



DANCING WIRES: NEGLECTED EARLY SIGN OF STERNAL WOUND DEHISCENCE?

Cardiovascular

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ABSTRACT

Sternal wound dehiscence is a serious but rare complication of medial sternotomy. Malalignment of the sternum delays bone healing and the loose fragments of bone and wire may damage the heart, making sternal wound dehiscence a surgical emergency. The incidence for sternal wound dehiscence globally is 0.3-4%. The causes of it can be either diabetes mellitus, obesity, chronic bronchopneumonia, old age. We present a case series of four such patients presenting with the classical dancing sternal wires sign. Over a span of three years, four cases of sternal wound dehiscence have been reported post open-heart surgeries. Similar findings of suture-line discharge on check dressing on pod5 were observed. A standard sternotomy closure by steel wires no.6, using 4-5 wires was performed for all patients. From POD 5-7 days they all were found to have central sternal lucency and displacement of 2 or more wires on plain chest radiograph. Debridement of the sternal wound and re sternotomy closure by using the steel wires in a figure of 8 fashion was the proposed treatment in 3 of them and removal of sternal wires with application of VAC dressing was done in one patient. Comparison of all 4 cases with their plain chest radiograph were done. A suture-line discharge should arouse suspicion of a probable sternal wound dehiscence which should be investigated further. A plain chest radiograph is a primary adjunct made available at urban as well as rural health-care setups. Awareness of early subtle signs on a plain chest radiograph can lead to prompt diagnosis and treatment of sternal wound dehiscence which otherwise can lead to an increased risk of mortality and fatality of the patient.

KEYWORDS

sternal wound dehiscence, sternotomy, malalignment, chest radiograph, dancing sternal wires

INTRODUCTION

Sternal wound dehiscence is a serious but rare complication of medial sternotomy. The incidence for sternal wound dehiscence globally is 0.3-4%¹. The most commonly used definition of Mediastinitis as defined by the Center for Disease Control and Prevention (CDC, USA). Other authors proposed a broader definition, including infection of pre-sternal tissue requiring reoperation, Sternal Osteomyelitis and Mediastinitis.² Sternal wound dehiscence leads to prolonged hospital stay and is responsible for in-hospital mortality rates of 8-28%³.

CASE REPORT

Over a span of three years, four cases of sternal wound dehiscence have been reported post open-heart surgeries. Similar findings of suture-line discharge on check dressing on post operative day 5 were observed. A standard sternotomy closure by steel wires no.6, using 4-5 wires was performed for all patients.

Patient 1: This patient is a 56-year-old male who underwent coronary artery bypass graft for multiple vessel coronary artery disease. On post operative day 5 when his dressing was checked, wound gaping with seropurulent discharge was noticed from the sternal suture line. Tenderness over sternum was also present. The plain chest radiograph was taken and which showed malalignment of sternal wires with central lucency. On the post operative day 7 the patient was taken up for re-suturing of the sternum. Post operatively patient was stable and discharged after 7 days when the sternum suture line was discovered to be healthy and chest radiographs showed undisplaced re-sutured sternal wires.

Patient 2: 63 years old female underwent mitral valve replacement for rheumatic heart disease – mitral stenosis. On the post operative day 4, the sternal skin suture dressing was soaked and was found to be gaping with purulent discharge. Consecutive chest radiograph showed minor malalignment of sternal wires. There was no tenderness over the sternum. The patient was taken up for removal of the infected sternal wires and re-suturing of the sternum.

Patient 3: Male patient, 68-year-old was operated for coronary artery disease, performed coronary artery bypass graft. On day 5 post operatively, dressing was checked, suture line seemed healthy but tenderness over sternum was present. Chest radiograph showed malalignment of sternal wires (dancing wires). The sternal wound was formed after day 10 of surgery, debridement was done. The patient was managed conservatively initially, later after 15 days the sternal wires were removed and re-suturing was needed.

Patient 4: Patient 58/female was a case of rheumatic heart disease and

was performed double valve replacement surgery. Similar to previous cases, on pod 5 sternal gaping and wound developed with purulent discharge. Patient was immediately taken up for sternal re-suturing but the sternum looked osteoporotic and re-suturing was difficult with chances of re-occurrence/morbidity. Therefore, VAC (vacuum assisted) dressing was done after removal of sternal wires.

DISCUSSION

In this hospital setup, it has been observed that in the last three years around 518 open heart surgeries were performed. The incidence of sternal wound infection/mediastinitis was 0.77%.

The causes of it can be obesity, diabetes mellitus, bronchopneumonia, bilateral internal mammary artery harvesting or osteoporotic sternum.

Malalignment of the sternum delays bone healing, and the loose fragments of bone and wire may damage the heart, making sternal wound dehiscence a surgical emergency. Morbidity associated with sternal wound dehiscence or mediastinitis is much higher so the patients were managed in the cardiac ICU till the sepsis was resolved. Hospital stay and antibiotic cover were significantly increased for a longer duration. Similar findings of suture line discharge on post operative day 4-5 were observed in all 4 patients. They all were re-explored with debridement of sternal wound and re-suturing or vacuum assisted dressing. Prognosis of these patients were on a positive side, no mortality was noted because of sternal wound dehiscence in the last three years in cases of open-heart surgery, but that does not exclude the fact of high mortality rate due to sternal wound dehiscence.

Figures:



Figure 1: Plain chest radiograph on POD 0 of CABG

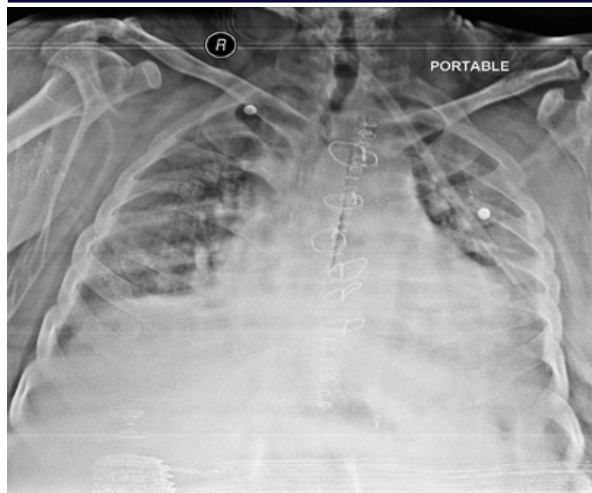


Figure 2: chest radiograph on POD 5, notice the malalignment of sternal wires (dancing wires)



Figure 3: on POD 7, dancing sternal wires with central lucency

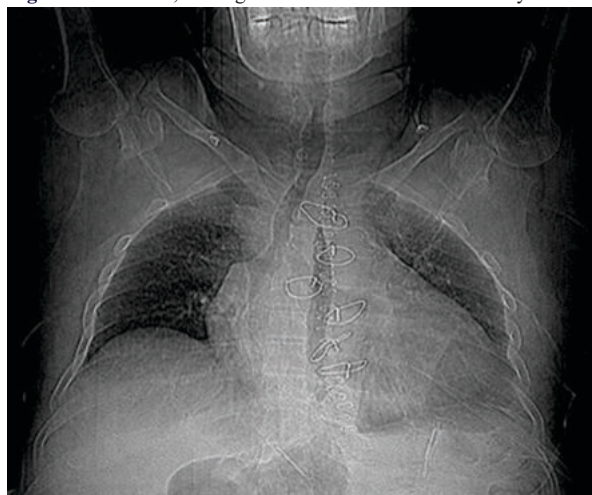


Figure 4: on POD 8, notice the shift of trachea, central lucency and dancing wires

CONCLUSION

Thus, it is easy to diagnose sternal wound dehiscence by just 2 classical signs4:-

- Dancing Sternal Wires (malalignment of wires)
- Central Lucency

A plain radiograph is economically wiser and can be taken daily for consecutive days.

Frequently the radiograph is not very well reported which increases the

chance of misdiagnosis or delayed diagnosis of sternal wound dehiscence or mediastinitis.

Therefore, a plain chest radiograph is a primary adjunct made available at urban as well as rural health-care setups. Awareness of early subtle signs on a plain chest radiograph can lead to prompt diagnosis and treatment of sternal wound dehiscence which otherwise can lead to an increased risk of mortality and fatality of the patient.

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