Relationship between Theatre Population and Post Operative wound Infection Following Implant Surgeries

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Relationship between Theatre Population and Post Operative wound Infection Following Implant Surgeries

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Abstract

Infection occurring after internal fixation of a fracture is a devastating complication and may be difficult to treat. This was a prospective study to assess the relationship between theatre population and postoperative wound infection (POWI). The theatre population was determined by counting the number of people in the theatre for the duration of the surgery. Wound surveillance was carried out for the patients over a 6-month period postoperatively. The data obtained was analysed using SPSS and PRISM 5 software. Only 9 (9.3%) cases in theatres with more than six persons had POWI. This was not statistically significant. (P=1.0, OR 1.23) We conclude that theatre population up to 6 does not contribute significantly to POWI.

Introduction

Post operative wound infection (POWI) following implant surgery, though relatively uncommon, constitutes a serious problem in surgical practice. Reported incidence rates vary amongst centres. The reported incidence of infection after orthopaedic operations on a broad cross section of patients varies from 0.2 to over 10%.

The main objective of this study was to determine the incidence of post operative wound infection in implant surgery, to assess the relationship between theatre population and the development of POWI.

Methods

Approval for this one year prospective study was obtained from the ethical committee of the National Orthopaedic Hospital, Enugu and informed consent was obtained from the patients. The Hospital is a regional center for management of orthopaedic, trauma, plastic and reconstructive surgery cases. The study included all patients who had implant surgery between the 1st of February and the 31st of July 2007. The patients were followed up for 6 months.

Results

Within the study period, 97 patients met the inclusion
Sixty one (63%) of the patients were males, while 36 (37%) were females (Fig 1). The male to female ratio was 1.7:1. Wound infection occurred in 6 (6.2%) males while 3 (3.1%) females developed wound infection. The difference in infection between sexes was not statistically significant (P=0.805). The age range was 7 to 83 years. The mean age was 38.7 yrs (Fig 2). Two (2.1%) of the infected cases were seen in the twenty four patients aged 1-25 years (Table 1). Four (4.1%) of the infected cases were seen in the fifty one patients aged 26-50 years, while 3 (3.1%) infected cases were seen in the seventeen patients aged 51-75 years. No infection was seen in the five patients aged 76-100 years. The difference was not statistically significant (p>0.05). All the infected cases (9 (9.3%)) had a theatre population of more than six persons (Table 2). None of the cases done had less than 4 persons in the theatre. Three (3.1%) cases were done with 4 – 6 people in theatre and no infection was seen in these groups. The Fisher exact test was used to analyse the relationship between POWI and theatre population. There was no significant contribution from theatre population (P=1, OR 1.23, 95% CI).

Discussion & Conclusion

Postoperative wound infection following implant surgery, though relatively uncommon constitutes a serious problem when it occurs. Postoperative wound infection after internal fixation of a fracture is a devastating complication and may be extraordinarily difficult to treat 1 4,5,6. Various hospitals in Nigeria have reported varying rates of postoperative wound infection following implant surgery. In this study, the infection rate was found to be 9.3%. This figure compares favorably with an earlier result of 15% obtained by Nwankwo et al 7 studying postoperative wound infection after Austin-Moore hemiarthroplasty in this same institution. An earlier study by Onche 3 at the National Orthopaedic Hospital, Igbobi, Lagos State recorded a postoperative wound infection rate of 6.4% following implant surgery. This was lower than the infection rate of 9.3% found in this study. In this study, the theatre population during the procedure was found to be significantly associated with occurrence of postoperative wound infection following implant surgery. Other risk factors which were found to be contributory to development of postoperative infection in other studies including age and sex, were found not to be contributory in this study.

Onche in Lagos found that age was not a significant risk factor. 3 Cruse and Foord 4 on the contrary, reported that patients aged over 66 years were six times more likely to develop wound infection than those aged one to fourteen years while Cronquist et al 9 reported that younger people were at a higher risk of developing surgical site infection.

The sex of the patient was not found to be significantly associated with the risk of developing postoperative wound infection in this study. This is contrary to reports by Moylan and Kennedy 10, who found that sex, influenced the incidence of wound infection with the female sex having a higher wound infection rate.

Ninety seven percent (96.9%) of cases in this study were done with a population of more than 6 persons in the theatre but only nine (9.3%) developed POWI. This is similar to the report by Onche 3 in Lagos who found that theatre population did not significantly affect the risk of developing post operative wound infection, although most cases in his series had less than 6 people in theatre.

In conclusion, we found that increased theatre population does not significantly lead to more postoperative infection. Patient age and sex also have no influence on the occurrence of postoperative infection.

References

7. Nwankwo OE, Eze CB, Onabowale BO, Osisioma ECO. Infection rate using Austin Moore prosthesis for...
Illustrations

Illustration 1

TABLE 1: RELATIONSHIP BETWEEN AGE AND POSTOPERATIVE WOUND INFECTION

<table>
<thead>
<tr>
<th>AGE</th>
<th>INFECTED</th>
<th>NOT INFECTED</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>1-25</td>
<td>2 (2.1)</td>
<td>22 (22.7)</td>
<td>24 (44.8)</td>
</tr>
<tr>
<td>26-50</td>
<td>4 (4.1)</td>
<td>47 (48.5)</td>
<td>51 (52.6)</td>
</tr>
<tr>
<td>51-75</td>
<td>3 (3.1)</td>
<td>14 (14.4)</td>
<td>17 (17.5)</td>
</tr>
<tr>
<td>76-100</td>
<td>0 (0%)</td>
<td>5 (5.1)</td>
<td>5 (5.1)</td>
</tr>
</tbody>
</table>

Chi square=2.08, 3 degrees of freedom  
P=0.557
Illustration 2

TABLE 2: RELATIONSHIP BETWEEN THEATRE POPULATION AND POST OPERATIVE WOUND INFECTION

<table>
<thead>
<tr>
<th>THEATRE POPULATION</th>
<th>WOUND STATUS</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>INFECTED</td>
<td>NOT INFECTED</td>
<td>TOTAL</td>
<td></td>
</tr>
<tr>
<td>&lt; 4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>4 – 6</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>&gt; 6</td>
<td>9</td>
<td>85</td>
<td>94</td>
<td></td>
</tr>
</tbody>
</table>

|                   | 9            | 88           | 97    |
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