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Original Research Paper

Surgery

A RETROPROSPECTIVE STUDY ON THE INCIDENCE AND RISK FACTOR IDENTIFICATION OF STERNAL DEHISCENCE IN PATIENTS UNDERGOING CARDIAC SURGERY- OUR INSTITUTIONAL EXPERIENCE.

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ABSTRACT

Median Sternotomy is an integral part of Cardiothoracic Surgery that has allowed access to the mediastinal and intrathoracic structures. Though a major advantage since its inception, there has been disadvantages as well, most important of which is sternal dehiscence.

Sternal dehiscence is the process of separation of the bony sternum, which is often accompanied by surgical site wound infection and mediastinitis. Sternal wound infection and dehiscence have been reported to occur in approximately 1.0 - 8.5% of cases.

KEYWORDS : Sternal Dehiscence, Sternal Wound Infection, Sternotomy

INTRODUCTION

Median Sternotomy is an integral part of Cardiothoracic Surgery that has allowed access to the mediastinal and intrathoracic structures. Though a major advantage since its inception, there has been disadvantages as well, most important of which is sternal dehiscence.

Sternal dehiscence is the process of separation of the bony sternum, which is often accompanied by surgical site wound infection and mediastinitis. Sternal wound infection and dehiscence have been reported to occur in approximately 1.0 - 8.5% of cases. Risk factors include obesity, diabetes mellitus, chronic obstructive lung disease (COPD), chronic cough from tobacco abuse, steroid therapy, immunosuppression, advanced age, congestive heart failure and respiratory failure. Operative risk factors include single or bilateral internal mammary artery (IMA) harvesting, prolonged operation, excessive hemorrhage, reoperation, break in sterile technique, and the use of an intra-aortic balloon pump (IABP).

Clinical presentation include erythema, fever, tachycardia, increased leukocyte count, serosanguinous or purulent discharge, and sternal instability occuring on days 3–5 postoperatively. An unstable sternum is a risk factor for prolonged ventilation and chest infections in the postoperative period. Management is either conservatively with prophylactic antibiotics and supportive dressings, VAC (Vaccum Assisted Closure) devices or with elective Sternal Rewiring / Banding.

METHODS AND MATERIALS:

Study conducted at Department of CardioThoracic Surgery, Rajiv Gandhi Government General Hospital and College, Chennai. Study period extending from August 2015 to August 2017 over a period of 2 years comprising 1131 patients. Both male and female patients undergoing cardiothoracic surgery in the age group ranging from 15 to 65 years were included. Patients who have already undergone Cardiac and thoracic surgeries and those in the Paediatric age group were excluded from the study.

Basic investigations done in the post-operative period include Complete blood count, ESR, Wound Swab Culture and Sensitivity, Blood Culture, Liver function test, urea & creatinine and Chest X-ray.

RESULTS AND DISCUSSION:

In this Study about 21 patients had Sternal Dehiscence out of 1131 patients. The average age group is 48.14 and there were 12 Male patients and 9 Female patients, the youngest being 15 years and the oldest being 65 years.

Incidence of Sternal Dehiscence in the study group is found to be 1.85 % [21/1131].

Table1: Total no cases with sternal dehiscence

Case Detail/Procedure	No of Patients
CABG with LIMA harvesting	11
Mitral/Aortic Valve Replacement	5
Ventricular septal defect closure	1
Anterior Mediastinal Mass (thymoma)-Thymectomy	1
Ascending Aortic Aneurysm-Interposition Graft	1
Ascending Aortic Aneurysm with BCAV-Bentall's Procedure	1

[Abbreviations : CABG-Coronary Artery Bypass Graft, LIMA-Left Internal Mammary Artery, BCAV-Bicuspid Aortic Valve]

The table above depicts the details of patients and the procedure they underwent. Out of 21 patients, 10 patients had Diabetes Mellitus, 4 patients had documented evidence of sternal wound infection (wound swab culture +ve). 3 patients had Staph.aureus and one patient Streptococcal infection. All treated with appropriate antibiotics. All patients who have undergone CABG had LIMA harvesting and none had Bilateral Internal Thoracic Artery harvesting and all of them had Off-pump procedure. Among the 11 CABG patients, 2 had Double vessel disease and 9 had Triple vessel disease. None had Single vessel disease in the study group. Among the 5 Valve Replacement patients, 3 had Mitral valve replacement, 1 had Mitral and Aortic valve replacement and 1 patient with Aortic valve replacement. 4 of the patients in the study group had COPD (Chronic Obstructive Pulmonary Disease) with long-term steroid medication. 10 patients had Re-sternotomy for re-exploration among the study group- 5 patients from the CABG group, 4 patients from Valve surgery group, 1 patient from Thymectomy. Bleeding in the immediate post-operative period was the primary indication of re-exploration in these 10 patients which was managed in the cardiothoracic ICU.

CONCLUSION;

In this study, the incidence of Sternal Dehiscence is 1.85%. The risk factors identified in the study group are Compromise of Vascularity in CABG patients with LIMA harvesting, Diabetes, Re-exploration, Wound infection and Long-term Steroid in COPD patients.

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