Antibiotic prophylaxis before skin incision versus after cord clamping in the prevention of maternal and neonatal infectious morbidity after cesarean section

Thesis

Submitted for partial fulfillment of Gynecology and Obstetric

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2018

الوقاية بالمضادات الحيوية قبل شق الجلد فى مقابل بعد لقط الحبل السرى أثناء العملية القيصرية فى وقاية الأمهات والمواليد من الأمراض المعدية بعد العملية القيصرية

رسالة

توطئة للحصول علي درجة الماجستير في النساء والتوليد

مقدمة من

الطبيب/ أحمد محمد أحمد فرج

بكالوريوس الطب و الجراحة

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كلية الطب- جامعة عين شمس

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جامعة عين شمس

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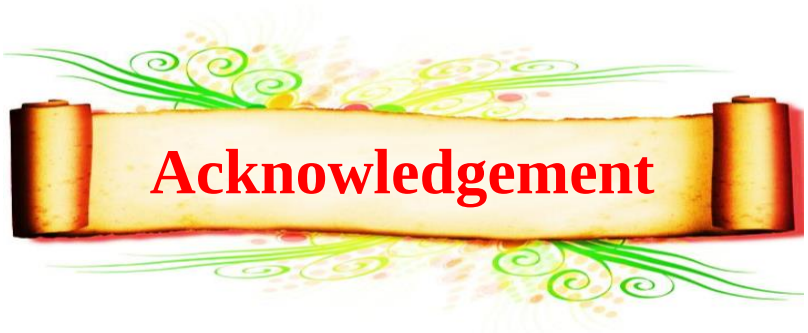
سورة البقرة الآية: ٣٢



Acknowledgement

Thanks are one emotion that flows directly from the heart and it is a very wonderful feeling that never goes away.

First and foremost, thanks are due to ***ALLAH*** *the most Merciful and the Mightiest to whom I relate my success in achieving any work in my life.*

I really express my gratitude to, ***Prof. Dr. Waleed Hetler El Tantawy,*** *Professor of Obstetrics and Gynecology, for his support, attention, and supervision throughout this work.*

I would like to express my sincere gratitude and deepest appreciation to ***Dr. Kareem Mohamed Labib****, lecturer of Obstetrics and Gynecology, for his kindness, precious advice, continuous guidance throughout the preparation of this work.*

Last but not least, I would like to express my profound love and gratitude to my family including my parents, wife and life companion and my precious son for their support and encouragement.

CONTENTS

List of Abbreviations

SSI..... Surgical site infections.

UTIs..... Urinary tracts infections.

E.Coli..... Escherichia Coli.

AAP ..... American Academy of Pediatrics.

G-6-PD ..... Glucose 6 phosphate dehydrogenase.

BSI ..... Blood stream infections.

VBAC ..... Vaginal birth after cesarean section.

NICU ..... Neonatal Intensive Care Unit.

Group B ..... Streptococcus: GBS.

LBW ..... Low birth weight.

G-CSF..... granulocyte colony-stimulating factor.

GM-CSF..... granulocyte-macrophage colony-stimulating factor.

CDC..... Centre for Disease Control and prevention.

BMI..... Body mass index.

CD..... Cesarean delivery.

BV ..... Bacterial vaginosis.

WI ..... Wound infection.

RCTs..... Randomized controlled trial.

S. aureus..... Staphylococcus aureus.

ASHP..... American Society of Hospital Pharmacists (now American Society of Health-System Pharmacists)

IDSA..... Infectious Disease Society of America.

SHEA..... Society for Healthcare Epidemiology of America.

ACOG..... American College of Obstetrics and Gynecologists.

CBC ..... Complete blood count.

ECS..... Elective Cesarean section

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INTRODUCTION

Cesarean section, known as C-section or cesarean delivery, is a surgical procedure involving incision of the walls of the abdomen and uterus for delivery of one or more babies ***(Fadhley and Salim, 2016).***

It is generally agreed that the prevalence of cesarean section is higher than needed in many countries and physicians are encouraged to actively lower the rate, as a cesarean rate higher than 10-15% is not associated with reductions in maternal or infant mortality rates. Some evidence supports a higher rate of 19% may result in better outcomes ***(Molina et al., 2015).***

In the 1980's, it was estimated that SSIs increase the duration of hospital admission by approximately 10 days. By 1992, this figure had risen extra charges for each SSI and deep SSI's involving organs or cavities, compared to superficial SSI's involving wound incisions, incurred even greater hospital stays and costs ***(Klevens et al., 2007).***

Approximately 1.7 million hospital-acquired infections occur annually and SSIs account for 20% of these cases ***(Anderson et al., 2008).***

Postpartum SSIs, especially those following cesarean delivery are more common than those following other surgical procedures. This may be due to the nature of intrapartum care, which is often prolonged, involves close

contact with lay personnel (e.g. relatives who may not be familiar with hospital antiseptic measures), as well as a wide range of professionals from different departments in the hospital, which may increase the risk of cross-contamination. Labor and delivery are also associated with contamination by other body fluids, and are often unplanned or due to emergency situations ***(Gaynes et al., 2001).***

There are a number of immediate and delayed complications that may be encountered and the obstetrician must be familiar with and able to manage these ***(Allen et al., 2003)***.

Aim of the work

It is acomparative study aims to compare the effects of antibiotic prophylaxis administered in cesarean section preoperatively versus after neonatal cord clamp on postoperative infectious complications for both the mother and the neonate.

POST CESAREAN SECTION MATERNAL INFECTIONS

Infection is considered the most serious complication as it can occur in around 8% of women who have caesareans, largely endometritis, urinary tract infections and wound infections and its associated morbidity ***(Kassebaum et al., 2014).***

It is likely that post- Cesarean wound infection rates are inaccurate, because up to 84% of infections occur after discharge, when surveillance may be lacking ***(Opoein et al., 2007).***

Patients who delivered abdominally are usually discharged on the 3rd or 4th postpartum day compared with the 1st or 2nd postpartum day for those who deliver vaginally. The average length of hospitalization may even be longer given some of the complications (eg, postpartum infections) that are more common in women who undergo delivery by cesarean section ***(Thompson et al., 2002)***.

The rate of postpartum readmission to the hospital is significantly greater for those who delivered by cesarean delivery than for those who delivered vaginally, and this increased risk persisted even after controlling for obstetric and intrapartum complications ***(Lydon-Rochelle et al., 2000).***

The maternal death after c- section , its rate is less than 0.02%, but that is four times the maternal death rate associated with vaginal delivery ***(Gedikbasi et al., 2008).***

The risk of sepsis is higher for emergency compared with elective caesarean section. A 2014 Cochrane review suggested a rate of wound infection of 97 per 1000 and 68 per 1000 for emergency and elective cesarean section, respectively; for endometritis the rates were 184 per 1000 versus 39 per 1000***.(Smaill and Grivell, 2014)***

Postpartum infections comprise a wide range of entities that can occur after vaginal and cesarean delivery or during breastfeeding. In addition to trauma sustained during the birth process or cesarean procedure, physiologic changes during pregnancy contribute to the development of postpartum infections ***(Cunningham et al., 2005).***

General risk factor for postpartum infections includes History of cesarean delivery, Premature rupture of membranes, Frequent cervical examination (Sterile gloves should be used in examinations). Other than a history of cesarean delivery, this risk factor is most important in postpartum infection, Internal fetal monitoring, Preexisting pelvic infection including bacterial vaginosis, Diabetes, Nutritional status and Obesity ***(Walsh and Joseph, 2008).***

Medical conditions that were found to be independently associated with severe sepsis included congestive heart failure, chronic kidney disease, chronic

liver disease, and systemic lupus erythematosus. An association with rescue cercelage was also found ***(Bauer et al., 2013).***

Postpartum patients are frequently discharged within a couple days following delivery. The short period of observation may not afford enough time to exclude evidence of infection prior to discharge from the hospital. In one study, 94% of postpartum infection cases were diagnosed after discharge from the hospital ***(Yokoe et al., 2001)***

Wound infection and endometritis are the commonest sites of postoperative infection, although the urinary tract, respiratory tract and nervous system must also be considered ***(Newton et al., 1990).***

- ***Endometritis***

Endometritis is the most common infection in the postpartum period. Other postpartum infections include: Postsurgical wound infections, perineal cellulitis, mastitis, respiratory complications from anesthesia, urinary tract infections (UTIs), septic pelvic phlebitis and wound infection which is more common with cesarean delivery ***(Leth et al., 2009).***

The standardized criteria of endometritis were postpartum temperature of ⩾38.5°C in the first 24 h after delivery or ⩾38°C for at least 4 consecutive hours ⩾24 h