Breast reconstruction can be a significant aesthetic and psychological course for responding to cancer and a mastectomy. Implant reconstruction involves placing tissue expanders, implanted balloons that are filled with saline, on the chest wall. The tissue expander is eventually replaced with a permanent implant. The major limitation with implant reconstruction is the high risk for infection, which could require removal of the implant.

• An infection at the surgical site of a breast reconstruction is an adverse potential outcome. If a surgical site infection occurs, the implant could become infected and require future surgery, the prosthesis could be removed, and hospitalization could be necessary. Based on multiple studies, the reported national average for surgical site infection after breast reconstruction surgery is 5.8%.

• There are many variables requiring review in relation to breast reconstruction surgical site infections such as Body Mass Index, hypertension, Current Procedural Terminology case codes, and specific setting variables such as performing surgeon and campus location.

Data/Results

1. CCF Rate of Surgical Site Infections

<table>
<thead>
<tr>
<th>CCF Rate of Surgical Site Infections between May 1, 2012 and May 9, 2013</th>
<th>Number of Total Breast Reconstruction Cases</th>
<th>Number of Breast Reconstruction Cases with Surgical Site Infections</th>
<th>Rate of Surgical Site Infections</th>
</tr>
</thead>
<tbody>
<tr>
<td>425</td>
<td>26</td>
<td>6.12%</td>
<td></td>
</tr>
</tbody>
</table>

2. Weight Levels of Patients with and without Infections

<table>
<thead>
<tr>
<th>Weight Levels of Patients with Infections</th>
<th>Weight Levels of Patients without Infections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obese 58% Healthy Weight 27% Overweight 15%</td>
<td>Obese 35% Healthy Weight 29% Overweight 26%</td>
</tr>
</tbody>
</table>

3. Hypertension Found in Patients with and without Infections

- Hypertension (HTN) Found in Patients with Surgical Site Infections
- Hypertension (HTN) Found in Patients without Surgical Site Infections

4. Comparison of Infection Rate in Current Procedural Terminology Case Codes

5. Instances of Infection/Non-infection by Performing Surgeon

Conclusions

• The Body Mass Index of each patient at the time of the surgery was identified and the weight levels were classified, where a BMI between 18.5 kg/m² and 24.9 kg/m² is a healthy weight, between 25.0 kg/m² and 29.9 kg/m² is overweight, and 30.0 kg/m² and above is obese (based on National Heart, Lung, and Blood Institute values). The data was analyzed with respect to SSI.

• Patient records were screened for hypertension and the data was analyzed with respect to SSI.

• Two types of surgical cases were included in this study. The first Current Procedural Terminology (CPT) code was 19357, which is a breast reconstruction, immediate or delayed, with tissue expander, including subsequent expansion. The second type of case included was 19340, which signifies an immediate insertion of breast prosthesis following mastectomy, mastectomy, or in reconstruction. The case codes were separately analyzed with respect to SSI.

• The performing surgeon for each of the 425 cases was recorded, and the data was analyzed with respect to SSI.

• The surgery location for each of the 425 cases was recorded, and the data was analyzed with respect to SSI.

• The Body Mass Index and hypertension status of a patient will impact a patient's chance of having a surgical site infection after a breast reconstruction. The case codes were separately analyzed with respect to SSI.

• The applicable CPT code does not increase the risk of SSI based on the cases studied. The correlation between surgery location and rate of SSI was also inconclusive.

• A higher rate of infection was found in patients with overweight or obese BMI. A lower rate of infection was found in patients with healthy weight BMI. A patient's BMI is related to the risk of infection in the case studies.

• The majority of the patients with SSI have hypertension, while the majority of the patients without SSI do not have hypertension. This shows that having hypertension can increase a person's risk for infection based on the cases studied.

• No difference was found in the rate of infection for the two CPT codes studied. The applicable CPT code does not increase the risk of SSI based on the cases studied.

• The information regarding rate of SSI based on performing surgeon is inconclusive. Additional information is needed to determine the significance of perforating surgeon and SSI.

• The information regarding rate of SSI based on surgery location is inconclusive. Additional information is needed to determine the significance of location of surgery in relation to rate of SSI.

• There are many variables and risk factors that could be studied to see if they have a relation to surgical site infection. It would be interesting to look at the use of radiation, the use of chemotherapy, a patient's smoking status, the use of alloderm, and the use of prophylactic antibiotics.

Recommendations