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INCIDENCE OF EARLY POST OPERATIVE SURGICAL SITE INFECTION AFTER PRIMARY TOTAL HIP ATHROPLASTY IN THE AFRICAN SETTING

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ABSTRACT

Background: **Implant orthopaedic surgery is associated with a risk of post operative Surgical Site Infection (SSI). This can have devastating consequences in the case of arthroplasty. Due to the less than ideal circumstances under which surgery is conducted in Africa, there are concerns that the risk of SSI may be high.**

Objective: **To determine the incidence of post operative SSI after primary total hip arthroplasty.**

Design: **A retrospective cohort study.**

Methods: **All primary total hip arthroplasties done from 1998 to 2011 were reviewed. The incidence of infection was determined on follow-up of the patients. The study was approved by the hospital ethics committee.**

Results: **The overall incidence of post operative SSI was 1.5%. Co-morbidities identified were not associated with an increased risk of infection. Increased duration of surgery and increased body weight were also not found to increase the risk of post operative SSI.**

Conclusion: **The risk of post operative SSI after total hip arthroplasties is low in the African setting. Further investigation is recommended to identify modifiable risk factors that may increase the risk of SSI.**

Key words: **Post operative, Surgical site infection, Arthroplasty, Primary total hip**

INTRODUCTION

The conduct of any surgery is associated with a risk of post operative Surgical Site Infection (SSI). This risk is higher in the presence of implants as happens in arthroplasty. Various measures have been put in place to mitigate this risk. These include patient screening, aseptic techniques and use of prophylactic antibiotics. With modern surgical techniques and the use of prophylactic antibiotics, the risk of post operative SSIs in orthopaedic implant surgery is as low as 2% (1-3). Various American and European protocols advocate for the initiation of prophylactic antibiotics within one hour of the incision and continued up to 24 hours after the end of the operation (4-6). Infection in the setting of arthroplasty can have devastating consequences including increased duration hospitalisation, costs and death (7). Due to the less than ideal circumstances under which primary joint arthroplasty is conducted in Africa, there is a tendency to believe that the risk of post operative SSIs would be higher.

We conducted a study to determine the incidence of post operative SSI after primary Total Hip Replacement Arthroplasty (THRA) at a centre in Africa and to determine if this was at variance with incidence rates reported in literature. We also sought to determine any risk factors that may contribute to the development of SSI.

MATERIALS AND METHODS

A retrospective cohort study of prospectively enrolled patients was conducted of all primary total hip arthroplasties conducted at our hospital's orthopaedic unit from 1998 to 2011. Our hospital is the premier orthopaedic unit in the country and is located about 20 kms from the capital city. It also serves as a teaching hospital for the orthopaedic residency program of the local university and the College of Surgeons of East Central and Southern Africa (COSECSA). Standard aseptic techniques were used in all patients including cleaning the surgical site with iodine and alcohol, use of double gloving, water proof draping,

and frequent change of gloves by the surgical team. Movement in and out of the operating room was kept to a minimum as was the members of the operating team. Our facility does not have laminar flow and space suits are not used. All patients undergoing a total hip arthroplasty had an intravenous antibiotic given 30 – 60 minutes prior to surgical incision and the surgeries were conducted by several surgeons. The surgical techniques and post operative medication was varied and depended on individual surgeons. Patients were deemed to have early infection if any of the following were noted in the first thirty days post operatively; any wound discharge after the fifth post operative day, purulent wound discharge at any time or a sinus at the operation site. Wound pus swabs with culture and sensitivity were not performed routinely. The data analysis was done using SPSS ver17.0 (IBM corp. New York, USA). The study was approved by the institution ethics committee which determined that written consent was not required being a retrospective study and waived the need for written consent.

RESULTS

There were 666 primary total hip arthroplasties in the fourteen year period. The male to female ratio was 1:2 and the mean age was 63 years (SD10.4). The three most common indications for the THRA were osteoarthritis (81.7%), fracture of the neck of femur (9.8%) and osteonecrosis of the femoral head (3.8%).

Majority of the implants (96.4%) used were cemented using cement impregnated with an antibiotic (2g gentamycin in every 40g of cement). A variety of implants were used with the three most common implants used being depuy (70%), biomechanica (10%) and tournier (10%).

Patient co-morbidities were investigated as risk factors for the development of infection. Table 1 shows the risk factors and the number of patients affected.

Table 1
Risk factors for infection

Risk factor	No. of patients	(%)	P value
Hypertension	217	32.6	0.735
Diabetes	87	13.1	1.0
Asthma	57	8.6	1.0
CVA	1	0.15	*
Malignancy	1	0.15	*

*Number too small to conduct any statistical tests

None of the risk factors was found to contribute to increased risk of infection.

There were ten cases of post operative surgical site infections giving an overall incidence of 1.5%. Six were superficial while four were deep infections. The six patients with superficial infections were managed with oral antibiotics with no further sequelae. Two patients with deep infection had a debridement procedure while two required removal or revision of the prosthesis.

The risk of infection in patients whose surgeries lasted less than 90 minutes was 1.5% while that of patients whose surgeries lasted 90 minutes or more was 1.4%. This difference was not statistically significant (p=1.0). The risk of infection in patients whose body weight was up to 80 kilograms was 1.5% while that of patients whose body weight was more than 80 kilograms was 2.5%. This difference was not statistically significant (p=0.69).

DISCUSSION

Our results report one of the largest series in the region showing a low rate of early infection in patients undergoing primary THRA.

The risk of post operative SSI in the African setting is low and comparable to other studies in the western world (7, 8). It is however higher than some centres in Europe especially in more recent studies (9). This may be due to the use of more sophisticated methods of infection prevention including the use of laminar flow and space suits in the operating room.

Our study did not identify any risk factors that would have led to the development of early SSI after arthroplasty. Studies have in other centres found that patient co-morbidities may be risk factors for infection (10). Our study did not identify any such association. Though some authors have noted a relationship between increased surgical time and infection, our study did not seem to detect any difference. Increased body weight was also not found to be a risk factor in contrast with other studies (11). A weakness of the study is in its retrospective nature and in the fact that body weight was used instead of the Body Mass Index (BMI).

Our study has shown that primary total hips can be successfully performed in African setting with a low incidence of infection that is comparable to

centres in the developed world. Further studies are needed to determine if this low incidence is replicated across the region and to identify modifiable risk factors that may contribute to the development of infection.

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