

## Concomitant Aortic Valve Replacement and Gastrectomy for Gastric Cancer

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### ABSTRACT

A 75-year-old male patient developed hematemesis due to gastric cancer 1 week before scheduled aortic valve replacement for severe aortic stenosis. A gastrectomy was urgently required, but the risk of intraoperative cardiac decompensation was judged as too high because of the severity of his cardiac disease. On the other hand, cardiopulmonary bypass posed an exceedingly high risk of bleeding from the stomach cancer. Concomitant aortic valve replacement and gastrectomy were performed successfully.

### INTRODUCTION

The concomitant occurrence of surgically amenable cardiac disease and primary cancer in other organs is rare. Combined surgical management of patients with coexisting valvular disease and gastric cancer has not been reported thus far in the scientific literature. Quite a few cases of simultaneous open heart surgery and resection for lung cancer have been described [Brutel de la Riviere 1995; Voets 1997]. In most instances, an asymptomatic pulmonary lesion was diagnosed during preoperative evaluation for cardiac surgery. Whether such surgical procedures should be performed as a staged procedure or as a simultaneous intervention has been a matter of debate. The initial reports described a staged procedure, whereas later reports have reported concomitant interventions. The advantages of the simultaneous approach, such as a better quality of life due to an immediate, definitive repair of the underlying diseases, have to be weighed against the greater operative risk of this strategy. The problem is made even more difficult because the extracorporeal circulation used in open heart surgery has been hypothesized to possibly promote the growth and spread of coexistent carcinoma [Yokoyama 1993]. The case we describe deals with

the concomitant management of a severe aortic stenosis and a bleeding gastric carcinoma requiring surgery.

### CASE REPORT

A 75-year-old man with severe aortic stenosis developed hematemesis 1 week before scheduled aortic valve replacement surgery. An immediate gastroscopy evaluation revealed a bleeding tumor, and the histopathologic evaluation of the biopsies demonstrated gastric cancer.

Because systemic heparinization would have induced further bleeding from the gastric tumor, aortic valve replacement as a single intervention was ruled out because of the risk of bleeding from the cancer. According to the American College of Cardiology/American Heart Association guidelines, the aortic stenosis was so severe that noncardiac surgery was considered appropriate only after aortic valve replacement. An isolated gastrectomy would have exposed the patient to an excessive risk of intraoperative cardiac decompensation. Because of the life-threatening hemorrhage, however, gastrectomy was urgently required. Therefore, a concomitant approach was the only possibility. The patient was brought to the cardiac operation room and prepared for both the cardiac and abdominal interventions. The gastrectomy was scheduled first with the option of placing the patient on cardiopulmonary bypass in the event of cardiac decompensation.

A median laparotomy was performed. During the inspection of the abdomen, no further metastases were found. Afterwards, a gastrectomy that included the excision of 8 cm of the esophagus, parts of the duodenum, and the spleen was performed. The esophagus resection was required because of a tumor mass in the distal esophagus. Parts of the tumor were frozen in sections and sent out for histologic evaluation, which revealed an adenocarcinoma with no signs of lymph node infiltration (pT2 N0 M0 R0). The tumor was completely removed. The resection of the spleen was performed for oncologic reasons. During the abdominal intervention, the patient was hemodynamically stable at all times.

After this intervention, a median sternotomy was performed, and cardiopulmonary bypass was instituted. The aortic valve was replaced with a stented bioprosthesis (25-mm size). No abdominal bleeding occurred during the cardiac intervention. After the intervention, the patient was

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transferred to the intensive care unit. He was weaned from catecholamine therapy and mechanical ventilation during the first hours after the intervention and transferred to the cardiac surgical ward on day 2 after the surgery. On day 3 after surgery, a barium passage evaluation showed no emission of the contrast agent; consequently, oral intake was started. Later in the hospital stay, the patient experienced episodes of sinus tachycardia, which were treated with beta-blockers.

Finally, the patient was discharged on day 14 after surgery. At 2 years after the surgery, the patient is free from cardiac symptoms and free from cancer relapse.

## DISCUSSION

The concomitant occurrence of cardiac disease and cancer in other organs is rare [Kaul 2009; Zhang 2009] and represents a dilemma for surgeons. The majority of the cases described in the scientific literature involve lung tumors [Cathenis 2009]. Although concomitant surgery can be beneficial (primarily mentally) for individual patients, the results of the only larger study demonstrated that the survival prospects after simultaneous interventions are worse because of the limited resection of the lung lesion. Nevertheless, there are no clear guidelines regarding a staged or simultaneous approach.

The presented case is the first description of a concomitant aortic valve replacement and gastrectomy for gastric cancer. It is of particular interest because of the urgency of the intervention for the gastric tumor due to the bleeding. The combined approach was deemed the safest option for this patient. Even though the patient was hemodynamically stable during the gastrectomy, a staged procedure was considered too risky. To cancel the concomitant surgery after the gastrectomy and perform the aortic valve replacement at a later date

would have increased the risk of hemodynamic instability in the intensive care unit or on the ward. Apart from that, the patient was stable and prepared for the aortic valve replacement. We therefore decided to proceed with the combined procedure. Concomitant lesions of the heart and the stomach pose a significant challenge to the entire team, but as demonstrated in this report, they can be treated with a satisfying outcome. However, careful preoperative assessment, meticulous strategic planning, a perfect surgical procedure, and excellent postoperative care are basic requirements.

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