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RESEARCH ARTICLE

UNVEILING THE ENIGMA: PORT SITE METASTASIS IN LAPAROSCOPIC CHOLECYSTECTOMY - A CASE REPORT WITH CRYPTIC PRIMARY TUMOR

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Abstract

The phenomenon of Port site metastasis post lap cholecystectomy with incidental carcinoma is common, but reporting of PSM with unknown primary is rare. Our literature search yielded only 4 such cases. We here report the case of a 70-year-old lady with symptomatic cholelithiasis who underwent LC at our institute, 6 months after which she developed a discharging mass at 2 of the previous laparoscopic port sites. The postoperative histopathology of the gall bladder was benign and even after a review of slides yielded no evidence of malignancy. A whole-body PET-CT scan was done for the patient but it revealed no primary tumor. The mass was ultimately resected after the necessary investigations and the defect closed primarily. Postoperative pathology was suggestive of adenocarcinoma with suspected pancreaticobiliary origin.

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Introduction:-

Laparoscopic cholecystectomy (LC) is the surgical treatment of choice for symptomatic gallstone disease (GSD). Postoperatively some of the specimens turn out to be incidentally harboring carcinomas in 0.3-2% of the cases out of which up to 10.3% are associated with metastasis at the port site (1). Port-site recurrences refer to the development of localized tumor growths at the sites of one or more trocars or incision wounds following laparoscopic surgery for cancer (2). There is extensive reporting of port site metastasis (PSM) in almost the entire spectrum of laparoscopic oncological procedures, video-assisted and robot assisted oncological procedures offered for staging or complete resection (3). However, reports of PSM with an unknown primary are rare after LC and our search of the literature yielded only 4 such cases. We report the case of a 70-year-old lady who underwent LC at our center with a benign post-operative histopathology of the gall bladder and presented after 8 months with an ulcero-proliferative growth at the right hypochondrial and epigastric port site

Timeline:
2022-12-23- Laparoscopic cholecystectomy
2023-08-01 Re-visit with discharging mass at the port site
2023-10-20 Wide local excision of the port site metastasis
2024-02-20 Doing well at follow up

Case history
A 70-year-old lady was diagnosed with symptomatic GSD in December 2022 at our center. Pre anesthetic workup was done and an ultrasound examination of the abdomen was suggestive of a single calculus of 8mm in the gall bladder with normal wall thickness and no features suggestive of malignancy. Laparoscopic cholecystectomy was

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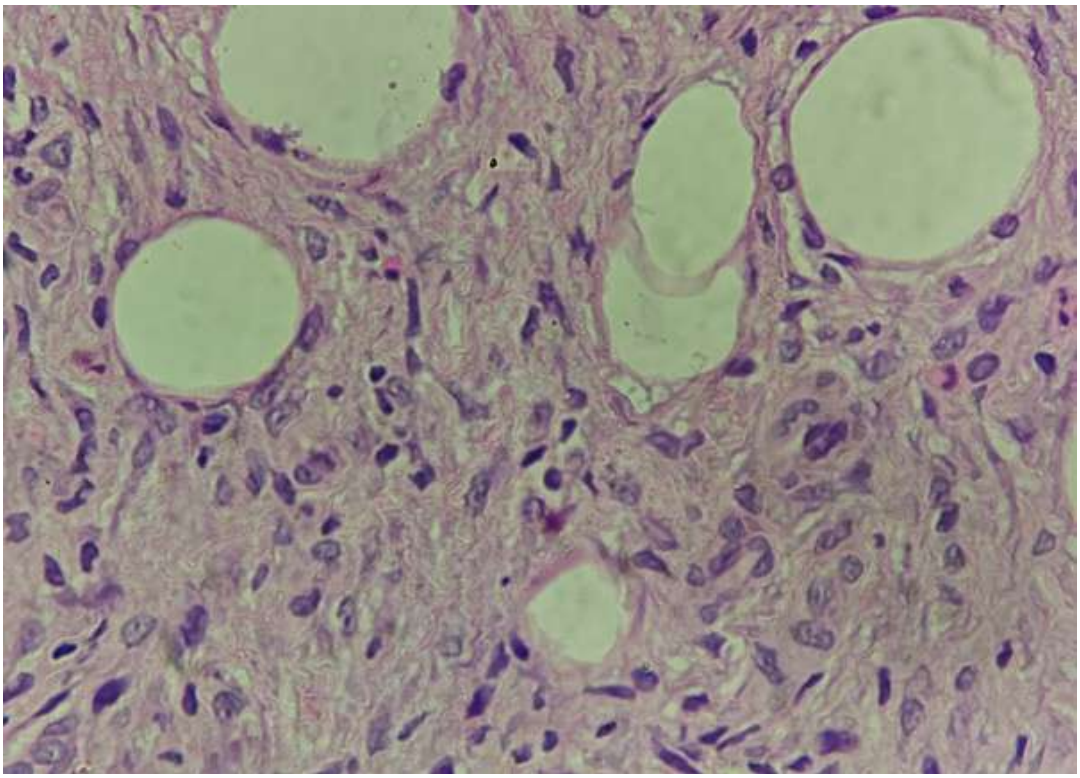
performed and the specimen was extracted without any rupture or spillage from the epigastric port with post-op histopathology suggestive of chronic cholecystitis with cholelithiasis and no evidence of malignancy. 8 months later she developed a mass of around 6x5cm with pus discharge at the epigastrium port site extending to the right hypochondrial port site which was firm, mobile, and non-tender with redness, edema, and ulceration of the surrounding skin. FNAC was performed from the swelling and it was found to be suspicious for malignancy. A core needle biopsy was performed and was suggestive of moderately differentiated adenocarcinoma with cells negative for Pan CK, CD86, and high Ki 67. The slides from the previous cholecystectomy were sent for review and despite repeated sectioning revealed no signs of malignancy. Ultrasound of that region showed a relatively well-defined hetero-echoic lesion of 1.9x2.9x2.9 cm at the site of the swelling in the subcutaneous plane withproximity to the laparoscopic cholecystectomy port site. MRI abdomen was suggestive of a large lobulated mass lesion in the anterior abdominal wall showing solid components with inner cystic areas and necrotic areas, adjacent to the right-sided rectus muscle likely representing a mesenchymal tumor. CECT- whole abdomen was suggestive of a mass lesion seen in the Right hypochondrium in the subcutaneous fat plane. The patient had mild leukocytosis on complete blood count examination with the rest being unremarkable. Antibiotic therapy was initiated for the discharging wound and continued for 7 days. After 7 days she underwent wide local excision of the mass under general anesthesia. The defect was sutured primarily and the excised specimen was sent for biopsy. The post-op histopathology report was suggestive of a 6x5x3.8cm centrally located globular capsulated tumor with all margins free. The cut surface was variegated showing multiple necrotic and cystically degenerated areas with features suggestive of papillary adenocarcinoma. On IHC the tumor cells were positive for CK7 and CEA and negative for CK20 and AMACR, which was suggestive of metastatic papillary adenocarcinoma with possibility of pancreato-biliary / gastrointestinal origin. The deep cavity shave was free of tumor. The post-op period was uneventful and the patient was discharged on POD-3. A whole-body FDG-PET scan was performed after 2 months and it was unremarkable with no areas of increased metabolic activity. The patient is doing well at 5 months follow-up.

Discussion:-

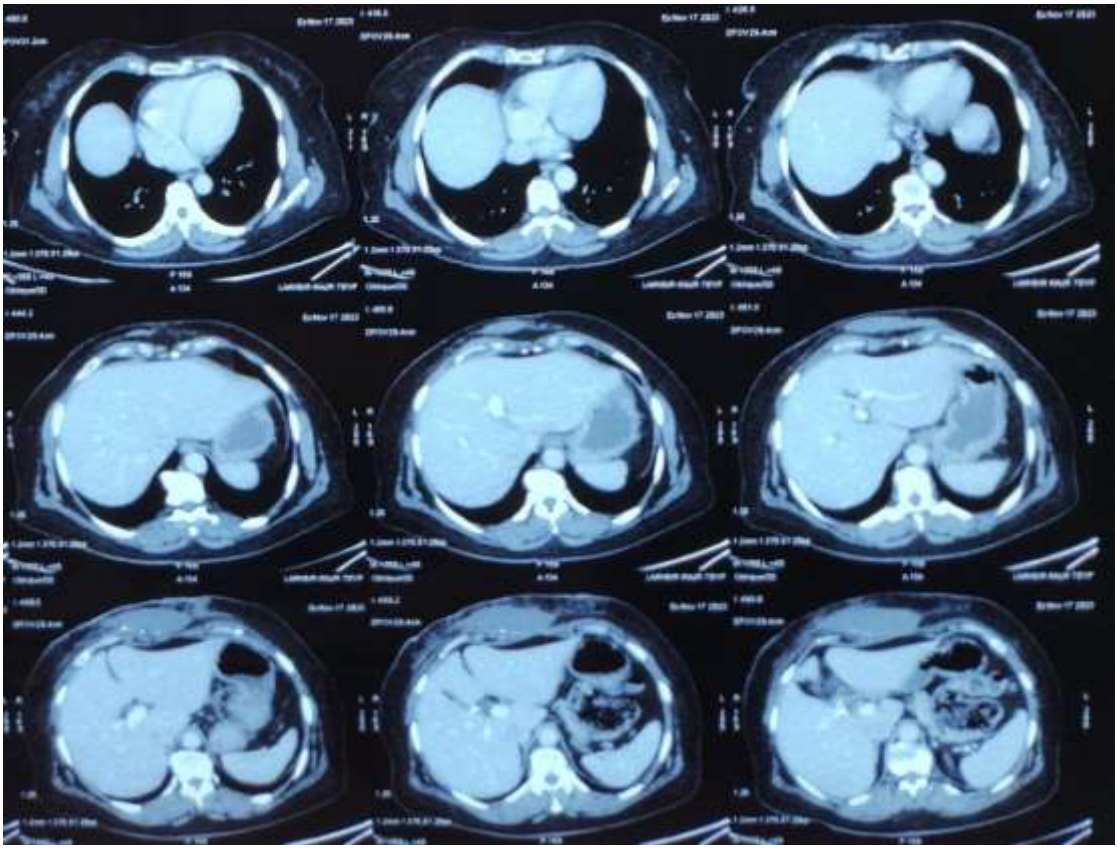
Various mechanisms and probable factors leading to PSM in laparoscopic procedures have been discussed by various authors. Almost all incidents of PSM have been reported in patients undergoing laparoscopic procedures for malignancy or those harboring an asymptomatic malignancy (1). In select cases reported in medical literature, the onset of port-site recurrences following laparoscopic cholecystectomies served as the initial manifestation of carcinoma. Remarkably, upon revisiting archived gallbladder tissue, previously overlooked carcinoma foci were discovered, or the primary tumor was detected outside the gallbladder (4). Our case is particularly unique, as carcinoma was identified at the port site, an unprecedented 8 months after an uncomplicated laparoscopic cholecystectomy performed for benign cholecystitis with the post-op report yielding no evidence of malignancy despite multiple reviews. Although the exact mechanism is unknown, the current literature suggests the possibility of direct implantation of the tumor cells during specimen extraction, CO2 venting out of the port site ("Chimney effect"), specimen rupture with tumor spillage and instrument contamination to be influencing the development of PSM. Although there are reports of PSM from all the possible ports, the operating port is at the highest risk due to trocar injury, continuous instrument manipulation, and tumor cell inoculation (2). Even in our case recurrence was observed at 2 ports, including the port used for extraction of the gall bladder specimen. Even though there are studies suggesting varying incidence rates of PSM after oncological procedures, reporting of PSM in patients undergoing LC with no evidence of malignancy is still unusual. Our search of literature yielded only 4 such cases including the one described by us (5,6). The mean age was 61.5 and all except one were female. The site of metastasis varied and sometimes involved more than one port at a time highlighting the importance of CO2 evacuation with the ports in situ, to mitigate the tumor embolization via the chimney effect. The shortest duration till the development of PSM was 6 months and the longest was 28 months (7,8). Yildirim et al.'s case was unique in having undergone renal transplantation and developed metastasis at the four port sites. The time taken to develop PSM was also the shortest in this case suggesting a possible role of immunosuppression in aggravating the tumor response (8). Also, it is an indicator of the aggressiveness of the initial tumor biology (9). Spillage of viable tumor cells from the gall bladder with gall bladder rupture has been hypothesized as the underlying mechanism for the development of PSM, however, no such event was reported in our case and the post-op biopsy yielded no evidence of malignancy. There was a significant increase in the CEA levels in 2 of the patients but the levels were not mentioned in the rest of the cases including ours. Histopathology of the excised mass in all the cases was suggestive of an adenocarcinoma, with suspected pancreato-biliary origins.

Attachments

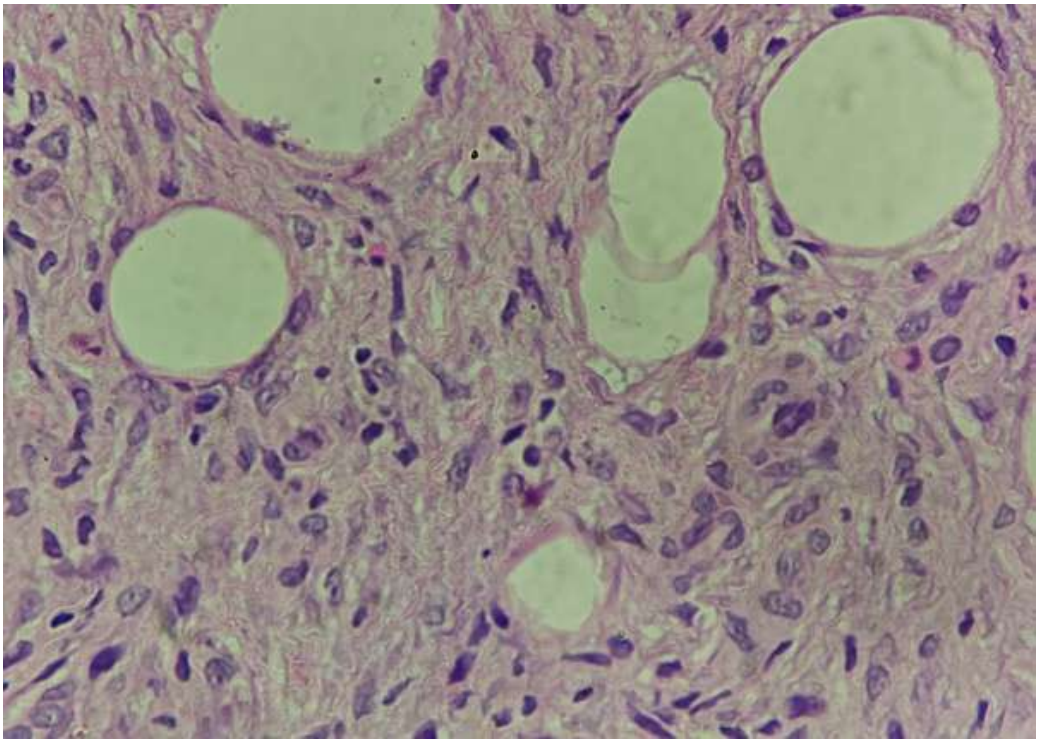
6x5 cm discharging mass at the epigastric and right hypochondrial port site



H&E sections of the wide local excision specimen showing fibro-fatty and fibro collagenous tissue with infiltration by tumor cells exhibiting moderate pleomorphism and conspicuous



CECT scan showing lesion in the anterior abdominal wall on the right side.



Conclusion:-

Case report generated using CARE-writer, care-writer.com 3 of 7 Surgeons adopting laparoscopic procedures must remain vigilant to the potential occurrence of port site metastasis (PSM), which may manifest after a latency period ranging from a few months to three to four years. While various factors contribute to PSM post-laparoscopic surgeries, intraoperative spillage is frequently implicated. The optimal treatment strategy for PSM remains debatable, emphasizing the importance of extended follow-up for patients undergoing laparoscopic procedures to enable early detection. This concern is particularly noteworthy in cases with preoperatively diagnosed gallbladder cancer, where the risk of port site metastases is elevated. Due to the potential for gallbladder perforation and tumor cell seeding during laparoscopy, avoiding laparoscopic procedures and opting for open surgery may be considered the prudent choice for patients suspected of having gallbladder cancer, underscoring the need for careful clinical decision-making in such scenarios.

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The authors declare that they have no conflict of interest.

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