ABSTRACT

In recent decades, new information has arisen regarding sternal healing and extended indications for using rigid plate fixation in patients during cardio-thoracic procedures. Three randomized controlled multicenter clinical trials recently demonstrated positive results after rigid plate fixation, including reduced sternal complications and decreased length of hospital stay. However, redo-sternotomy after sternal reconstruction utilizing rigid fixation has not been previously delineated in surgical literature. This case highlights the technical challenges of performing a median sternotomy for cardiac surgery after sternal reconstruction with bilateral longitudinal plating.

INTRODUCTION

Median sternotomy is the preferred route of access for cardiac surgery. There has been an increase in the number of patients who undergo multiple surgical procedures with median sternotomy. Wound complications resulting in instability of the sternum have contributed to the introduction of various chest closure techniques, such as simple steel wires, stainless steel coils, cables, titanium and synthetic plates, longitudinal plating etc. to enhance the stability of sternal closures in high-risk patients [Robiscek 1977; Zeitani 2006; Francel 2001; Madjarov 2018]. Three randomized, controlled, multicenter clinical trials demonstrated positive results after rigid plate fixation, including reduced sternal complications and decreased length of hospital stay [Tam 2018]. However, redo-sternotomy after chest reconstruction utilizing similar techniques of sternal closure as mentioned above has not been delineated in the surgical literature.

CASE PRESENTATION

A 69-year-old man presented to the emergency department of our institution with unstable angina. He had a history of ischemic heart disease and was subjected to numerous percutaneous coronary interventions and multiple stents. His other comorbidities included hypertension, chronic obstructive pulmonary disease (COPD), hypercholesterolemia, lupus erythematosus treated with long-term steroids, and osteoporosis as previously confirmed by measuring bone mineral density with T-score ≤ −2.5.

It was noted that 5 months prior, the patient was involved in a car accident and admitted to the surgical department with blunt chest trauma and transverse sternal fractures. Due to intractable, severe traumatic chest pain with compromised respiratory mechanics, the patient was offered surgical treatment and underwent uneventful sternal reconstruction with longitudinal plate fixation with prompt resolution of symptoms.

At the time of the current presentation, the patient underwent urgent coronary angiography, which revealed significant two-vessel coronary artery disease, and was then transferred to the cardiac surgery department to subsequently undergo an off-pump coronary artery bypass grafting (CABGx2). Postoperative recovery was uneventful, and the patient was discharged in stable condition on postoperative day 4.

Technical points of a median sternotomy after previous longitudinal plate fixation

a. The technique of sternotomy must be careful and atraumatic. Extensive electro cautery to control bleeding is not well advised as it can cause tissue necrosis and a predisposition to wound complications. Careful attention to aseptic...
Surgical reconstruction with bilateral longitudinal plating in patients with osteoporosis increased structural integrity of the sternum. This technique in our reported case prevented chest complications after re-sternotomy and provided mechanical protection of the fragile sternum.
REFERENCES


