Comparative study between closed suction surgical wound drainage after hip fracture surgery and using no drainage.

Thesis

Submitted for fulfillment of

Master degree in Orthopaedic surgery

by

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Table of contents

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Dedication

My family

Thank u for your unconditioned love, support and faith in me.

You were my guiding light when I was indulging alone in darkness.

No words could express how grateful I am to you.

...thank you for being there.

Index

List of figures

List of tables

Abbreviations

CSD: Closed suction drainage.

DCS: Dynamic condylar screw.

DHS: Dynamic hip screw.

HAP: Hemiarthroplasty.

Hb: Hemoglobin.

Htc.: Hematocrit.

SD: Standard deviation.

THA: Total hip arthroplasty.

ABSTRACT

In this study we found that there is no statistically significant difference between both groups regarding the need for reinforcement of the dressing, degree of haematoma, pyrexia after operation, postoperative blood loss and subsequent need for blood transfusion, infection and ROM and in order to invalidate the deep rooted beliefs in orthopaedic surgeons about drain we proposed three questions.

First one -and the primary outcome measure in investigating that topic as it should be- is: "Is there is any difference regarding the incidence of wound infection?"

This study and other studies reported no statistically significant difference[2,5,37,38,41,46–53].

Second one –which is a very serious general health problem-, is: "What about the blood loss and the subsequent need for blood transfusion and its known risks especially in the developing countries?"

''At best, their use appears to make no difference to rates of transfusion, and, at worst, may increase the need for transfusion[2].'' Five studies [5,41,49–51] found no statistically significant difference and 3 studies[2,52,53] found statistically significant difference where blood transfusion was needed more in the drainage group.

So it could be concluded that; closed surgical drainage systems reduce the need for reinforcement of the dressing, but increase the need for blood transfusion.

KEYWORDS: Hemiarthroplasty- hip fracture -THA- DHS- drainage-

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Introduction

The incidence of all hip fractures is ˜80 per 100 000 individuals; intertrochanteric fractures make up 45% of them, and these figures are expected to double over the next 50 years.[1]

The hip region is rich in blood supply [figure 1] and consequently haematomas are inevitable especially following orthopaedic operations because complete haemostasis is difficult when the medullary canal has been exposed [2]. Drains are commonly used in orthopaedic surgery, particularly in joint arthroplasty, principally in order to reduce the formation of a haematoma.[2] Most surgeons have developed a 'personal opinion' about the use and effectiveness of drains, adapting that prevention of haematomas is believed to decrease the infection rate.[3]

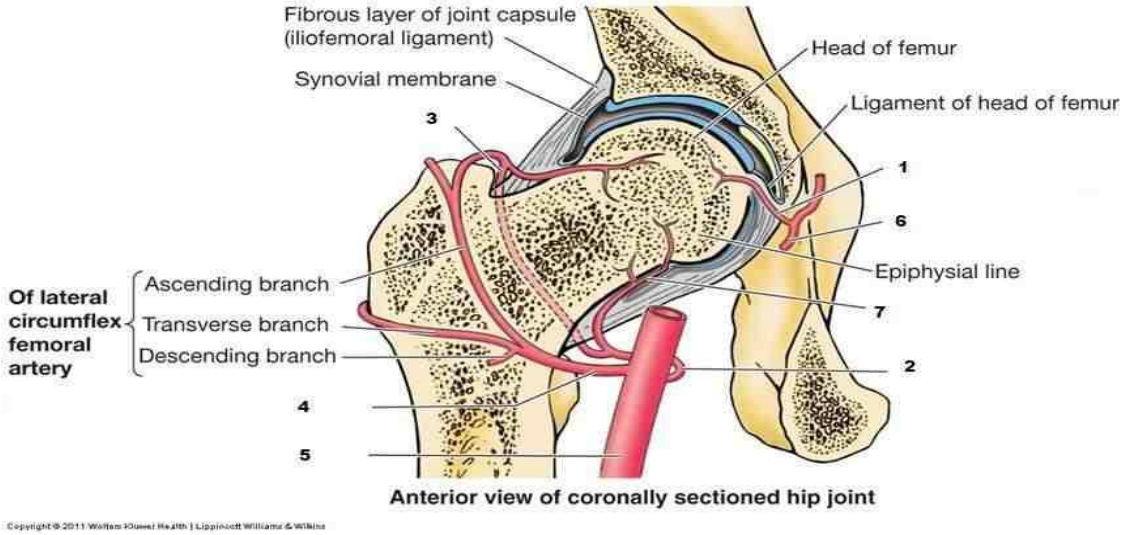

Figure (1): Anterior view of coronally sectioned hip joint.[4]

Waugh and Scinchfield were the first to describe the closed suction drainage system for orthopaedic wounds in 1961 as a solution to the high rate of infection that was associated with the open drainage systems (i.e.; Penrose drains).[5] Since this date suction drains have been used with varying success in orthopaedic surgery for many years.[6]

There are different opinions on the exact risks and benefits that closed suction drainage provides for a surgical wound and this is seen in everyday clinical practice, where some surgeons use drains and others do not. However, despite the widespread use of closed suction drainage in hip fracture surgery, there are few randomized controlled trials evaluating scientifically the advantages and disadvantages of placing a drain in surgical wound following hip fracture surgery.[6]

Surgeons who use drains argue that they decrease the risk of haematoma formation; haematomas may lead to limited range of motion and wound infections after surgery, possibly necessitating additional surgery.[7] Those who do not use drains argue that they serve as a portal for bacteria, increase postoperative blood loss and do not improve the range of motion.[8] The increased postoperative blood loss results in a higher probability of blood transfusion with the known risks of blood transfusion including the increased risk of infection, where a correlation has been reported between allogenic blood transfusion and postoperative infection in the elective surgical patients[9–13] and even more so in the traumatically-injured patient.[10,12]

This study attempts to find out if there is a difference between using closed suction drainage system and not using it for surgeries concerned with fixing proximal femoral fractures (using dynamic hip screw or dynamic condylar screw) and for hip arthroplasty surgeries (total, bipolar or monopolar hip prosthesis).

It was totally conducted in Cairo university hospitals and to our knowledge this is the first study approaching this topic in the Egyptian orthopaedic society.

This study was conducted between 2012 and 2014.

Patients and methods

Study design:

The study was performed in prospective randomized controlled manner using sealed opaque envelopes.

The patients sample was divided into two groups, "**Group A**" and "**Group B**", where we didn't use drain for the first group but we used drain for the second.

Sample size:

The initial sample consisted of 60 patients where 7 patients (5 from group A and 2 from group B) were lost from the follow up either due to death (2 from group A and 1 from group B, causes were not related to the procedure) or non compliance (3 from group A and 1 from group B). So this study included 53 patients.

Inclusion criteria:

Skeletally mature patients with fracture proximal femur either at the peritrochanteric region or fracture neck of femur.

Exclusion criteria:

- Skeletally immature patients.
- Patients who have any chronic illness requiring continuous use of anticoagulation.

- Patients who have any coagulopathy.
- Patients who are going to have revision surgery due to infection.
- Patients who have any skin pathology at site of planned surgery.
- Patients with pathological fractures of proximal femur.

The fifty three patients included in this study are described in table-1 regarding the age and sex distribution.

Table [1]: Demographic data of patients

Criteria			Total	Group	
				A	B
Age	Mean age (Years)		61.7	64.6	59.11
	Range		20-90	20-90	20-90
	SD		16.6	18.4	14.5
Sex	Males	Number	28	10	18
		Percent	52.83%	18.86%	33.96%
	Females	Number	25	15	10
		Percent	47.17%	28.32%	18.86%

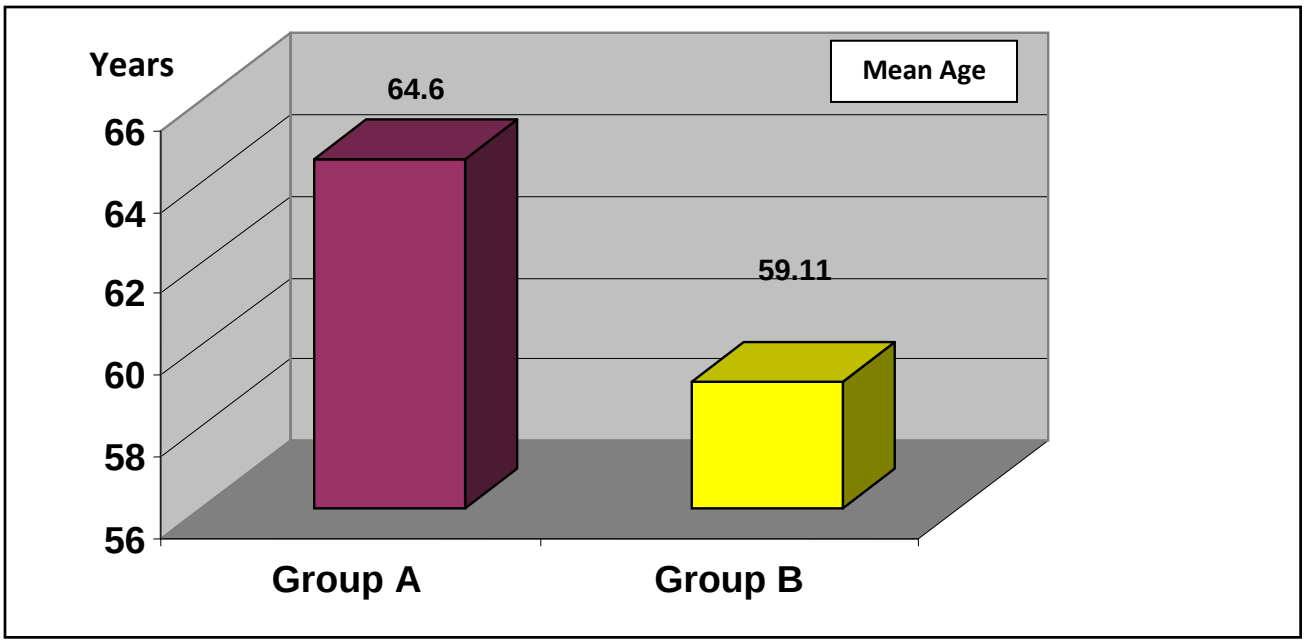

Figure (2): Age distribution of both groups.

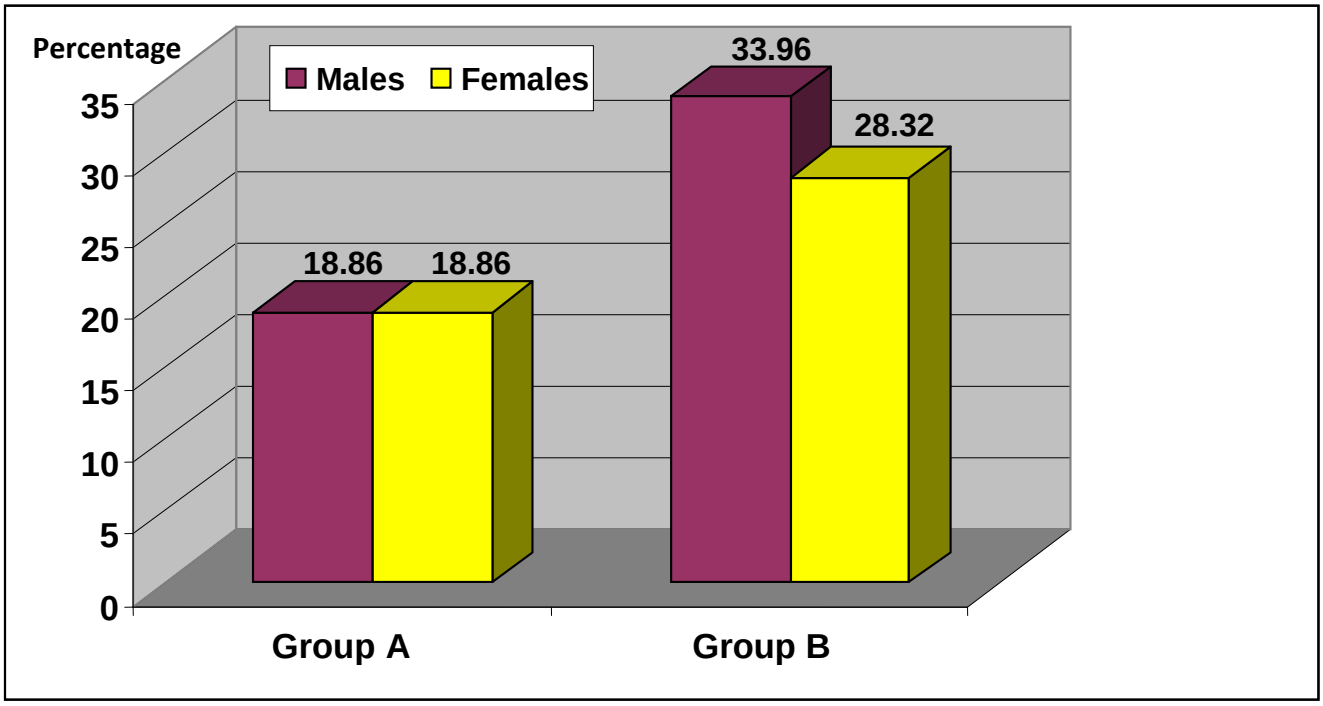

Figure (3): Sex distribution of both groups.