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MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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Bone Wax versus Oxidized Regenerated Cellulose in Controlling Sternal Bleeding after Cardiac Surgery

Thesis

Submitted for Partial Fulfillment of Master Degree in Cardiothoracic Surgery

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Mohamed Abdel-Fattah

List of Contents

List of Abbreviations

Abb.	Full term
AMI	Acute myocardial infarction
aPTT	Activated partial thromboplastin time
CMV	Cytomegalovirus
COPD	Chronic obstructive pulmonary disease
CPB	Cardiopulmonary bypass
CRF	Chronic renal failure
CVA	Cerebrovascular accident
DSWI	Deep sternal wound infection
ECG	Electrocardiogram
HIV	Human immunodeficiency virus
HTN	Hypertension
IABP	Intra-aortic balloon pump
ICU	Intensive care unit
IDDM	Insulin-dependent diabetes mellitus
IgA	Immunoglobulin A
INR	International normalized ratio
MCAD	Mechanical circulatory assist device
NIDDM	Non- insulin- dependent diabetes mellitus
ORC	Oxidized Regenerated Cellulose
PL	Phospholipid
PT	Prothrombin time
SIRS	Systemic inflammatory response syndrome
tPA	Tissue plasminogen activator

List of Tables

List of Tables Cont...

List of Figures

List of Figures Cont...

INTRODUCTION

The incidence of re-exploration for bleeding after cardiac on-pump operations varies from 2 to 5% [(1)].

Postoperative bleeding results in increased mortality and morbidity rates and health care costs.

Multiple surgical sites may cause bleeding, including distal and proximal anastomoses, cannulation sites, branches of arterial and venous grafts, the internal thoracic wall where the internal mammary artery is harvested, anterior mediastinum, and others.

Sternal intramedullary bleeding is an important contributor to postcardiac surgery hemorrhage [(2)].

Excessive blood loss requiring heavy transfusion is also a well-known risk factor for wound infections and subsequent sternal dehiscence [(3)].

Many preventive strategies are used for control of sternal intramedullary bleeding as oxidized regenerated cellulose which is applied topically and can effectively control diffuse capillary oozing [(4)], bone wax which is considered as an agent physically preventing bleeding, electrocauterization, absorbable gelatin powder which is a hemostatic product constituted by swine origin protein[(5)] and others.

AIM OF THE WORK

This study is prospective randomized trial to compare the result of two different strategies of sternal intramedullary hemostatic control after cardiac surgery using bone wax concomitant electrocauterization versus oxidized regenerated cellulose concomitant with electrocauterization.

Chapter 1

POST-OPERATIVE BLEEDING IN CARDIAC SURGERY

Bleeding is a common and severe complication after cardiac surgery[6]. When surgery is completed, the patient is equipped with chest tubes to drain the thoracic cavity from blood and fluid. In normal cases, postoperative mediastinal drainage averages about 900 milliliter (range 400 – 2200 milliliter[7]. The incidence of re-exploration for bleeding after cardiac on-pump operations varies from 2 to 5%[1].

Postoperative bleeding results in increased mortality and morbidity rates and health care costs[2].

Excessive postoperative bleeding:

It is postoperative bleeding into drains placed in the cardiothoracic cavity after admission to the ICU. Drainage loss was assessed on an hourly basis after completion of a 30-minute stabilization period. Drainage loss was defined by at least 1 of the following criteria: (1) 200 mL/h in any 1 hour or (2) 2 mL/kg/h for 2 consecutive hours in the first 6 hours after surgery.

Blood loss during the stabilization period was not included in the definition of the volume criteria as such loss may be due to postural changes when transferring the patient