates [3]. Complete abdominal wound dehiscence, sometimes called abdominal wound dehiscence, is defined as a postoperative open wound in the abdomen, which in 20% to 45% of cases results in evisceration of internal organs, associated with mortality rates in the perioperative period [4]. The mortality rate in complete abdominal wound dehiscence is reported to range from 15% to 45%, while the incidence rate ranges from 0.4% to 3.5% of all laparotomy operations. Most cases occur in the second week and peak on day 10 post-operatively. Therefore, detached abdominal sutures, whether partial or complete, must be immediately treated [5]. In this study, there were 4 cases out of 746 CS at Dr. Soetomo Hospital (0.5%) and 4% of 99 accreta cases.

Significant wound dehiscence occurs in approximately 1% of all laparotomies. This poses a threat to surgeons, particularly in obstetrics and gynecology, as it hinders postoperative management, increases hospital length of stay and financial burden on patients, and carries a high mortality risk. This can range from failure of the internal part of the abdominal incision to unite, unrecognized in the postoperative process but resulting in "complete abdominal wound dehiscence" or dramatic evisceration, where wound dehiscence occurs suddenly and is accompanied by protrusion of abdominal contents, usually intestines, through the torn wound.

Sometimes it can present as an incisional hernia later [6].

In this case report, the authors wish to discuss cases of complete abdominal wound dehiscence occurring after cesarean section, which is a complication that can actually be prevented but has a high mortality risk if it occurs. Therefore, it is important for us as obstetricians to know how to prevent it and also manage it if it occurs, so that the patient's prognosis is good.

CASE REPORT

Table 1: Summary of Complete Abdominal Wound Dehiscence Cases Following Cesarean Section at Dr. Soetomo Hospital 2023-2024

	Case 1	Case 2	Case 3	Case 4
Name	Mrs. HA	Mrs. YUA	Mrs. LA	Mrs. SA
Age	37 years old	38 years old	34 years old	35 years old
Parity	GIIIP2002	GVP2022	GIVP3003	GIIP1001
Previous Surgery History	CS once	CS once	CS twice	CS once
Previous CS Indication	Placenta Previa	Prolonged 2nd stage	1) Secondary arrest 2) CS twice	*KPP* or Premature Rupture of Membranes (PROM)
Primary Diagnosis	1) GIII P2002 36/37 weeks IUFD, cephalic, EFW 2200g 2) PPT, high suspicion of Placenta Accreta FIGO grade II Type I, Intracervical grade I involving S1 segment vascularization 3) Short Cervix (CL 2,08) 4) PE 5) Suspected fetal congenital anomaly (LUTO ec HN Grade 4 bilateral, hydroureter bilateral, suspected PUV) 6) Severe oligohydramnios (AFI 0,43)	1) GV P2022 34/35 weeks, IUFD, oblique lie, EFW 2000 g 2) History of APB ec PPT 3) History of Preterm PROM 4) High suspicion Placenta Accreta Grade IIIA Type I Intracervical Grade I involving S1 segment vascularization 5) Gestational DM 6) High risk of PE 7) Short Cervix (CL 2,12)	1) GIV P3003 22/23 weeks, IUFD, breech, EFW 560 g 2) Preterm PROM 3) APB ec Low Lie Placenta 4) Placenta Accreta FIGO Grade 3B Type 3 involving S1 segment vascularization	1) GII P1001 21/22 weeks, IUFD with recurrent APB suspected placental abruption 2) Cephalic, EFW 300 g 3) Suspected placenta accreta PAI score 19% 4) Suspected chorioamnionitis
Comorbid Diagnosis	1) Class II Obesity (BMI 36.1) 2) Post Cesarean Section	1) Post Cesarean Section 2) Age ≥ 35 years old 3) Class II Obesity (BMI 36,3)	Twice Post Cesarean Section	1) Once Post Cesarean Section 2) Secondary elderly primigravida
First Procedure	One Step Conservative Surgery, Sterilization and Nausica Suture	One Step Conservative Surgery, Sterilization	One Step Conservative Surgery, Sterilization, Sharp Adhesiolysis	One Step Conservative Surgery, Modified Surabaya Uterine Compression Suture
Fascia Suture & Material (First Surgery)	Vicryl 0.5 mm continuous suture	Vicryl 0.5 mm continuous suture	Vicryl 0.5 mm continuous suture	Vicryl 0.5 mm continuous suture
First Surgery Duration	3 hours	12 hours	6 hours 20 minutes	3 hours
First Surgery Blood Loss	3.100 cc	4.500 cc	4.710 cc	1.500 cc
Pre-op Hb & Albumin (First Surgery)	11.8 g/dL and 3.31 mg/dL	10.3 g/dL and 3.23 mg/dL	10 g/dL and 3.23 mg/dL	4.7 g/dL, albumin not checked
Lab Na/K/Cl	139/4.1/107	133/3.8/91	140/2.80/107	136/4.5/101

Transfusion During First Surgery	WB 1,200 cc	WB 2,420 cc	WB 2,000 cc	WB 1,512 cc
Post-op Hb & Albumin (First Surgery)	7.1 g/dL and 2.22 mg/dL	6.4 g/dL and 2.17 mg/dL	4.5 g/dL and 1.95 mg/dL	8.4 g/dL and 1.89 mg/dL
Postoperative Outcome	Complete abdominal wound dehiscence on day 7 post-op	Complete abdominal wound dehiscence on day 13 post-op	Complete abdominal wound dehiscence on day 8 post-op	Complete abdominal wound dehiscence on day 11 post-op
Second Procedure	Wound edge refreshening and complete abdominal wound dehiscence repair, cystoscopy placement, bladder rupture repair, abdominal drain placement	Complete abdominal wound dehiscence repair, sharp adhesiolysis, abdominal drain placement, VAC placement (VAC continued for 2 weeks)	Debridement, refreshening, complete abdominal wound dehiscence repair	Fascia and subcutis tissue debridement, TAH, bilateral salpingectomy and downhill drain placement
Second Surgery Duration	5 hours	4 hours	3 hours	3 hours 30 minute
Second Surgery Blood Loss	500 cc	1500 cc	100 cc	3000 cc
Pre-op Hb & Albumin (Second Surgery)	9.8 g/dL and 2.65 mg/dL	11 g/dL and 2.8 mg/dL	9.4 g/dL and 2.48 mg/dL	9.6 g/dL and 3.34 mg/dL
Transfusion During Second Surgery	(-)	(-)	(-)	WB 1,200 cc
Post-op Hb & Albumin (Second Surgery)	12.9 g/dL and 2.75 mg/dL	11.8 g/ dL and 2.36 mg/dL	11.6 g/dL and 2.72 mg/dL	11.4 g/dL and 3.34 mg/dL
Culture-Specific Antibiotics	Surgery I: none Surgery II: Ampicillin Sulbactam 4×1.5g IV (3 days)	Surgery I: none Surgery II: Cefoperazone Sulbactam 2×2g IV (5 days)	Surgery I: none Surgery II: - Cefoperazone Sulbactam 2×2g IV (5 days) - Chloramphenicol 4×800mg IV (5 days)	Surgery I: Ampicillin Sulbactam 4×1.5g IV (3 days), Metronidazole 3×500mg IV (3 days) Surgery II: Ceftriaxone 2×1g IV (7 days), Metronidazole 3×500mg IV (7 days)
Outcome After Second Surgery	Good surgical wound	Good surgical wound	Good surgical wound	Good surgical wound

Assessment to Predict the Risk of Abdominal Wound Dehiscence:

1) VAMC Score (Veteran Affairs Medical Center), as follows: [7]
   a. Stroke without deficit: score +4
   b. History of COPD: score +4
   c. Current pneumonia: score +4
   d. Emergency procedure: score +6
   e. Operation duration >2.5 hours: score +2
   f. PGY4 (Postgraduate Year 4) as surgical resident: score +3
   g. Clean wound classification: score skor -3
   h. Superficial wound infection: score +5
   i. Deep wound infection: score +17

j. Failure to wean from ventilator: score +6
k. One or more complications (other than dehiscence): score +7
l. Return to operating room during admission: score -11.

Score 11-14: Predicts a 5% risk of dehiscence.
Score > 14: Predicts a ≥10% risk of dehiscence. [7].

2) RRI (Rotterdam Risk Index) in simple point form as follows: [8]
a. Age ≥65 years: 2 points
b. BMI (Body Mass Index) ≥30 kg/m²: 1-2 points
c. Anemia (Hb <10 g/dL): 2 points
d. Hypoalbuminemia (albumin <3,5 g/dL): 2 points
e. Emergency surgery: 2-3 points
f. Surgical site infection (SSI): 3-4 points

A total score of 10 points indicates high risk of wound dehiscence, while a score <10 points is considered low risk [8,9].

DISCUSSION

Risk Factors for Complete Abdominal Wound Dehiscence Following Cesarean Section

The etiology and risk factors for abdominal wound dehiscence and the occurrence of complete abdominal wound dehiscence complications can be classified into three main groups: (1) preoperative risk, (2) intraoperative risk, and (3) postoperative risk.

In this case report, preoperative conditions in the form of obesity were found which may be a risk for complete abdominal wound dehiscence. Of the four cases, two were obese patients with class II obesity, one normal case, and one underweight case. Obesity can cause abdominal dehiscence through several mechanisms. People with obesity often have higher intra-abdominal pressure due to excess fat pressing on the abdominal wall. This pressure can strain surgical sutures, thereby increasing the risk of wound rupture. Obesity is also associated with reduced blood supply to adipose tissue, leading to hypoxia (low oxygen levels) in the wound. This can delay healing and make abdominal wounds more vulnerable to damage and rupture [10,11].

In this case report, preoperative conditions in the form of anemia and hypoalbuminemia were also found which can be a risk for complete abdominal wound dehiscence. Of the four cases reported, all four were patients with anemia and hypoalbuminemia, and only one case had Gestational Diabetes Mellitus (GDM). Anemia and malnutrition can also increase the risk of wound dehiscence by disrupting cellular oxygen perfusion during the wound healing process [12], which includes the phases of hemostasis, inflammation, proliferation, and maturation [13]. During the hemostasis phase, platelet aggregation undergoes degranulation and activates blood clot formation followed by capillary vasodilation and complement cascade activation. The inflammatory phase occurs when macrophages initiate cellular lysis, accompanied by cytokine and growth factor production by neutrophils; the high oxidative effects of this process require adequate oxygenation. Proper cellular oxygen perfusion also supports the proliferation phase where granulation tissue formation in the wound space results from fibroblast migration responsible for collagen synthesis [10,11]. The same applies to hypoproteinemia and hypoalbuminemia, where large amounts of amino acids are needed in the tissue healing process [5]. Meanwhile, in one patient with GDM, there can be an increased risk of SSI and poor wound healing due to immune system impairment (chemotaxis, neutrophil bactericidal and macrophage function), inhibition of angiogenesis and collagen maturation, prolongation of the inflammatory phase, and easy biofilm formation. However, in this GDM patient, preoperative and postoperative blood sugar could be managed well.

In this case report, there was a condition of previous CS history. Of the 4 cases reported, all 4 were patients with previous CS history. Previous surgical history, which includes cesarean section procedures, also increases the risk of wound dehiscence due to the potential risk of postoperative adhesions, especially during trial of labor after cesarean (TOLAC) within 2 years post-surgery. Each CS leaves scar tissue (fibrosis) on the abdominal wall and uterus. Scar tissue is not as strong as original tissue, so the area of the previous incision becomes a weak point vulnerable to rupture or dehiscence in subsequent operations.

Scarring from previous CS can cause tissue thinning, both in the abdominal wall and uterus. In subsequent operations, this already thinned tissue is more prone to spontaneous rupture, especially if there is increased intra-abdominal pressure (for example when coughing, straining, or pregnant again). Each time a new operation is performed, the tissue must be recut, which can disrupt the previous wound healing process. If there are additional risk factors such as infection, obesity, or diabetes, the risk of poor healing increases and can lead to dehiscence or complete abdominal wound dehiscence [10,11].

Intraoperative risk factors include surgery duration exceeding one hour, present in all 4 cases [14]. Postoperative risk factors include conditions that increase intra-abdominal pressure: use of mechanical ventilation, excessive coughing and vomiting, postoperative ileus, bladder distension, and ascites; and other postoperative conditions that further interfere with wound healing: infection and antineoplastic treatment. Determination of risk factors in patients at risk for abdominal wound dehiscence is needed to establish necessary prevention and proper management [10,11].

How complete abdominal wound dehiscence occurs when entering 2 weeks post-operatively in these cases relates to the inflammatory phase of wound healing where M1 macrophage activation in bacterial phagocytosis and tissue debris only lasts until day 3 post-operatively, then continues with reparative phenotype macrophages (M2) which increase wound healing. If M1 activity during the first 3 days is not optimal, then continued infection can occur and is compounded by other contributing factors such as anemia, hypoalbuminemia, obesity, and unbalanced nutrition that can cause complete abdominal wound dehiscence [15].

Challenges in Diagnosing Complete Abdominal Wound Dehiscence Following Cesarean Section

In this case report, complaints of abdominal pain at the surgical wound and also finding of an open wound in the surgical scar area on the abdomen were found. Of the four cases above, patients were post-cesarean section patients with an open wound found in the abdominal sutures.

Complete abdominal wound dehiscence usually appears before postoperative day 14 and more often occurs on days 5 to 8 after abdominal surgery. As with any condition, thorough history-taking and physical examination are required [16]. Observe the patient's overall condition, including signs of pain, fever, or other systemic illness. Assessment of the abdominal wound should be performed, looking for signs of dehiscence such as separation of wound edges, protrusion of abdominal contents (omentum or intestines), or fluid discharge.

In cases of severe complete dehiscence (complete abdominal wound dehiscence), there is visible protrusion of abdominal contents (usually omentum or intestines) through the wound. There are also several challenges in diagnosing complete abdominal wound dehiscence earlier, especially because symptoms can vary and are not always immediately visible. Non-specific symptoms early on such as increasing abdominal pain are often considered normal postoperative effects. Patients may complain of abdominal fullness or pressure, but this can also occur due to intestinal distension or postoperative ileus.

In obese patients, thick adipose tissue can obscure early signs such as suture release or fluid leakage from the wound. Not all cases of complete abdominal wound dehiscence are immediately visible without thorough examination. If dressings still cover the wound, doctors may not immediately suspect dehiscence until the patient complains of protruding abdominal contents or severe pain. Patients may ignore early symptoms such as fluid leakage from the wound or discomfort [16].

Management of Complete Abdominal Wound Dehiscence Following Cesarean Section

In this case report, all 4 cases were managed with abdominal repair and collaboration with the digestive surgery department.

Recent developments in multidisciplinary management strategies for abdominal wound dehiscence have shifted from preference for conservative management with secondary intention toward debridement and secondary closure or reoperation. Immediate wound closure surgery can eliminate the entire period of secondary wound healing, which can prolong the disability period, increase postoperative follow-up visits, and increase the emotional burden on affected patients.

Although this management approach carries risks associated with anesthesia use and surgical intervention, which may not exist in conservative management with secondary intention healing, it has been proven that the benefits far outweigh the surgical risks [10]. In a small number of cases, primary closure is inappropriate or unsafe (e.g., severe abdominal sepsis, necrotizing fasciitis of the abdominal wall) and needs to be managed as an open abdomen, for example using negative pressure dressings (VAC) or bridging mesh. Two main approaches in complete abdominal wound dehiscence management:

1) Immediate Primary Closure

Immediate primary closure in complete abdominal wound dehiscence is a surgical procedure performed immediately after dehiscence occurs with the aim of restoring abdominal wall integrity and preventing serious complications such as evisceration of internal organs and infection. IPC is performed by debriding necrotic tissue and closing the wound directly, without waiting for the tissue granulation phase to develop as in delayed primary closure.

This technique is recommended if infection is controlled, there is no severe edema, and wound edges can be approximated without excessive tension. In a study of Pfannenstiel CS wound dehiscence, debridement of all nonviable tissue and immediate closure successfully healed in an average of 20 days with an average BMI of 45. This also optimizes patient management by reducing the disability period, care costs, and patients' emotional distress [17].

2) Delayed Primary Closure

Delayed primary closure is usually performed after a clean wound, generally done 3-7 days post-operatively. For wounds with fecal contamination such as perforated appendicitis, DPC is usually performed. A study concluded that DPC post-septic surgery is better than IPC in terms of reducing surgical site infection and surgical wound dehiscence (P=0.009) and fewer complete abdominal wound dehiscence events (p=0.042). Other indications for DPC include if the patient is in septicemia, malnutrition, or has high BMI [18].

In the second case, during relaparotomy, muscle and fascia tissue were found to be friable, so primary closure of muscle and fascia was not performed. After abdominal wall closure, VAC was placed so that exudate production could be controlled, which subsequently prevents infection and then forms a granulation tissue bridge. In the second case, non-adherent PU foam was attached over the surgical wound incision then covered with an impermeable plastic layer and connected to a negative pump between -75 mmHg to -125 mmHg continuously and adjusted to the patient's condition.

The surgical wound then improved and delayed primary closure was not performed despite the risk of ventral hernia. If evisceration (protrusion of abdominal organs) occurs, the intestines should be immediately covered with sterile cloth moistened with saline solution to prevent dehydration and further infection. The patient should then be immediately prepared for exploratory surgery and

surgical repair in the operating room, with the method of re-suturing the abdominal fascia using a stronger technique, such as tension-free sutures or retention sutures, to prevent recurrence. After surgery, the patient should receive close monitoring if needed, with special attention to signs of infection, wound leakage, and hemodynamic status [10].

Prevention of Complete Abdominal Wound Dehiscence and Possible Surgical Site Infection Complications

Prevention of complete abdominal wound dehiscence begins preoperatively with optimization of patient condition. We can use the RRI (Rotterdam Risk Index) to optimize patient condition before surgery in controlling risk factors, such as weight loss if the patient is obese, addressing anemia and hypoalbuminemia. The VAMC (Veteran Affairs Medical Center) score can also be used after the first surgery to assess AWD risk by evaluating surgery duration, emergency procedures, clean wound classification, superficial wound infection, deep wound infection, ventilator use, and others.

It is seen that in this case, two patients were obese, so by losing weight, prevention might be possible. Obesity found in two cases is associated with decreased tissue vascularization, thereby increasing the risk of suboptimal wound healing. Safe weight loss in pregnancy with obesity is through dietary modification and physical activity, not through strict dieting or extreme weight loss. Weight loss in pregnant women with obesity is done with the following principles [19]:

1) Intensive nutrition consultation and monitoring: Nutritional intervention should meet minimum daily macro and micronutrient needs, and maintain caloric intake around 1,800-2,200 kcal/day depending on trimester and BMI status, without reducing breast milk quality.
2) Dietary modification: Focus on balanced diet, reduce fatty/junk food, increase fiber intake from vegetables/fruits, lean protein, and avoid empty calories.
3) Physical activity according to obstetric recommendations: Light exercise such as walking, prenatal yoga, or pregnancy gymnastics regularly 3-5 times per week, proven safe and effective for gradual weight loss without risk to the fetus or breast milk production. A meta-analysis stated that exercise intervention statistically and significantly reduces the incidence of gestational diabetes [19].
4) Weight monitoring and fetal growth: Recommended weight loss during breastfeeding is 0.5-1 kg/week; in pregnancy, prioritize limiting weight gain according to Institute of Medicine (IOM) recommendations, not active weight loss.

Proper surgical technique is also very important, including selecting the optimal type of incision, using strong and durable fascia sutures (such as continuous suture technique with absorbable monofilament), and avoiding excessive tension on the wound. In this study, all 4 cases used vicryl 0.5 mm sutures and continuous suture technique on the fascia.

While the recommended continuous fascia suture uses monofilament suture diameter 0.4 mm or interrupted suture using vicryl 0.5 mm, suture spacing not more than 1.5 cm and distance from fascia edge at least 2 cm, in both suture techniques showed no significant difference for complete abdominal wound dehiscence or incisional hernia [20]. After surgery, patients should avoid activities that increase intra-abdominal pressure, such as straining, excessive coughing, or lifting heavy loads, and in some cases, an abdominal binder can be provided to support the abdominal wall. Prevention of wound infection is also crucial, involving good aseptic technique, prophylactic antibiotic administration, and close monitoring for signs of infection or early dehiscence, such as serosanguineous fluid discharge from the surgical wound.

In 4 cases, prophylactic antibiotic Cefazolin 2 grams was given and repeated 1 gram after more than 3 hours of surgery and/or bleeding more than 1500 cc. A cohort study stated that administration of 2 grams of Cefazolin does not reach MIC (Minimally Inhibitory Concentration) value to prevent gram-negative rod bacterial infection with MIC concentration not more than 4 mcg/g in adipose tissue, but in another study comparing administration of 2 grams and 3 grams of Cefazolin in obese women showed no difference in reducing surgical site infection rates [21]. POGI recommends prophylactic antibiotic Cefazolin 2 grams for all cesarean sections. Intravenous antibiotic use for 72 hours post-CS does not reduce SSI risk and is not recommended because it can cause bacterial resistance and prolong length of stay, while oral antibiotic administration is inappropriate because it is neither prophylactic nor therapeutic and is not based on infection presence. Intravenous antibiotics post-CS can be given in special conditions such as obesity [22]. A study stated that additional antibiotic use of Metronidazole 500 mg and Cephalexin 500 mg for 48 hours post-CS has low risk for SSI compared to the control group in obese women [22]. In addition, patients should be given postoperative education regarding the importance of maintaining wound cleanliness, consuming high-protein nutritious food to support healing, and immediately reporting suspicious symptoms so that early intervention can be carried out before further complications occur [23].

In this case report, all 4 cases were given antibiotics after complete abdominal wound dehiscence laparotomy. The types of antibiotics given varied, ranging from ampicillin sulbactam, cefoperazone sulbactam, metronidazole, ceftriaxone, and chloramphenicol. In case 1, patient was given antibiotic ampicillin sulbactam 4 times 1.5 grams/day intravenously for 3 days. Case 2 shows that patient was given antibiotic cefoperazone sulbactam 2 times 2 grams/day intravenously for seven days. In case 3, patient was given antibiotic cefoperazone sulbactam 2 times 2 grams/day intravenously and chloramphenicol 4 times 800 mg/day intravenously for 5 days. Lastly, in case 4, patient received empirical antibiotics before surgery ampicillin sulbactam 4 times 1.5 grams/day intravenously and metronidazole 3 times 500 mg/day intravenously for 3 days, then antibiotic administration after relaparotomy ceftriaxone 2 times 1 gram/day intravenously and metronidazole 3 times 500 mg/day intravenously for 7 days. Antibiotic administration was based on

blood culture results, pus, and surgical site infection tissue. Most obstetricians use cefazolin (first-generation cephalosporin) as prophylactic intravenous antibiotics at a dose of 2 g for cesarean section surgery and other surgeries post-cesarean section complications such as complete abdominal wound dehiscence, the rest use 1-2 g to prevent surgical site infection.

WHO recommends prophylactic antibiotic administration for obstetric and gynecological surgery using a single dose of first-generation cephalosporin between 30 and 60 minutes before surgery. Using a single dose of prophylactic antibiotics can reduce costs, potential toxicity, and risk of colonization by resistant microorganisms. The American College of Obstetricians and Gynecologists also recommends using first-generation cephalosporin as the antibiotic of choice for prophylaxis in obstetric and gynecological surgery. Guidelines from the American Society of Health-System Pharmacists and Society of Obstetricians and Gynecologists of Canada also recommend using a single dose of first-generation cephalosporin 15-60 minutes before incision. Other antibiotics that can be used include ceftriaxone, cefotaxime, cefazolin, ampicillin-sulbactam, gentamicin, metronidazole, cefuroxime, meropenem, amikacin, and amoxicillin. Prophylactic antibiotics are highly recommended for surgery in obstetrics and gynecology, such as cesarean section surgery and repair of its complications such as complete abdominal wound dehiscence. Antibiotic prophylaxis has been proven to reduce maternal morbidity, healthcare costs, and excessive antibiotic use. Prophylactic antibiotics can also reduce the risk of postoperative wound infection [22]

CONCLUSION

Complete abdominal wound dehiscence is one of the complications that can occur post-operatively, including after cesarean section surgery, which can actually be prevented. There are 4 cases reported from 2023-2024 related to complete abdominal wound dehiscence that occurred after cesarean section. From the four cases, it was found that two cases were obese patients with class II obesity, with one normal case, and one underweight case. Obesity is mentioned as a risk factor for complete abdominal wound dehiscence. From the reported cases, all four cases were patients with anemia and hypoalbuminemia. Anemia and malnutrition can also increase the risk of wound dehiscence by disrupting cellular oxygen perfusion during the wound healing process, which includes the hemostasis, inflammation, proliferation, and maturation phases. The same applies to hypoproteinemia and hypoalbuminemia, where large amounts of amino acids are needed in the tissue healing process. In addition, there was one patient with GDM which increases the risk of SSI and poor wound healing because immune function can decrease (chemotaxis, neutrophil bactericidal and macrophage function), inhibition of angiogenesis and collagen maturation as well as prolongation of the inflammatory phase and easy biofilm formation.

Diagnosis related to complete abdominal wound dehiscence as in the four cases can be established by local examination of the abdomen with the finding of an open surgical wound after previous surgery with purulent drainage indicating infection in the surgical wound or salmon-colored drainage which classically indicates complete abdominal wound dehiscence. Nevertheless, there are still several challenges that can delay diagnosis. Delays and difficulties in diagnosis cause delays in repair procedures for patients.

All patients have been managed appropriately. If evisceration occurs (protrusion of abdominal organs), the intestines must be immediately covered with sterile cloth moistened with saline solution to prevent dehydration and further infection. The patient must then be immediately prepared for exploratory surgery and surgical repair in the operating room, with the method of re-suturing the abdominal fascia using stronger techniques, such as tension-free sutures or retention sutures, to prevent recurrence. The administration of antibiotics to patients was appropriate because it was in accordance with guidelines to prevent infection complications in surgical wounds.

For prevention of complete abdominal wound dehiscence, preventive measures are needed preoperatively, during surgery, and postoperatively. It is highly recommended to use the RRI (Rotterdam Risk Index) for optimization of patient condition before surgery in controlling risk factors and the VAMC (Veteran Affairs Medical Center) score in the first postoperative period to assess AWD risk by evaluating surgery duration, emergency procedures, clean wound classification, superficial wound infection, deep wound infection as well as ventilator use and others. In the four cases handled, preparation pre-operatively and postoperatively was likely inadequate so that complete abdominal wound dehiscence could occur. It is evident that in these cases, two patients experienced obesity, all four cases experienced anemia and hypoalbuminemia, so by reducing weight during pregnancy and optimizing Hb and serum albumin, prevention might be possible. Proper surgical technique is also very important, including selection of the optimal type of incision, use of strong and durable fascial sutures, and avoiding excessive tension on the wound. Recommendations for immediate primary closure are to perform it immediately after dehiscence if infection is controlled and wound edges can be approximated without tension, while delayed primary closure is performed 3-7 days after the wound becomes clean, preferred for contaminated wounds or septic patients, malnutrition, and high BMI because it reduces wound infection and complete abdominal wound dehiscence rates compared to IPC. Postoperatively, we should also manage proper nutrition for optimal surgical wound repair and recognize signs of surgical wound infection so that we can perform tissue culture or pus examination and provide antibiotics according to culture more quickly and prevent dehiscence which often appears on day 7-10 postoperatively, where in all four cases it was known to occur on day 7-13 postoperatively.

REFERENCES

1. Mantilidewi KI, Firdaus N, Kurniadi A, et al. Wound Dehiscence Following Obstetrics and Gynecology Surgeries: An Observational Study at a Tertiary Hospital in Bandung. *Indones J Obstet Gynecol Sci*. 2024;7(3):314-324.
2. Kalaiarasi S. A study of intra operative complications associated with repeat cesarean sections at tertiary care hospital. *Madras Medical College, Chennai*. Preprint posted online 2020.
3. Hilmi IL, Salman S, Sholih MG, Ratnasari D, Septiani D. Penyukia (Penyuluhan Dan Edukasi Kesehatan Ibu Dan Anak) Pada Puskesmas Rawamerta Karawang. *J Sustain COMMUNITY Serv*. 2022;2(4):214-222. doi:10.55047/jscs.v2i4.638
4. Mahey R, Ghetla S, Rajpurohit J, Desai D, Suryawanshi S. A prospective study of risk factors for abdominal wound dehiscence. *Int Surg J*. 2017;4(1):24-28. doi:10.18203/2349-2902.isj20163983
5. Zulhijayanti NA, Aryananda RA, Hariani L, Koendhori EB, Darmawan E. Recurrent Abdominal Burst after Obstetric Surgical Procedure. *J South Asian Fed Obstet Gynaecol*. 2019;11(5):321-328.
6. Srinivasa RK, Naik. DMG, Achyut DG. Burst Abdomen – Causes, Consequences and Complications. *J Med Sci*. 2021;20(2):4-13. doi:10.9790/0853-2002070413
7. Webster C, Neumayer L, Smout R, et al. Prognostic models of abdominal wound dehiscence after laparotomy. *J Surg Res*. 2003;109(2):130-137. doi:10.1016/S0022-4804(02)00097-5
8. Sharma R, Lonare SB, Arora P, Al-Dwlai H, Vadher A, Hersi M. Risk Factors and Predictive Accuracy of the Rotterdam Risk Index for Wound Dehiscence Following Abdominal Surgery. *Cureus*. 2025;17(1):1-11. doi:10.7759/cureus.76769
9. van Ramshorst GH, Nieuwenhuizen J, Hop WCJ, et al. Abdominal wound dehiscence in adults: development and validation of a risk model. *World J Surg*. 2010;34(1):20-27. doi:10.1007/s00268-009-0277-y
10. Hermawan GN, Wibisono JJ, Nembo LF. Abdominal Wound Dehiscence: A Review of Risk Factors, Prevention and Management in Obstetrics and Gynecology Practice. *Medicinus*. 2021;8(3):102. doi:10.19166/med.v8i3.3767
11. Rosen R, Manna. B. Wound Dehiscence. *Total Implant Venous Access Devices Manag Mid- Long-Term Clin Setting*. Published online May 2023:157-160. doi:10.1007/978-88-470-2373-4
12. Rahayu K, Rahmawati A, Susiloningtyas I. The Relationship Between Family Income and the Nutritional Status of Pregnant Mothers at Ampel 1 Primary Health Care Center in Boyolali Regency. *Pharmacol Med REPORTS, Orthop Illn DETAILS*. 2023;2(2):55-66. doi:10.55047/comorbid.v2i2.820
13. Srinivasa RK, Naik DMG, Achyut DG. Complete abdominal wound dehiscence – Causes, Consequences and Complications. *J Med Sci*. 2021;20(2):4-13. doi:10.9790/0853-2002070413
14. Choden N, Dorji N, Dem D, Lhaden K. Post-cesarean severe sepsis and uterine wound disruption presenting as abdominal wound abscess and peritonitis: A case report. *SAGE Open Med Case Reports*. 2022;10. doi:10.1177/2050313X221105922
15. Greaves NS, Ashcroft KJ, Baguneid M, Bayat A. Current understanding of molecular and cellular mechanisms in fibroplasia and angiogenesis during acute wound healing. *J Dermatol Sci*. 2013;72(3):206-217. doi:10.1016/j.jdermsci.2013.07.008
16. Crosen M, Sandhu R. Fascial Dehiscence. *StatPearls*. Published online July 2023.
17. Falola RA, Tilt A, Carroll AM, et al. Management of Abdominal Wound Dehiscence Following Cesarean Section: The Case for Debridement and Immediate Primary Re-Closure. *Clin Surg*. 2018;3(1):1881. doi:10.25107/2474-1647.1881
18. Raafat A, Habib F, Sallam A, Gertallah L. Comparison Between Delayed Primary Closure and Immediate Primary Closure of Abdominal Incisions in Patients With Septic Peritonitis. *Int J Adv Res*. 2018;6(1):261-268. doi:10.21474/IJAR01/6213
19. Kurnaz D, Karaçam Z. The effect of methods used in the management of maternal obesity on pregnancy and birth outcomes: a systematic review with meta-analysis. *Int J Obes*. 2025;49(6):1013-1023. doi:10.1038/s41366-025-01748-y
20. Polychronidis G, Rahbari NN, Bruckner T, et al. Continuous versus interrupted abdominal wall closure after emergency midline laparotomy: CONTINT: a randomized controlled trial [NCT00544583]. *World J Emerg Surg*. 2023;18(1):51. doi:10.1186/s13017-023-00517-4
21. Matla, R. K. (2025). AN AI-DRIVEN AUGMENTED ANALYTICS FRAMEWORK FOR ENHANCING DECISION-MAKING EFFICIENCY IN MID-SIZED ENTERPRISES: ACASE STUDY APPROACH. International Journal of Engineering Sciences & Research Technology, 14(10), 1–11. https://doi.org/10.29121/ijesrtp.v14.i10.2025.1
22. Coleman, Jenell, Murtha A, Silverman NS. ACOG Practice Bulletin No. 199: Use of Prophylactic Antibiotics in Labor and Delivery. *Obstet Gynecol*. 2018;132(3):e103-e119. doi:10.1097/AOG.0000000000002833
23. Akbar MIA, Ulhaq RA, Yuliati I, Yusuf M, Prasetyo B, Tjokroprawiro AB. Antibiotic Use in Cesarean Section among Obstetricians and Gynecologists in the Second Largest City in Indonesia. *Indones J Obs Gynecol*. 2023;11(2):80-86.
24. World Union of Wound Healing Societies (WUWHS). Surgical wound dehiscence: improving prevention and outcomes. *Wounds Int*. Published online 2018:1-48.
25. Dione B A, Diallo O, CisséO, Diop A P S M, Bal M H, Gaye S.(2025). INSTALLATION AND TESTING THE FUNCTIONING OF A DEVICE FOR MEASURING TEMPERATURE AND HUMIDITY. International Journal of Engineering Sciences & Research Technology, 14(9), 19-28. https://doi.org/10.29121/ijesrtp.v14.i9.2025.2