

## Case Report

# Robotic Surgery for Mastitis Complicated With Tricuspid Valve Infective Endocarditis: Case Report

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## Introduction

Tricuspid Valve Infective Endocarditis (TVIE) accounted for 5% to 10% of infective endocarditis [1]. The researches of TVIE are increasing due to intravenous drug abusers are more often seen in healthcare settings. However, TVIE caused by mastitis is extremely rare.

According to the definition by the World Health Organization (WHO), mastitis refers to as an inflammatory condition of the breast, possibly accompanied by infection and usually associated with lactation [2]. Mastitis often occurs in postpartum women. Once abscesses form in mastitis, generally surgical incision and drainage are required.

In a joint study conducted by National Yang Ming University Hospital and Heping Fuyou Branch of Taipei City Hospital, it was found that 88% of mastitis in Taiwan was caused by *Staphylococcus aureus*. In which, more than half of them are Methicillin Resistant *Staphylococcus Aureus* (MRSA). According to a study, 77% of patients can be cured from ultrasound-guided drainage without surgery.

It is important to conduct health education to prevent patients from mastitis-associated complications. Once mastitis is complicated with TVIE, profound bacteremia and cardiac valve damage will be frequently accompanied. Early surgical valve repair is necessary to be considered due to Methicillin resistant *Staphylococcus aureus* are often seen. By robotic surgery, rapid postoperative recovery is expected due to the small surgical wound.

## Case

A 35-year-old woman who breastfed complained of fever and chills for 2 weeks. Meanwhile, right breast pain with erythematous change over 11 to 3 o'clock was noted and mastitis was impressed. While admission, vital signs showed that blood pressure was 94/63 mmHg and heart rate was 93/min. Physical examination showed no

## Abstract

Tricuspid Valve Infective Endocarditis (TVIE) is less common than left-sided infective endocarditis. Nevertheless, mastitis may be complicated with TVIE. Valve repair should be considered in this situation due to high probability of Methicillin resistant *Staphylococcus aureus* vegetation. By robotic surgery, postoperative recovery is expected to be rapid owing to the small surgical wound.

**Keywords:** Infective Endocarditis; Tricuspid Valve; Da Vinci Robotic-Assisted Surgery

evidence of cardiac murmur, or marble markings over bilateral legs. Laboratory test revealed leukocytosis (white blood cell, WBC 17900/ $\mu$ l) and elevated C-reactive protein (242.4 mg/L). Echocardiography showed myxomatous mitral valve with mild centric mitral valve regurgitation, mild Tricuspid Valve Regurgitation (TR), a 2.1\*0.9 cm fluttering echogenic mass over posterior leaflet of tricuspid valve. Transesophageal echocardiography showed two fluttering echogenic masses over posterior and anterior leaflet (1.8\*1cm, 1.6\*1cm) and mild TR (Figure 1). Blood culture yielded Methicillin resistant *Staphylococcus aureus*. Thus, antibiotic with Vancomycin [3], was prescribed. However, off-and-on fever and vomiting were still noted.

Due to acute infectious endocarditis with Tricuspid Valve (TV) vegetation, da Vinci robotic surgery was arranged. Vegetectomy in anterior and septal leaflet, TV annuloplasty with 27mm Tailor ring were performed (Figure 2). There are five ports incision wounds over right chest wall. Patient weaned off ventilator 3 hours after operation and started walking training on the second postoperative day. However, skin ecchymosis appeared under Vancomycin. Hypersensitivity to Vancomycin was suspected. Antibiotic was shifted to Daptomycin. Follow-up echocardiography revealed adequate heart function, and trivial residual TR. Daptomycin maintained six weeks for entire antibiotic course. She was discharged without any adverse event.

## Discussion

After TVIE diagnosed, antibiotic treatment is indicated. Furthermore, antibiotic should be continuously administered until infection signs disappeared for 4 to 6 weeks. Blood culture yielded Methicillin resistant *Staphylococcus aureus*. Thus, Vancomycin was prescribed. Due to allergy noted, antibiotic was shifted to Daptomycin. Generally, operative indications for TVIE in the active stage included uncontrolled right ventricular dysfunction due to massive TR, active infection persisted and persistent fever despite antibiotic such as Vancomycin administered over one week.



**Figure 1:** Transesophageal echocardiography revealed vegetation's on anterior leaflet (1.8\*1cm, 1.6\*1cm) of tricuspid valve.



**Figure 2:** Gross view of vegetation located on anterior leaflet of tricuspid valve.

Emergency surgery was indicated in this case because transesophageal echocardiography showed two fluttering echogenic masses over posterior and anterior leaflet (1.8\*1 cm, 1.6\*1 cm) and mild TR (Figure 1). Tricuspid valve repair is currently the most desirable surgical option for patient with TVIE. In this case, valve repair should be considered. It is also necessary to shorten the operation time due to preoperative septic shock in this patient to prevent further complications.

Acute infective endocarditis with Tricuspid Valve (TV) vegetation may be fatal. To prevent from such serious condition, we must find ways to reduce risk factors of infective endocarditis, including prevention of mastitis. There are six methods to prevent mastitis and further complications as the following listed:

1. Acute mastitis caused by lactation should be treated early, such as performing an appropriate breast massage, clearing the milk tube, and treat the fissured nipple.

2. When the course of the disease lasts more than 10 days and with the following symptoms: the skin of breasts turns red, fever persists, pain aggravates, or the lump becomes soft, drainage should be done in time so as to prevent from further deterioration.



**Figure 3:** Incision wounds over right chest wall with maximal 3cm length.

3. Women should use 75% alcohol to clean nipples nearing the end of pregnancy, or wash them with warm water to enhance the elasticity and protectiveness of the breast skin.

4. Regular breastfeeding habit is required. 10-15 minutes feeding time is appropriate. If there is remarkable residual milk, it can be removed by a breast pump or squeezed out by hand.

5. If there is abrasion or fissure on the nipple, it should be treated promptly. If it is purulent, pus must be drained immediately.

6. During postpartum period, it is essential to monitor intake such as protein, vitamins, and trace elements. Additionally, drink adequate water, in a good mood, and ensure adequate sleep are also important. On top of that, once infective endocarditis is diagnosed, it must be treated with a physician to complete the entire treatment process to prevent any associated or deadly complication.

## Conclusion

In Summary, mastitis could be treated easily for women who can continue breastfeeding. However, mastitis may be complicated with bacteremia and cardiac valve damage. Early valve repair is necessary to be considered for the Methicillin resistant *Staphylococcus aureus* vegetation. Postoperative recovery is expected to be rapid owing to the small surgical wound (Figure 3).

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