

# **Management Of Infected Knee Arthroplasty**

## **Essay**

Submitted for Partial Fulfillment of Master Degree  
in Orthopedic Surgery

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2013



قَالَ اسْمُكَ لَا عَلَمَ لَنَا إِلَّا مَا عَلَّمْنَا

إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ

مَنْزِلَةُ الْقُرْآنِ

سُورَةُ الْبَقَرَةِ آيَةُ (٢٢٢)



*First of all, Thanks for ALLAH, the only truth in the world.*

*I would like to express my deeply felt gratitude to **Prof. Dr. Mahmoud Elsebaey** professor of orthopedic surgery, faculty of medicine, Ain Shams University, for his kind and gentle guidance beside the valuable time he spent.*

*I would like to express my appreciation to **Dr. Mohamed Nabil Elsaied** assistant professor of orthopedic surgery, faculty of medicine, Ain Shams University, for ideas and valuable discussions throughout the process of writing the essay.*

*Also I would to express my great thanks to my senior **Dr. Ashraf Yassin** and everybody who gave me a help in this essay.*



**Mahmoud Mustafa Zaied**

*To* the soul of my father, my beloved mother, my wife,  
my brother and my sisters for their encouragement, love,  
support, and for always being there when I need them.

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## Table of abbreviations

TKA	Total Knee Arthroplasty
DVT	Deep Vein Thrombosis
ESR	Erythrocyte Sedimentation Rate
CRP	C-Reactive Protein
WBC	White Blood Cell
TiN	Titanium Nitride
OA	Osteoarthritis
RA	Rheumatoid Arthritis
TNF $\alpha$	Tumor Necrosis Factor-alpha
PPI	Periprosthetic Infections
EPS	Extracellular Polymeric Substance
IL-6	Serum Interleukin-6
ELISA	Enzyme-Linked Immuno-Sorbent Assay
TPBS	Triple-Phase technetium-99 Bone Scan
FDG-PET	Fluro-Deoxyglucose Positron Emission Tomography
SF	Synovial Fluid
PCR	Polymerase Chain Reaction

## **Table of abbreviations (Cont.)**

DNA	Deoxyribonucleic acid
FISH	Fluorescent In Situ Hybridization
SSPA	Staphylococcus Slime Polysaccharide Antigen
AICS	Antibiotic-Impregnated Cement Spacers
IM	Intramedullary
ROM	Range Of Movement

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# Introduction

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When performed successfully, total knee arthroplasty (TKA) can be a life-changing procedure, restoring function, relieving pain, and offering high patient satisfaction. However, it is not a procedure without risk of complications. One of the most serious complications of knee arthroplasty is deep infection. <sup>[17]</sup>

Careful preoperative evaluation of the patient, adequate operative procedure, and postoperative follow up, and rehabilitation should be promptly full-field so as to achieve a successful TKR. <sup>[17]</sup>

The coagulase negative *Staphylococcus* remains the most common causative organism in infected knee arthroplasty, occurring in 49% of cases. <sup>[17]</sup>

Risk factors of TKA infections are systemic malignancy, previous infection of the replaced joint, arthroplasty revision, increased operative time, and postoperative surgical site infection not involving the arthroplasty. <sup>[21]</sup>

Moreover, a two to four folds increased risk has been reported in Rheumatoid Arthritis (RA). <sup>[25]</sup>

Strategies including the use of intravenous antibiotics, antibiotic loaded cement, body exhaust suits and laminar flow positive pressure operating theatres, have all been successfully employed to minimize the infection risk. <sup>[37]</sup>

Diagnosis is multifactorial and relies on the clinical picture, radiographs, bone scans, serologic tests, synovial fluid examination, intra-operative culture and histology. Newer techniques including ultrasonic and molecular diagnostic studies are playing an expanded role. <sup>[39]</sup>

Treatment of infected TKA is complex, requires more surgical and inpatient time than non-infected revision TKA, and is more prone to failure. The goal of treatment is eradication of the infection and maintenance of a pain-free, functional joint. <sup>[38]</sup>

When infection does occur, early recognition and appropriate management are required in order to minimize the damage caused. Antibiotic suppression, joint lavage, debridement with exchange of polyethylene liner, and complete revision, are all strategies which have been employed to manage deep infection. In severe cases arthrodesis or even amputation are sometimes required when all other options fail. <sup>[17]</sup>

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# Aim of the Essay

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This study aims to explain the causes, diagnosis of infected knee arthroplasty and various methods of treatment.



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# **Anatomy of the Knee Joint**

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**The knee joint**, the largest in the body, is of the compound variety. Despite its single joint cavity in man, it is convenient to describe it as consisting of two condylar joints between the corresponding condyles of the femur and tibia and a sellar joint between the patella and the patellar surface of the femur (fig.1-1).

[1]

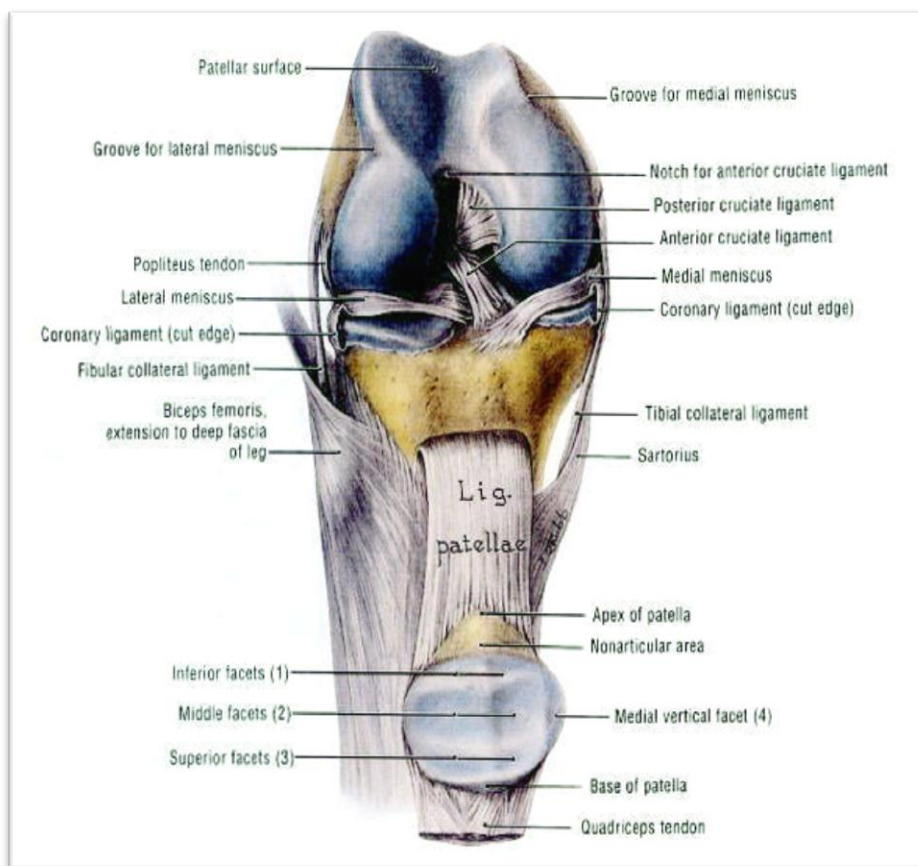


Fig. (1-1): Diagram showing the interior of the knee. [2]