

**Closure versus Non Closure of  
Subcutaneous Tissue in Cesarean Section  
in Diabetic Women: A Randomized  
Controlled Trial**

***Thesis***

*Submitted for Partial Fulfillment of Master Degree  
In Obstetrics and Gynecology*

***By***

**Khaled Mostafa Mohammed Rozeik**

*M.B.B.Ch - Mansoura University - 2009*

*Resident of Obstetrics and Gynecology*

*Dekernes General Hospital*

**Under Supervision of**

**Prof. Dr. Gamal Farag Mustafa**

*Professor of obstetrics and gynecology*

*Faculty of Medicine –Ain Shams University*

**Dr. Rehab Mohamed Abd El Rahman**

*Lecturer of Obstetrics and Gynecology*

*Faculty of Medicine –Ain Shams University*

Ain Shams University

Faculty of Medicine

2017





## Acknowledgements

*First, and foremost, my deepest gratitude and thanks should be offered to **"ALLAH"**, the Most Kind and Most Merciful, for giving me the strength to complete this work,*

*I would like to express my sincere gratitude to **Prof. Dr./ Gamal Farag Mustafa**, Professor of Obstetrics and Gynaecology, Faculty of Medicine, Ain Shams University for his continuous support and guidance for me to present this work. It really has been an honor to work under his generous supervision.*

*I acknowledge with much gratitude to **Dr ./ Rehab Mohamed Abd El Rahman**, Lecturer of Obstetrics and Gynaecology, Faculty of Medicine, Ain Shams University, for her great supervision, efforts and unlimited help to provide all facilities in the whole work,*

*Last but not least, thanks to **my Parents and my Family** for helping me to finish this work,*

*✍ **Khaled mostafa Mohammed***



# *List of Contents*

<u><i>Title</i></u>	<u><i>Page No</i></u>
Protocol .....	I
Introduction .....	1
Aim of the work .....	4
Review of Literature:	
- <i>Cesarean Section (CS)</i> .....	5
- <i>Diabetes Mellitus</i> .....	29
- <i>Surgical Site Infection</i> .....	53
- <i>Surgical Sutures and Surgical Site Infection</i> .....	82
Patients and method .....	91
Results .....	103
Discussion .....	131
Summary .....	145
Conclusion .....	149
References .....	150
Arabic summary .....	—



## *List of Abbreviations*

<b>AADE</b>	American Association of Diabetes Educators
<b>ACOG</b>	American College of obstetrics and Gynecology
<b>ADA</b>	American Diabetes Association
<b>ASA</b>	American Society of Anesthesiologist
<b>BMI</b>	Body mass index
<b>CABG</b>	Coronary artery bypass graft
<b>CDC</b>	Centers for Disease control and prevention
<b>CHG</b>	Chlorhexidine gluconate
<b>CS</b>	Cesarean section
<b>CTG</b>	Cardiotocography
<b>DNA</b>	Desoxy ribonucleic acid
<b>FHR</b>	Fetal heart rate
<b>GA</b>	Gestational age
<b>GDM,</b>	Gestational diabetes mellitus
<b>GLUT3</b>	Glucose transporter 3
<b>GTT</b>	Glucose tolerance test
<b>HCAI</b>	Health Claims for Auto Insurance
<b>HELLP</b>	Hemolysis elevated liver enzymes, low platelet count
<b>HELLP syndrome</b>	Hemolysis elevated liver enzymes, low platelet syndrome
<b>HIV</b>	Human immune deficiency virus



## *Abbreviations*

---

---

<b>IADPSG</b>	International Association of Diabetes and pregnancy study Groups
<b>IDDM</b>	Insulin-dependent diabetes mellitus
<b>IDMs</b>	Infants of diabetic mothers
<b>NDDG</b>	National Diabetes Data Group
<b>NHS</b>	National Health Service
<b>NICE</b>	National Institute for Health and Care Excellence
<b>NIDDM</b>	Noninsulin-dependent diabetes mellitus
<b>NIH</b>	National Institute of Health
<b>NIH,</b>	National Institute of Health
<b>NIHCE</b>	National Institute for Health and Clinical Excellence
<b>NNIS</b>	National Nosocomial Infection Surveillance
<b>NPSA</b>	National Patient Safety Agency
<b>OGTT</b>	Oral glucose tolerance test
<b>PCOS</b>	Polycystic ovarian syndrome
<b>PVP-I</b>	Povidone-iodine
<b>RCTs</b>	Randomized control trials
<b>RDS</b>	Respiratory distress syndrome
<b>SCIP</b>	(Surgical Care Improvement project)
<b>SSI</b>	Surgical site infection
<b>T2DM</b>	Type 2 diabetes
<b>TC</b>	Treatment Centre
<b>WHO</b>	World health Organization
<b>POSAS</b>	Patient and Observer Scar Assessment Scale



## *List of Tables*

<u><i>Table No</i></u>	<u><i>Title</i></u>	<u><i>Page No</i></u>
<u><i>Table (1) :</i></u>	The common indication of caesarean section elective or emergency.....	<b>11</b>
<u><i>Table (2):</i></u>	Etiological classification of Diabetes Mellitus.....	<b>33</b>
<u><i>Table (3):</i></u>	Current screening and diagnostic strategies of GDM.....	<b>35</b>
<u><i>Table (4):</i></u>	Patient and operation characteristics that may influence the risk of developing a surgical site infection.....	<b>63</b>
<u><i>Table (5):</i></u>	The Stony Brook Scar Evaluation Scale.....	<b>101</b>
<u><i>Table (6):</i></u>	Descriptive data of included women.....	<b>104</b>
<u><i>Table (7):</i></u>	Blood sugar, closure time and BMI descriptive data of the study group.....	<b>106</b>



---

---

*List of tables*

---

---

<u><i>Table No</i></u>	<u><i>Title</i></u>	<u><i>Page No</i></u>
<u><i>Table (8):</i></u>	Pre &postoperative blood sugar , closure time and BMI descriptive data of the study group.....	<b>107</b>
<u><i>Table (9):</i></u>	difference between both groups regarding descriptive data.....	<b>108</b>
<u><i>Table (10):</i></u>	Difference between both groups regarding pre and postoperative blood sugar level.....	<b>113</b>
<u><i>Table (11):</i></u>	Difference between both groups regarding closure time .....	<b>115</b>
<u><i>Table (12):</i></u>	Difference between both groups regarding BMI and type of diabetes.....	<b>117</b>
<u><i>Table (13):</i></u>	Difference between both groups regarding postoperative pain ((VAS scale10).....	<b>119</b>
<u><i>Table (14):</i></u>	Difference between both groups regarding wound collection.....	<b>123</b>



## *List of tables*

---

---

**Table No**

**Title**

**Page No**

**Table (15):** Difference between both groups regarding wound inflammation(redness, tenderness or edema).....**124**

**Table (16):** Difference between both groups regarding wound dehiscence.....**125**

**Table (17):**Difference between both groups regarding Positive wound culture.....**126**

**Table (18):** Difference between both groups regarding scar appearance according to visual analogue scale.....**127**

**Table (19):** Difference between both groups regarding cosmetic patient view (satisfaction.....**129**



## *List of Figures*

<u><i>Figure No</i></u>	<u><i>Title</i></u>	<u><i>Page No</i></u>
<b><u>Figure(1):</u></b>	(A)Vertical midline, (B) Maylard, (C) Pfannenstiel incisions (Hatched line indicate possible extension).....	<b>15</b>
<b><u>Figure (2):</u></b>	Pfannenstiel & Joel Cohen Incision.....	<b>16</b>
<b><u>Figure (3):</u></b>	Various uterine incisions; (I) Lower segment transverse incision (Kerr), (II) Lower segment vertical incision (De Lee Cornell), (III)Vertical midline uterine incision (Classical incision).....	<b>17</b>
<b><u>Figure (4):</u></b>	Delivery of the deeply engaged head.....	<b>19</b>
<b><u>Figure (5):</u></b>	Exteriorization with suturing of the uterus by an interrupted or a continuous locked suture.....	<b>20</b>
<b><u>Figure (6):</u></b>	First layer closure.....	<b>21</b>
<b><u>Figure (7):</u></b>	Parity distribution of the study group.....	<b>105</b>



## *List of Figures*

---

---

<u><i>Figure No</i></u>	<u><i>Title</i></u>	<u><i>Page No</i></u>
<u><i>Figure (8):</i></u>	C.S distribution of the study group . ....	<b>105</b>
<u><i>Figure (9):</i></u>	Comparison between Both Groups regarding age .....	<b>109</b>
<u><i>Figure(10):</i></u>	Comparison between Both Groups regarding parity .....	<b>110</b>
<u><i>Figure (11):</i></u>	Comparison between Both Groups regarding gestationalage(weeks).....	<b>111</b>
<u><i>Figure (12):</i></u>	Comparison between Both Groups regarding type of cesarean section (C.S).....	<b>112</b>
<u><i>Figure (13):</i></u>	Comparison between Both Groups regarding pre and postoperative blood sugar level...	<b>114</b>
<u><i>Figure (14):</i></u>	Comparison between Both Groups regardingclosuretime(minutes).....	<b>116</b>
<u><i>Figure(15):</i></u>	Comparison between Both Groups regardinBMI(Kg/m2).....	<b>118</b>



## *List of Figures*

---

---

<u><i>Figure No</i></u>	<u><i>Title</i></u>	<u><i>Page No</i></u>
<u><i>Figure (16):</i></u>	Comparison between Both Groups regarding post-operative pain (after 2 days).....	<b>120</b>
<u><i>Figure(17):</i></u>	Comparison between Both Groups regarding post operative pain(after 7 days).....	<b>121</b>
<u><i>Figure (18):</i></u>	Comparison between Both Groups regarding post- operative pain (after 30 days)....	<b>122</b>
<u><i>Figure (19):</i></u>	Difference between Both Groups regarding scar appearance as regard to visual analogue scale .....	<b>128</b>
<u><i>Figure (20):</i></u>	Difference between Both Groups regarding cosmetic patient view(satisfaction.....	<b>130</b>





---

*protocol*

---

