



ORIGINAL RESEARCH PAPER

Radio-Diagnosis

LARGE HIDDEN SHADOW ON A CHEST RADIOGRAPH - CASE REPORT OF AN INCIDENTALLY DIAGNOSED LARGE SUBXIPHOID INCISIONAL HERNIA.

KEY WORDS: Subxiphoid Incisional Hernia(SIH), Sternotomy, Incidental Diagnosis

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ABSTRACT

Subxiphoid incisional hernias (SIH) are an uncommon but recognized complication following a median sternotomy in cardiac surgeries or after postoperative sternal infections. SIH occurs due to a defect created during median sternotomy, xiphoid excision, sternal dehiscence or incision of linea alba resulting in potential site of weakness in anterior abdominal wall. The defect mainly occurs in the caudal part of the sternotomy that allows protrusion of tissue such as fat or bowel. Many cases are not diagnosed due to asymptomatic nature. This article presents one such case of large subxiphoid incisional hernia with part of transverse colon and mesentery herniating in anterior chest wall which was incidentally diagnosed in pre-operative chest radiograph done for pre-operative workup for a patient with intertrochanteric fracture. The diagnosis was confirmed by HRCT thorax.

INTRODUCTION

According to the European Hernia Society, a subxiphoid incisional hernia (SIH) occurs within 3 cm of the xiphoid process and is classified as a midline (M1) hernia [1]. While common after abdominal surgery, SIH following median sternotomy is less frequently reported. This complication often arises when a sternotomy extends into the epigastrium, weakening the upper abdominal wall [2]. Asymptomatic cases are frequently incidental findings on imaging. Frontal radiographs may show radiolucent bowel shadows overlapping the heart without the "silhouette sign," while lateral views and HRCT are essential to confirm the diagnosis and evaluate the hernia sac and sternal integrity.

Case Report

A 73-year-old obese male presented to the emergency department with intertrochanteric fracture of left femur. There was presence of a clinically visible soft swelling on chest wall at the site of midline surgical scar [figure 1]. Preoperative frontal chest radiograph in AP supine position [figure 2] revealed an abnormal bowel like radiolucent shadow in bilateral paramedian location which showed haustra-like margins without silhouetting of any cardiac or mediastinal borders. Lung fields were normal and there was no mass effect on any intrathoracic structures. Surgical vascular clips corresponding to arterial graft of CABG were seen, however, sternal sutures were not seen. The patient's past medical history revealed prior CABG followed by sternal infection by sutures and subsequent removal of sternal sutures. HRCT thorax revealed the presence of a large hernia sac in anterior chest wall, with herniation of omentum, part of transverse colon and its mesentery [figure 3]. There was a large subxiphoid defect with absence of xiphoid process of sternum. Sternal dehiscence was also seen without any trans-sternal herniation of soft tissues [figure 4]. Owing to asymptomatic nature of the hernia, conservative management was decided for the same as fracture management was required in acute setting. Patient was counselled for elective hernia surgery after the management of fracture.



Figure 1: Clinical Photograph of the Patient Showing Large Swelling in the Region of Anterior Chest Wall with Midline Surgical Scar.



Figure 2: Anteroposterior (AP) Chest Radiograph of the Patient Showing Large Lucency with Haustra-Like Lobulated Margins in Bilateral Paramedian Location Overlying Heart and Lung Fields, Without Silhouetting or Mass Effect. Vascular Sutures are Seen Along Left Heart Border, However, Sternal Sutures are Not Seen.

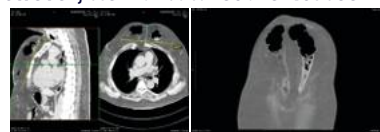


Figure 3: Multiplanar Images Showing a Large Hernia SAC Extending From Subxiphoid Defect Superiorly in Anterior Chest Wall. Loop of Transverse Colon with its Mesentery and Omental Fat are Seen as Contents.

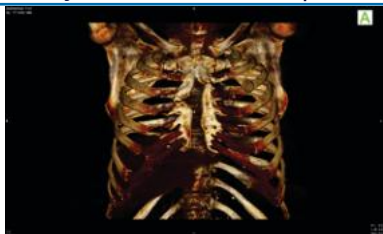


FIGURE 4: 3D-VRT Image of Bony Thorax Showing Post Operative Sternal Dehiscence with Absence of Xiphoid Process.

DISCUSSION

Incisional hernias affect 10%–26% of abdominal surgeries, but the incidence following median sternotomy is lower, ranging from 1% to 4.2% [3]. Risk factors include obesity, male sex, surgical site infections, and technical factors such as the use of absorbable sutures or improper closure [4].

Meticulous evaluation of frontal chest radiographs for overlapping radiographic dense and lucent shadows while applying the concept of chest radiographic signs can help in suspecting occult abnormalities in asymptomatic cases. Additional acquisition of lateral chest radiographs [figure 5] can be very useful in evaluating anterior and posterior chest wall lesions which can be occult on frontal views.



Figure 5: Reconstructed Lateral Radiographic View by Mean Reformatting of CT Images Clearly Demonstrating Presence of Anteriorly Located Large Bowel Loop With Haustral Folds in Extrathoracic Chest Wall.

Computed tomography (CT) provides a definitive diagnosis with surgically relevant information, provides holistic evaluation of underlying structures and impending complications.

Case reports have been described in literature, mainly in cardiac and abdominal surgical journals, focussing on surgical methods of repair, complexities, and outcomes [5–8]. However, to the best of our knowledge, this case report is first of its kind in a radiology journal highlighting the radiographic appearance and pearls for evaluation on cross-sectional imaging that can help the surgeon decide the further management.

CONCLUSION

SIH is an uncommon but significant complication of cardiac surgery. Radiologists must maintain a high index of suspicion when encountering abnormal shadows on chest X-rays in patients with a history of sternotomy. Clinical history and examination coupled with radiological clues can help the radiologists guide the surgeon towards the diagnosis and management of such hidden pathologies, preventing future complications and catastrophic events.

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REFERENCES

[1] Muysoms FE, Miserez M, Berrevoet F, Campanelli G, Champault GG, Chelala E, Dietz UA, Eker HH, El Nakadi I, Hauters P, Hidalgo Pascual M, Hoferlin A, Klinge U, Montgomery A, Simmermacher RK, Simons MP, Smieta ski M, Sommeling C, Tollens T, Vierendeels T, Kingsnorth A. Classification of primary and incisional abdominal wall hernias. *Hernia*. 2009 Aug;13(4):407–14. doi: 10.1007/s10029-009-0518-x. Epub 2009 Jun 3. PMID: 19495920; PMCID:PMC2719728.

[2] Kim HS, Kim KB, Hwang HY, Chang HW, Park KJ. Subxiphoid incisional hernia development after coronary artery bypass grafting. *Korean J Thorac Cardiovasc Surg*. 2012 Jun;45(3):161–5. doi: 10.5090/kjtc.2012.45.3.161. Epub 2012 Jun 7. PMID:22708083;PMCID:PMC3373971.

[3] Chan J, O'Hanlon J, McKenna J, Oo S. Subxiphoid incisional hernias post median sternotomy: A literature review. *J Card Surg*. 2021;36:1050–1055. <https://doi.org/10.1111/jocs.15261> CHAN ET AL. | 1055

[4] Symeonidou E, Gkoutziotis I, Dinas S, Totsi A, Liaretidou E and Damaskos D (2026) Subxiphoid Incisional Hernia Following Cardiac Procedures: A Narrative Review. *J. Abdom. Wall Surg*. 4:15219. doi: 10.3389/jaws.2025.15219

[5] Cohen MJ, Starling JR. Repair of subxiphoid incisional hernias with Marlex mesh after median sternotomy. *Arch Surg*. 1985;120:1270–1271. doi: 10.1001/archsurg.1985.01390350052011. [DOI] [PubMed] [Google Scholar]

[6] Landau O, Raziell A, Matz A, Kyzer S, Haruzi I. Laparoscopic repair of poststernotomy subxiphoid epigastric hernia. *Surg Endosc*. 2001;15:1313–1314. doi:10.1007/s004640090011. [DOI] [PubMed] [Google Scholar]

[7] Eisenberg D, Popescu WM, Duffy AJ, Bell RL. Laparoscopic treatment of subxiphoid incisional hernias in cardiac transplant patients. *JSLs* 2008;12:262–6.

[8] Raakow J, Schulte-Mäter J, Callister Y, Aydin M, Denecke C, Pratschke J, Kilian M. A comparison of laparoscopic and open repair of subxiphoid incisional hernias. *Hernia* 2018;22:1083–8.