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Research Paper

Incidence of Early Post Operative Infection After Primary Total Knee Replacement At A Private Specialist Hospital, Kaduna, North West Nigeria.

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Abstracts
Introduction: *For most orthopedic surgeons, total knee arthroplasty (TKA) is considered the most effective surgery for patients with severe knee conditions. Although it is rare, surgical site infection (SSI) is a serious complication that can occur after TKA, leading to significant morbidity. To mitigate this risk, various techniques have been established. Thus, prompt and accurate diagnosis is critical in guiding the treatment of these patients.*
Objective*: The study was conducted to determine the incidence of early postoperative infection following primary total knee replacement among patients treated at a private specialist hospital in Kaduna, northwestern Nigeria*
Methods: *This was a retrospective cohort study of all the patients who had total knee arthroplasties at our hospital from 2018 to 2024. Our hospital is a specialist hospital serving patients from all over the country. The patient's record was used for data collection. Data collected were analyzed with Statistical Package for Social Sciences version 25.0 and presented as tables.*
Results*: A total of 28 patients were studied, with a male to female ratio of 1:2. The mean age of the patients was 64.75. Only 2 patients developed infections in the first 30 days postoperatively, resulting in an incidence rate of 7.1%. One patient experienced a superficial infection that was effectively treated with antibiotics and resolved completely without further intervention. The other patient had a deep infection, which required implant removal and arthrodesis, followed by antibiotic therapy.*
Conclusion: *There is an increased risk of early surgical site infection after primary TKR in our setting; however, larger and multi-center studies will be necessary to identify modifiable risk factors.*

Keywords*: Knee Arthroplasty, surgical site infection, Private facility*

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I. Introduction

Surgical site infection (SSI) is a serious and concerning complication that can occur following total knee arthroplasty (TKA). SSIs can lead to significant morbidity and may require repeated surgical procedures. Published studies indicate that the current incidence of SSI ranges from 1% to 3%, depending on the study.[1-4] This issue poses challenges not only for orthopedic surgeons but also for patients and their families, as it impacts both physical and psychological well-being. An SSI can negatively affect a patient's quality of life, hinder their ability to return to daily routines, and result in decreased functionality overall.

Another important aspect of prosthetic infections is their significant economic impact. Generally, when a prosthesis becomes infected, it requires three to four times more resources than a primary knee arthroplasty. In comparison to a revision of an aseptic prosthesis, the resources needed are about twice as great.[5]

Several factors can contribute to the development of SSIs. There are factors related to the anatomical location of the knee joint, which is superficial and has limited muscle coverage, leading to a higher incidence of cutaneous complications than arthroplasties in other areas. On the other hand, host-dependent factors such as immunosuppression can increase risk. Additionally, patients with diabetes mellitus and obesity—two conditions that are often related—are at a greater risk. Pre-existing septic arthritis also raises the risk of infection.[6-8]

Some studies suggest that longer operative times, specifically over two hours for knee replacement, may be associated with an increased risk of infection.[8,9] However, other research indicates there is no correlation

between operative time and infection rates. [10] SSIs continue to be one of the more challenging complications of total knee arthroplasty when it comes to prevention and treatment.

For treatment and control to be more effective, multidisciplinary teams composed of professionals from various specialties should collaborate to eradicate these types of infections. To improve cost-effectiveness, efforts must focus on prophylactic control, early diagnosis, and the establishment of clear protocols for the different situations or symptoms that may indicate the presence of a surgical site infection (SSI). Antibiotic prophylaxis is the most effective method for reducing SSIs

Maintaining total control of the operating room environment is crucial during total knee arthroplasty (TKA). The number of people present in the operating room should be kept to the minimum necessary, and frequent entry and exit should be avoided. Utilizing devices like ultraviolet light or laminar flow systems can help reduce the incidence of SSIs.

II. Methodology

Study Area: Rapha Specialist Hospital, a multi specialist hospital located in Kaduna, Kaduna State, North West Nigeria with a staff strength of 80 staff and patients' turnover of about 15,000 per annum**.**

Study Design: This was a retrospective cohort study

Study population: All patients who attended the hospital for orthopedic conditions between January 2018 to June 2024

Inclusion and exclusion Criteria: All patients undergoing primary total knee arthroplasty during the study period were included. However, patients undergoing revision arthroplasty, those with preexisting infections, or those with incomplete data were excluded from the study. Early postoperative infection in this study was defined as an infection that developed within 30 days of surgery.

Data Collection:

The hospital followed a standard operating procedure for all patients. Patients were routinely seen for follow-ups at two weeks, four weeks, six weeks, six months after surgery, and then annually. Standard aseptic techniques were employed for all procedures, which included cleaning the surgical site with iodine, double gloving, waterproof draping, and frequent glove changes by the surgical team. Movements in and out of the operating theater were restricted to maintain a sterile environment. A tourniquet was applied to all patients, and prophylactic intravenous antibiotics, specifically ceftriaxone, were administered and continued for 72 hours postoperatively. A midline approach with medial para-patella arthrotomy was utilized in all cases, with the implantation of a prosthetic secured with bone cement. A Redivac drain was placed during surgery and removed after 48 hours. Patients were considered to have an early postoperative infection if any of the following occurred within the first 30 days: wound discharge after the fifth postoperative day, purulent wound discharge at any time, or the development of a sinus at the surgical site. A wound swab was conducted for patients exhibiting discharge. We collected data on demographic characteristics, date of diagnosis, date of surgery, presence and onset of infection, and the outcome of treatment following the infection. Additionally, we assessed possible risk factors for infection, including common medical comorbidities

III. Results

There were 28 primary total knee arthroplasties performed in the 6 years. The male-to-female ratio was 1:2, and the mean age was 62.5yrs. The most common indication for surgery was osteoarthritis (85.71%). All the implants used were cemented using cement impregnated with antibiotics.

The median duration for follow-up was 15 months; only 2 patients had infection in the first 30 days postoperatively giving an incidence of 7.1. One of the patients had a superficial infection that was managed with antibiotics, and it resolved completely without need for further treatment, while the other patient had a deep infection, necessitating implant removal and arthrodesis followed by antibiotic therapy.

Table 1. Age and sex distribution of the Patients (n=28),

Variables	**Frequency**	**PERCENTAGE%**
Age Group		
≤40	1	3.6
41-50	2	7.1
51-60	6	21.4
61-70	11	39.2
71-80	5	17.9
≥81	3	10.7
Sex		
MALE	8	28.6

FEMALE	20	71.4

Table 2: Risk factors for Infection

Factors	**Frequency**	**PERCENTAGE%**
Sickle Cell Disease	1	3.6
Diabetes	6	21.4
Hypertension	12	42.9
weight > 80kg	9	32.1
Total	28	100

IV. Discussion

The incidence of infection in our study was 7.1%, which is considered high, as most centers worldwide report rates of less than 3%.[5,9] Similar studies have shown that the incidence is higher in developing countries compared to Western societies.[11, 12] The reasons for this may include the lack of laminar flow design in our operating theaters, in addition to other comorbidities.

In our study, one patient experienced a superficial infection that was treated with antibiotics. However, another patient developed a deep infection and required implant removal, followed by knee arthrodesis. This intervention will significantly affect the patient's quality of life. The patient would have benefitted from staged revision arthroplasty, but the cost of the implants far exceeded what the patient could afford. The two patients who had surgical site infections (SSI) had comorbidities, although this was not statistically significant due to the small sample size. The small sample size was a major limitation of this study. Further prospective studies with a larger sample size are desirable.

V. Conclusion:

There may be an increased risk of infection following primary total knee arthroplasty in our setting, and further studies are needed to identify any modifiable risk factors. The availability of revision knee implants could improve outcomes for patients who develop surgical site infections (SSI), although these implants are expensive and unaffordable for most of our patients. Therefore, it is essential to implement all necessary measures to prevent SSI.

References

[1]. Gerhke, T.Aiijanipour p,.The management of an infected total knee arthroplasty, bone jointJ2015;97-B\:20-29 DOI:10.1302/0301-
[2]. WangCJ, Huang TW, JW at al. The often poor clinical outcome of infected total knee arthroplasty.J Arthroplasty 2002;17:608-614
[3]. Campoccia D,Montanaro L,Arciola CR.The significance of infection related to orthopaedic devices and issues of antibiotic resistance, Biomaterials. .2006;27(11);2331-9.
[4]. Pavel A,Smith RL, Ballard A, et al.Prophylactic antibiotics in clean orthopaedic surgery,J Bone joint surgAM.1974;56:777-82.
[5]. BackeH ,WolfD, Winson R. Total knee replacement infection after 2-stage reimplantation. Clin Orthop1996;(331):125-131.
[6]. Bolognes MP,Marchant MH Jr,ViensNA, et al,The impact of diabaetes on perioperative patient outcomes after total hip and total knee arthroplasty in the united states,J Arthroplasty2008;23:92-98. DOI:10.1016/J.arth.2008.05.012
[7]. Malinzak RA, Ritter MA, Berend ME,et al. Morbidly obese, diabetic, younger and unilateral joint arthroplasty patients have elevated total joint arthroplasty infection rates.J Arthroplasty2009;24:84-88. DOI;10.016/j.arth2009.05.016.
[8]. Yang k,Yeo SJ,lee BP,et al.Total knee arthroplasty in diabetic patients:a study of 109 consecutive cases.J Arthroplasty 2001;16:102-106.DOI:10.1054/arth.2001.19159.
[9]. PeersmanG,Laskin R,Davis J,et al.Infection in total knee replacement: a retrospective review of 6489 total knee replacements.clin Orthop Relat Res,2001;392;15-23
[10]. Duchman KR, Pugely AJ, Martin CT,et al. Operative time affects short-term complications in total joint arthroplasty.J Athroplasty 2016;32:1285-1291.DOI:10.1016/j.arth.2016.12.003
[11]. Tejwani NC,Immerman I,Myths and legends in orthopaedic practice: are we all guilty? Clin Orthop Relat Res,2008;466:2861-2872, DOI:10.100/S111999-008-0458-2.
[12]. Renaud A, Lavigne M, Venditolli PA,Periprosthetic joint infections at a teachiing hospital in 1990-2007.Can J Surg.2012;56(6):394-400
[13]. Von Dollinger EJ,de souza GM,de Melo GB, et al,Surgical site infections in primary total hip and knee replacements surgeries, Am infect Control. 2010;38(3):246-8