



## SURGICAL SITE INFECTION DESPITE ANTI-BIOTIC PROPHYLAXIS IN MASTECTOMY: A CASE REPORT

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### ABSTRACT

*Staphylococcus aureus* is often isolated in surgical site infection (SSI). The efficacy of prophylactic antibiotic in breast surgery has been addressed in several clinical trials. A 46-year-old Malay woman with right breast invasive ductal cancer and a history of gastritis for six years was admitted for right modified radical mastectomy with axillary clearance level II. Axillary drain had been continued for more than one week. Two days after the mastectomy, the patient presented with pus collection with haemoserous discharge, despite treatment with Augmentin. Dressing was not soaked. Pus swab culture revealed *Staphylococcus aureus* sensitive to Cloxacillin, Erythromycin, Cotrimazole and Fusidic acid and resistant to Penicillin G. Tablet Cloxacillin 500 mg was given four times a day for wound infection. Appropriate selection of prophylactic antibiotic is important to reduce risk of infection.

Keywords: Cloxacillin, Erythromycin, Cotrimazole, Fusidic acid

### INTRODUCTION

*Staphylococcus aureus* is often isolated in surgical site infection (SSI). The risk of SSI is low (1 % to 3 %) in clean surgical procedure and use of prophylactic antibiotics is controversial because increased antibiotic use may potentially increase antibiotic resistance and adverse effects such as *Clostridium difficile* associated diarrhea.<sup>1</sup> However, the efficacy of prophylactic antibiotic in breast surgery has been addressed in several clinical trials, with a 65 % reduction in risk.<sup>2</sup> Unlike other clean surgeries, the infection rates for breast surgery appear to be between 3 % and 15 % higher.<sup>3</sup> Breast invasive ductal cancer (IDC) starts in breast's milk ducts and invades the surrounding breast tissue and lymph nodes under the arm. On a mammogram, IDC is usually presented with spikes radiating from the edges or a smooth-edged mass with calcifications in the tumor area. Amplification of the HER2/neu proto-oncogene has been reported to occur in 10 % to 34 % of IDC.<sup>4</sup> Modified Bloom Richardson Grade has also been used as an indicator of cell proliferation in biopsy specimen examination. Since tumors have spread to the lymph nodes in IDC, Modified Radical Mastectomy with axillary clearance level I or II is recommended in most cases. The entire breast and some or all of the lymph nodes under the axilla are removed. A drain is placed to prevent fluid accumulation at the surgical site. Seroma, lymphoedema and bleeding are common complications of axillary clearance. In patients with drainage, the incidence of SSI was reported to be significantly low when being treated with antibiotic prophylaxis.<sup>5</sup> IV Augmentin 1.2 g remains as the first line prophylactic antibiotic in breast surgery. Augmentin covers broad spectrum of bacteria, including gram positive, gram negative, anaerobes and beta-lactamase-producing bacteria such as *S. aureus*.

### Case Presentation

A 46 years old Malay woman with right breast invasive ductal cancer and a history of gastritis for six years was admitted for right modified radical mastectomy and axillary clearance level II. One month ago, the patient underwent a

wide local excision of the breast lump following an increase in breast size to 2.5 x 2 cm and a score of 3 for BI-RADS. The present breast surgery was performed after a biopsy report from the first surgery showed Modified Bloom Richardson Grade 2, ER positive, PR positive, C-erb B2 score 3+. The surgical procedure took about three hours. Upon admission, patient was alert, conscious and oriented. Vital signs and laboratory results were normal. There was no tender, skin change and nipple discharge. Patient had five times pregnancy and one abortion. All the children were breastfed. There was no history of using oral contraceptive pill and no radiation. There was a pain at incision site postoperatively complaint by the patient that is tolerable. There was no back pain, shortness of breath (SOB), numbness and tachypnea. Despite the administration of intravenous Augmentin 1.2 g before surgery pus collection with haemoserous discharge was observed. Patient was given tablet Cloxacillin 500 mg four times a day as empiric therapy for the wound infection. Intravenous Tramadol 50 mg three times a day and tablet Paracetamol 1 g four times a day were given for postoperative pain relief. Axillary drain was continued for more than one week, while breast drain was removed on postoperative day three when the drainage dropped to 20 cc per 24 hours. Pus swab culture revealed *Staphylococcus aureus* sensitive to Cloxacillin, Erythromycin, Cotrimazole and Fusidic acid and resistant to Penicillin G. Patient continued taking tablet Cloxacillin. Patient was not discharged, despite more than one week after the surgery, to monitor surgical site infection.

### DISCUSSION

Intravenous Augmentin 1.2 g had been administered one hour preoperatively but patient still presented with surgical site infection. The elimination half-life for Augmentin is one hour. The surgical duration of three hours has exceeded two times the antibiotic's half-life. To optimize antibiotic use in SSI prevention, re dosing of antibiotic is recommended. Alternatively, a single dose of intravenous Cefazolin 1 g is recommended as prophylaxis because Cefazolin's half-life is 90 to 150 minutes.<sup>6</sup> A reduction in risk of SSI by 81 % was

reported with prophylaxis administration of Cefuroxime in breast surgery.<sup>7</sup> Infection in this patient was most probably due to prolonged presence of surgical drains that should be removed at the earliest possible opportunity to rule out surgical-drain-associated infection. Wound dressing should remain for at least the first 48 hours post-operation to reduce microbial contamination.<sup>8</sup> Patient was also more susceptible to infection as a result of breast surgery for the second time.<sup>9</sup>

### CONCLUSION

Identification of the expected microorganisms in a specific surgical procedure and timing of antibiotic administration are crucial to establish the most effective antibiotic regimen to use. In addition, risk factor of infection has to be ruled out.

### REFERENCES

1. Scottish Intercollegiate Guidelines Network (SIGN). Antibiotic prophylaxis in surgery section 3: benefits and risks of antibiotic prophylaxis 2001; 5: 122-129.

2. AH and MS. Prophylactic antibiotics in breast cancer surgery significantly reduces infection in overweight and obese patients. *2 minute medicine* 2012; 2: 174-9.
3. Bunn F, Jones DJ and Bell Syer S. Prophylactic antibiotics to prevent surgical site infection after breast cancer surgery. *Cochrane Database Syst Rev* 2012; 18: 1-8.
4. Ross JS and Fletcher JA. Her2/neu (c-erbB-2) gene and protein in breast cancer. *Am J Clin Pathol* 1999; 112(suppl 1): S53-S67.
5. Sanguinetti A *et al.* Antibiotic prophylaxis in breast surgery. Preliminary results of a multicenter randomized study on 1400 cases. *Ann Ital Chir* 2009; 80(4): 275-9.
6. Ng D *et al.* Current use of antibiotic prophylaxis in breast surgery: a nationwide survey. *Breast* 2007; 16: 68–72. <http://dx.doi.org/10.1016/j.breast.2006.06.004>
7. Penel N *et al.* Prevention of surgical site infection after breast cancer surgery by targeted prophylaxis antibiotic in patients at high risk of surgical site infection. *J Surg Oncol* 2007; 96(2): 124-9. <http://dx.doi.org/10.1002/jso.20796>
8. Leaper D *et al.* Prevention and treatment of surgical site infection: summary of NICE guidance. *British Medical Journal* 2008; 337: a1924.
9. Tran CL *et al.* Does reoperation predispose to post-operative wound infection in women undergoing operation for breast cancer? *American Surgery* 2003; 69(10): 852–856.

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