Comparative Study Between Polypropylene Versus Polydioxanone Suture Material Regarding Wound Dehiscence In Closure Of Vertical Abdominal Incisions

Thesis
Submitted for partial fulfillment of the MD degree in
General Surgery

By

Ehab Hussein Abd El-Wahab
Master Degree in General Surgery
Ain Shams University
Supervision of

Prof. Dr.Mohamed Alaa El-Din Ahmad Osman
Professor of General Surgery
Faculty of Medicine –Ain Shams University

Prof. Dr.Mohamed Hatem Ibrahim
Professor of General Surgery
Faculty of Medicine-Ain Shams University

Dr. Mohamed Fathy Abd El-Gaffar
Assistant Professor of General Surgery
Faculty of Medicine-Ain Shams University

Dr. Ali Mohamed EL-Anwar
Lecturer of General Surgery
Faculty of Medicine-Ain Shams University

Faculty of Medicine
Ain Shams University
2009

Acknowledgement

First and foremost, I thank GOD who gave me the strength to fulfill this study.

I would like to express my sincere gratitude ***Prof. Dr.Mohamed Alaa El-Din Ahmad Osman*** *Professor of General Surgery Faculty of Medicine –Ain Shams University for his generous supervision , keen interest and precious time he offered me through this study . I consider myself very fortunate to work under his supervision*

I wish also to express my deep gratitude to ***Prof. Dr. Mohamed Hatem Ibrahim*** *Professor of General Surgery Faculty of Medicine –Ain Shams University for his continuous support and great advice throughout this study.*

I wish also to express my deep gratitude to ***Dr.Mohamed Fathy Abd El-Gaffar*** *Assistant Professor of General Surgery Faculty of Medicine-Ain Shams University for his continuous support , valuable remarks and for offering me much of his time and effort throughout this study.*

Finally I would like to express my sincere gratitude to ***Dr.Ali Mohamed EL-Anwar*** *Lecturer of General Surgery Faculty of Medicine-Ain Shams University for his precious and great help.*

INTRODUCTION

Median laparotomy is the most common technique of abdominal incisions because it is simple, provides adequate exposure to all four quadrants, is rapid to open and usually blood sparing. A major problem after median laparotomy remains the adequate technique of abdominal fascia closure. In prospective studies the incidence of wound dehiscence varies from 9% to 20%. Suture closure technique is addressed as major risk factors for the development of wound dehiscence *(Nicole et al., 2000).*

Abdominal wound dehiscence remains a major cause of morbidity following any laparotomy whether elective or emergency. Wound dehiscence carries with it a substantial morbidity. In addition there is an increase in the cost of care both in terms of increased hospital stay nursing and manpower cost in managing the burst and its complications*(Lars Tue et al.,2005).*

Whereas patient related factors such as age, gender, body mass index (BMI), underlying disease, co-morbidities, prior surgical procedures and life-style factors (e. g. smoking) cannot be controlled or standardized, the decisive chance to lower the incidence of wound dehiscence is to optimize the

surgical technique. Therefore, a great variety of suture materials and needles has been developed to provide an adequate closure of the fascia and thus the abdominal wall *(Stephen et al., 2001).*

The ideal suture for closing abdominal fascia has yet to be determined. Surgical tradition, prejudice, familiarity, and personal conviction tend to dictate surgical procedures rather than evidence-based medicine. The ideal method should be technically so simple that the results are as good in the hands of the trainee as in those of the surgical master; it should be free from the complications of burst abdomen, inscional hernia,and persistant sinuses; it should be comfortable to the patient; and it should leave a reasonably aesthetic scar. Choice of suture and technique of closure are therefore important predisposing factors to wound failure *(Bucknall et al., 2002).*

List of figures

page

List of Tables

page

List of contents

CHAPTER 1 ...

ANATMY OF THE ANTERIOR ABDOMINAL WALL

Layers of the anterior abdominal wall

In addition to skin and fat, the abdominal wall comprises several muscles and fascial structures that allow it to function as the protector of intra-abdominal organs and to flex and extend the trunk and support the back. In describing the anterior abdominal wall components by location from superficial to deep, the abdomen is composed of (1) skin, (2) superficial fascia consisting of superficial fatty layer (Camper's fascia) & deep membranous layer (Scarpa's fascia)(3) Anterior abdominal wall muscles (4) Fascia transveralis (5) extraperitoneal adipose tissue , and (6) peritoneum. Other abdominal wall structures located lateral to the rectus abdominus muscles are the external oblique fascia and muscle, internal oblique fascia and muscle, and transverses muscle and transversalis fascia.

The Fascia

From latin: a band is the soft tissue component of the connective tissue system that permeates the human body. It interpenetrates and surrounds muscles, bones, organs, nerves, blood vessels and other structures. Fascia is an uninterrupted,

three-dimensional web of tissue that extends from head to toe, from front to back, from interior to exterior. It is responsible for maintaining structural integrity; for providing support and protection; and acts as a shock absorber. Fascia has an essential role in hemodynamic and biochemical processes, and provides the matrix that allows for intercellular communication. Fascia functions as the body's first line of defense against pathogenic agents and infections. After injury, it is the fascia that creates an environment for tissue repair *(Paoletti et al., 2006).*

Superficial fascia is found in the subcutis in most regions of the body, blending with the reticular layer of the dermis. It is present on the face, over the upper portion of the sternocleidomastoid, at the nape of the neck, and overlying the sternum. It is comprised mainly of loose areolar connective tissue and adipose and is the layer that primarily determines the shape of a body. In addition to its subcutaneous presence, this type of fascia surrounds organs and glands, neurovascular bundles, and is found at many other locations where it fills otherwise unoccupied space. It serves as storage medium of fat and water; as a passageway for lymph, nerve and blood