Randomised study to compare the incidence of postoperative infection following different timing for prophylactic antibiotics in elective cesarean section

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دراسة عشوائية للمقارنة بين اعطاء المضاد الحيوى الوقائى قبل فتح الجلد او بعد ربط الحبل السرى للجنين وتاثير ذلك فى حدوث العدوى الميكروبيه بعد العملية القيصرية

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List of Abbreviations

VLBW:	Very low birth weight
HIV:	Human immunodeficiency virus
HSV:	Herpes simplex virus
FTP:	Failure to progress
CPD:	Cephalopelvic disproportion
VBAC-TOL:	Vaginal birth after cesarean trial of labor
FHR:	Fetal heart rate
PDS:	Polydioxanoe
SSIs:	Surgical site infections
RCTs:	Randomized controlled trials
CS:	Cesarean section
RCOG:	royal college of obstetrics and gynecologists

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Introduction

Several controversies exist regarding the use of antibiotic prophylaxis in cesarean section. Studies have investigated effectiveness, choice of drug timing, duration, and appropriate, route of administration. Efficacy of antibiotic prophylaxis in preventing postoperative endometritis in certain high-risk patients has been well documented. Factors identifying patients at high risk for endometritis include: indigent socioeconomic status, labor prior tocesarean section, rupture of chorioamniotic membranes, and number of vaginal examinations. Administration of antibiotics after cord clamping reduces the risk of fetal exposure without compromising maternal risk of endometritis **(*Glick et al., 1990)***.

In 1993 ***Fejgin et al.,*** found that extended-spectrum cephalosporins, when given pre-operatively, are both effective and safe, and may have an advantage over intra-operative first generation cephalosporin in the reduction of post cesarean section infectious morbidity ***(Fejgin et al., 1993).***

A study was conducted to assess whether antibiotic prophylaxis in low-risk patients for post-cesarean febrile morbidity was beneficial and cost effective. They conclude that single-dose cefazolin prophylaxis is both beneficial and cost effective, even in patient considered to be at low risk of post-cesarean febrile morbidity. Since the value of antibiotic prophylaxis in high-risk patients is accepted, universal

antibiotic prophylaxis in every cesarean section case is suggested ***(Jakobi et al., 1994)***.

One gram of cefazolin preoperatively is no more effective than the same dose administered after cord clamping in preventing postcesarean infectious morbidity but is associated with a trend toward increased suspected sepsis in the newborn. However, this trend may be related to differences between the study groups' risk factors for infection ***(Wax et al., 1997).***

Thigpen et al. conducted a prospective study to determine whether the timing of prophylactic antibiotics at cesareandelivery influences maternal/neonatal infectious morbidity. They found that there was no difference in maternal infectious morbidity whether antibiotics were given before skin incision or at cord clamping ***(Thigpen et al., 2005).***

Anothor study was to determine whether the administration of cefazolin prior to skin incision was superior to administration at the time of umbilical cord clamping for the prevention of post cesarean infectious morbidity. The study observed that administration of prophylactic cefazolin prior to skin incision resulted in a decrease in a both endomyometritis and total post cesarean infectious morbidity, compared with administration at the time of cord clamping. This dosing did not result in increased neonatal septic workups or complications. ***(Sullivan et al., 2007).***

Aim of the Work

The aim of this work is to compare the rate of post cesarean section infection after administration of prophylactic antibiotics either prior to skin incision or after cord clamping.

Chapter (1)

Indications of Cesarean Section

Overview of Indications:

In general, cesarean delivery is used to prevent the development of fetal and/or maternal morbidity in excess of that expected following vaginal delivery. Indications for cesarean delivery can be categorized (table 1).

Fetal Indications:

Fetal indications for cesarean birth are in large part designed to minimize neonatal morbidity and possibly long term consequences of profound intrapartum metabolic or mixed metabolic acidemia and/or delivery related trauma (including significant fetal thrombocytopenia) or transmission of infection. Accepted indications, often used selectively, include the following: "significant" nonremediable and non reassuring FHR patterns, especially when associated with progressive loss of variability; various categories of breech presentation at risk for head entrapment and/or cord prolapse; the VLBW fetus; and active genital herpes ***(ACOG, 1999).***

"Significant" Non-reassuring FHR Observations

Approximately 1 to 3 percent of all laboring patients

undergo cesarean delivery for a non remediable and non reassuring FHR pattern. Some clinicians unfortunately continue to designate this indication as "fetal distress," a term not recommended by the ACOG ***(How et al., 2000).*** The cesarean delivery rate and the precise criteria for "fetal distress" vary considerably from hospital to hospital and among individual practitioners.

Table (1): Commonly reported indications for cesarean delivery.

Indications	Selective	Subjective	Controversial	Universally Accepted
Fetal				
Nonreassuring FHR[1]	■	■		■
Breech, frank	■		■	
Breech, non frank	■		■	
Breech, preterm	■		■	
Very low birth weight (< 1.500g)	■		■	
Herpes simplex virus	■			
Immune thrombocytopenic purpura	■			
Congenital anomalies, major	■		■	
Maternal-fetal				
Cephalopelvic disproportion (relative)	■	■		■
Cephalopevic disproportion (absolute)		■		■
Failure to progress	■	■		■
Placental abruption	■	■		■
Placenta previa				■
Maternal				
Obstructive benign and malignant tumors	■	■		
Large vulvar condyloma	■	■		
Cervical cerclage (abdominal)	■			
Prior vaginal colporrhapy	■			
Conjoined twins				■

- **Controversy regarding need for universal application. † Universally accepted if selective/subjective criteria present. ‡ Of a critical degree commonly associated with change in FHR variability.**

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