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Unusual Abnormal Communications Leading to Interesting Imaging Findings in Onco-Radiological Practice

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ABSTRACT

An abnormal communication is a connection between two epithelial surfaces such as between hollow organs, skin or vessels. In onco-radiological practice they may occur in association with malignancy due to the primary or recurrent tumor, or in due course of treatment of the tumor by surgery, chemotherapy and radiotherapy. Looking for these abnormal communications and their causes are necessary for further planning, management and follow up of these cases. Computed tomography (CT) is sensitive in detecting , assessing the fistulous tract with positive contrast effect and contrast leak at abnormal sites, changes in the adjacent soft tissue and identification of air foci within the tract. Now, we report a case series of 8 rare, unusual and abnormal communications such as esophago-mediastinal, tracheo-mediastinal, entero-enteric, entero-cutaneous seen in different cancers on CT in our oncoradiological practice in MNJ Institute of Oncology and Regional Cancer Center.

KEYWORDS: Abnormal communication, tracheo-mediastinal, esophago-mediastinal, entero-enteric, entero-cutaneous, oncoradiology.

ARTICLE DETAILS

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Case 1: ABNORMAL COMMUNICATION BETWEEN DISTAL ESOPHAGUS AND PERICARDIUM IN CASE OF CARCINOMA GASTROESOPHAGEAL JUNCTION.

A 60-year-old aged male, presented to emergency department with complaints of cough, chest pain and respiratory distress. He is a known case of carcinoma gastroesophageal junction (GEJ), post radiotherapy. CT was performed with oral contrast which showed asymmetrical wall thickening of GEJ, distal esophagus and an abnormal communication was seen between distal esophagus and pericardium with contrast and air leak into pericardium.

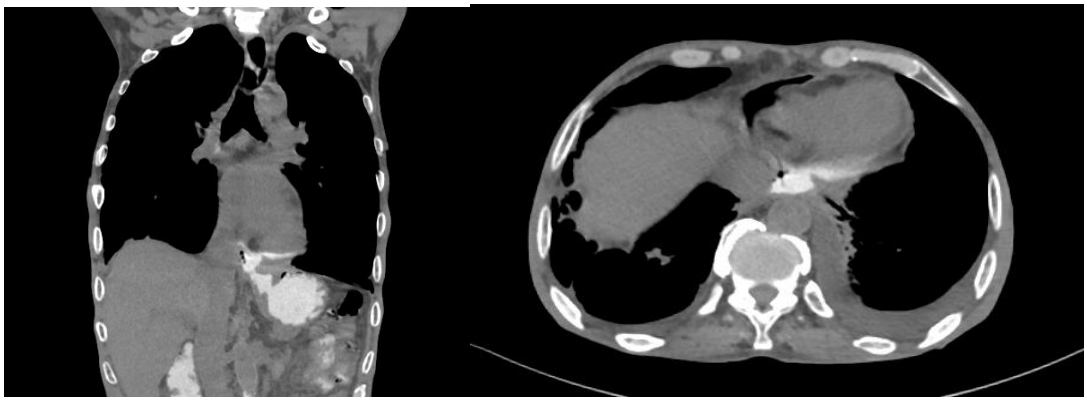

Figure1 (a) 1(b)

Fig 1(a) & (b). Coronal and axial CT with oral contrast shows gastroesophageal thickening and contrast leak into pericardium.

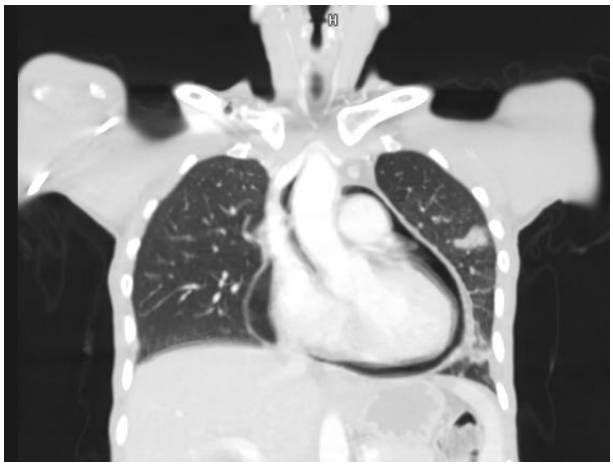

Fig 1(c). Coronal plain CT lung window showing air in pericardial space.

CASE DISCUSSION: Abnormal communication between the GEJ and the pericardium is a rare condition which is generally related to gastroesophageal malignancy or gastroesophageal surgery and more than 50 % of cases present with chest or left shoulder pain [1]. Pneumopericardium is often first discovered by chest X-ray, but it cannot help in coming to certain diagnosis. CT helps in this case by identifying the communication between the gastrointestinal tract and the percardium[2]. If CT scan is negative, then further clarification needed with fluoroscopy [3]. Endoscopy is useful in cases that cannot be identified by contrast imaging and allows localization of a fistula through direct visualization and provides access for biopsy of the lesion[4]. Radiation therapy causes vascular endothelial damage, tumor necrosis, potential adhesion between the gastrointestinal tract and the diaphragm with subsequent formation of abnormal communication[4]. Our patient had received radiotherapy for GEJ carcinoma which resulted in abnormal communication between the distal esophagus and the pericardium.

Case 2: ABNORMAL COMMUNICATION BETWEEN METASTATIC LUNG LESION AND MEDIASTINUM IN A CASE OF CARCINOMA CERVIX.

A 45 year old aged female, known case of carcinoma cervix, post radiotherapy (RT), presented with respiratory distress. Contrast enhanced CT was done showing ill-defined heterogeneously enhancing mass lesion with central cavitations in the left hilar region with abnormal communication of anterior aspect of lung lesion with pericardium causing pneumopericardium and pneumomediastinum.

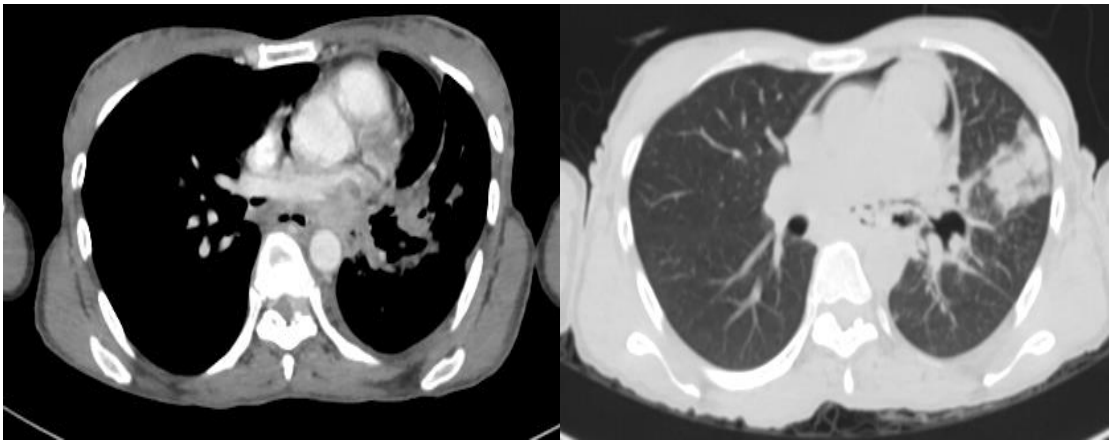

Figure 2(a) 2(b)

Fig 2 (a). Axial CECT showing heterogeneously enhancing cavitating left perihilar lung lesion infiltrating pericardium and encasing aorta for >180 degrees. Fig2 (b) Axial CT lung window showing air leak from the cavitating lesion into pneumomediastinum.

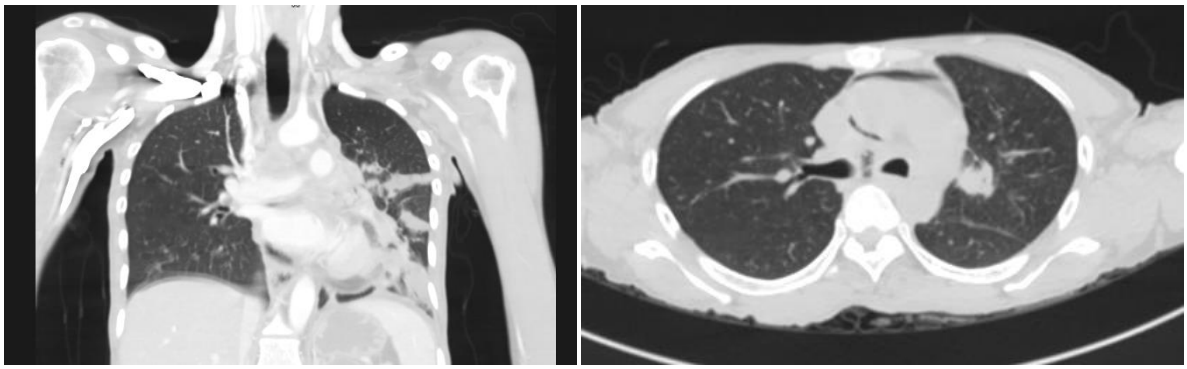

Figure2(c) 2(d)

Fig 2(c) & (d). Coronal and axial CT lung window showing pneumopericardium and pneumomediastinum.

CASE DISCUSSION: Locally infiltrative hilar masses especially necrotic type either may be primary lung or secondary metastasis have a propensity to cause pneumomediastinum, pneumopericardium, pneumothorax though very rare[5]. Usually pneumopericardium is caused by blunt, iatrogenic trauma but malignant infiltrative tumors can cause pneumopericardium and should be suspected in patients who have hilar, mediastinal, gastroesophageal locally advanced tumors and present with shortness of breath[6]. Radiographs can miss small foci of pneumopericardium or pneumomediastinum which may later land up in tamponade. So, CT scan evaluation is needed in these patients. Generally, when a tumor invades the pericardium directly it results in pericardial effusion[7]. When A cavitatory or necrotic infiltrate invades the pericardium can result in pneumopericardium either by causing broncho pericardial fistula or by directly cavitating into pericardium

Case 3: ABNORMAL COMMUNICATION BETWEEN ESOPHAGUS AND CARINA IN A CASE OF CARCINOMA ESOPHAGUS.

A 60-year-old female patient known case of carcinoma esophagus presented with cough. Non contrast CT was performed which showed irregular, circumferential thickening involving mid and distal esophagus with communication between anterior wall of esophagus and trachea at the level of carina. CT chest also show centrilobular nodules with tree in bud appearance.

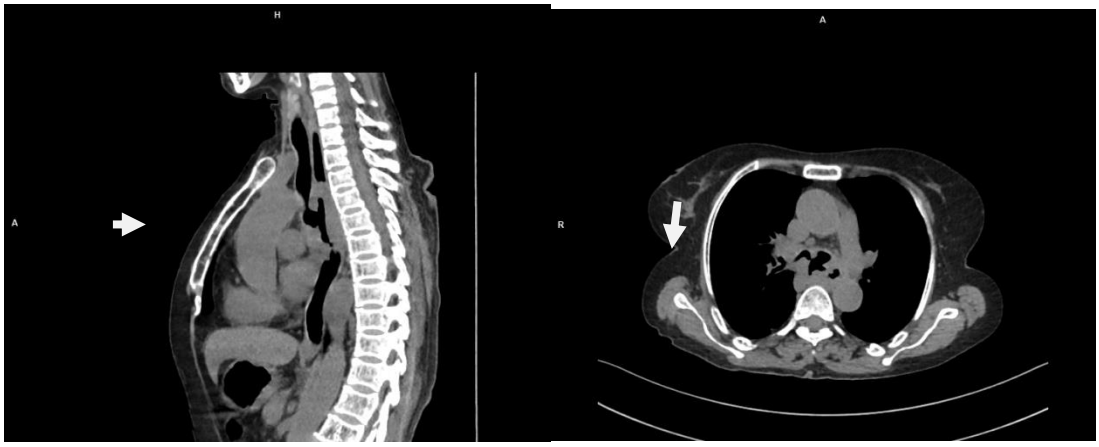

Figure 3(a) 3 (b)

Fig 3 (a) & (b). Sagittal and axial plain CT sections revealing asymmetrical thickening of mid thoracic esophagus with fistulous communication (*bold white arrows*) between anterior wall of esophagus and trachea at the level of carina.

CASE DISCUSSSION:

Lack of serosa of esophagus makes its adjacent structures like pleura, trachea, bronchi, mediastinal structures amenable to injury. The causes of esophago-carinal fistula include trauma, chronic inflammation (like tuberculosis), malignancy, poisoning in adults. In children the cause is usually congenital[8]. The cause of tracheoesophageal fistula due to malignancy is necrosis of tissue and erosion by tumor[9] .The Classical sign of tracheoesophageal fistula is paroxysmal cough and choking while having liquids. Sometimes the Fistulous tract is closed which is difficult to assess on plain CT. Therefore we can use water soluble oral contrast which can also demonstrate smaller fistulae[9]. 3D multiplanar reconstructions can be useful to assess the 3D pathway of fistulous tract. Care must be taken not to use barium oral contrast as it can cause mediastinitis after certain threshold.

Case 4: ABNORMAL COMMUNICATION BETWEEN COLON AND DUODENUM IN A CASE OF CARCINOMA ASCENDING COLON.

A 50-year-old female patient came with abdominal pain. CT was performed which revealed asymmetric circumferential wall thickening in the hepatic flexure, ascending colon infiltrating D2 segment of duodenum and contrast leak from duodenum into hepatic flexure showing abnormal communication.

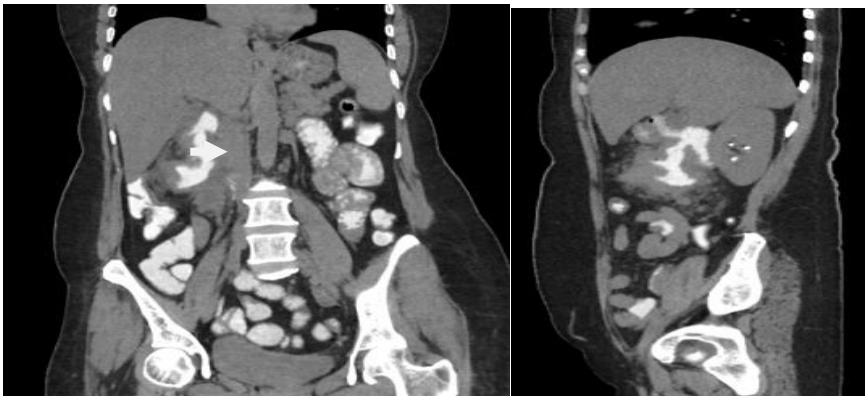

Figure 4(a) 4(b)

Fig 4 (a) & (b). coronal and sagittal sections of CT abdomen with oral contrast study showing asymmetrical thickening of ascending colon, hepatic flexure with abnormal fistulous communication between the ascending colon and D2 segment of duodenum.

CASE DISCUSSION:

Colo-duodenal fistula is an abnormal communication between colon and duodenum. It can be caused by either benign or malignant etiology[11]. In this case, it is caused by malignant thickening of ascending colon and hepatic flexure. The second part of duodenum is laterally associated with hepatic flexure anatomically[14]. Invasive malignancy of hepatic flexure can therefore spread to adjacent second segment of duodenum after an extra serosal invasion. Clinical presentation includes upper abdominal pain, feculent vomiting and diarrhea associated with foul eructation's. The bile that enters the colon from duodenum through the abnormal communication irritates the colonic mucosa and causes diarrhea[12]. The causes of entero-enteric fistulae include Crohn's disease, diverticular disease, Colo-rectal malignancy, radiation enteritis, tuberculosis, actinomycosis[13]. Treatment usually includes right radical hemicolectomy and localized wedge excision of duodenum usually after appropriate chemotherapy cycles[12].

Case 5: ABNORMAL COMMUNICATION BETWEEN RECTOSIGMOID JUNCTION AND SKIN IN A CASE OF CARCINOMA RECTOSIGMOID.

A 48-year-old male patient, known case of carcinoma recto sigmoid junction, post diversion colostomy, post radiotherapy and chemotherapy presented with complains of discharge from anterior abdominal wall. Contrast enhanced CT with oral contrast was performed which showed ill-defined heterogeneously enhancing growth involving rectosigmoid junction infiltrating adjacent mesentery, dome of urinary bladder, extending up to the anterior abdominal wall and skin in suprapubic region causing enterocutaneous communication between the growth and the skin.

Fig 5. Showing heterogeneously enhancing asymmetrical thickened rectosigmoid junction infiltrating anterior abdominal wall resulting in an entero-cutaneous fistula.

CASE DISCUSSION:

Enterocutaneous fistula is an abnormal communication between bowel and skin. Most common causative factors include abdominal surgery, bowel resection following Crohn's, malignancy especially when associated with radiotherapy[15,16]. Any ongoing inflammation can result in enteritis, strictures, abscess or fistula. Radiotherapy can cause microvascular inflammation of abdominal organs and can

result in this pathology causing entero-cutaneous fistula[17]. Spontaneous entero -cutaneous fistula can occur with direct infiltration of the tumor. Bevacizumab is another agent that arrest the healing process and can result in ongoing inflammation resulting in the fistula[18]. Ultrasound is the first imaging choice for fistulas but ileus and post op wounds can make it difficult to clearly delineate the tract. Fistulography can be performed by using a water-soluble contrast injected directly into the fistula. For post radiotherapy patients, en-bloc resection is ideally indicated[16].

Case 6: ABNORMAL COMMUNICATION BETWEEN SIGMOID DIVERTICULA AND SKIN IN A CASE OF CARCINOMA RECTOSIGMOID JUNCTION

A 55-year-old male patient came with complaints of discharge from anterior abdominal wall. He has a past history of surgery for intestinal obstruction. Oral and contrast enhanced CT was performed which showed multiple diverticulae involving the colon with asymmetrical wall thickening and narrowing of the rectosigmoid junction. There is an abnormal communication of the diverticula in sigmoid colon proximal to the thickening with the anterior abdominal wall and associated discharge. On post contrast study, enhancing enterocutaneous abnormal communication noted.

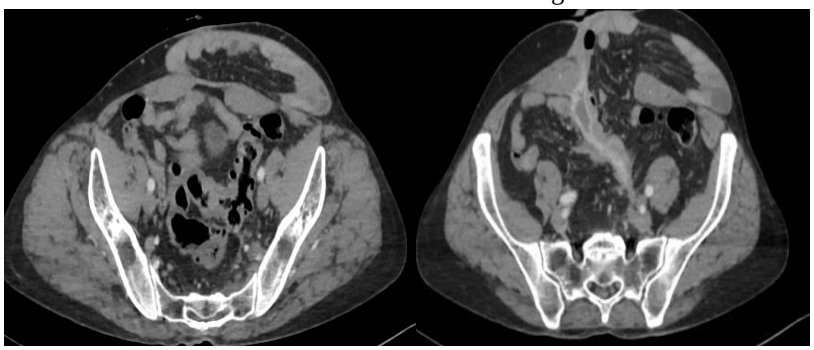

Figure 6(a) 6(b)

Fig 6a). CECT shows asymmetrical wall thickening of rectosigmoid junction and multiple small diverticulae involving rectum and sigmoid colon. Fig 6b) CECT showing enhancing abnormal communicating tract between the diverticulum of sigmoid colon proximal to the rectosigmoid wall thickening and the skin with collection and air foci within the tract.

CASE DISCUSSION:

Three fifths of the population over 60 years develop diverticulosis[19]. It can get complicated with diverticulitis, diverticulitis with peri colitis, pericolic abscess, intra-abdominal abscess, fistula and perforation[20]. Colo-uterine, Colo-salpingeal, Colo-seminal are common fistulae, but colo-cutaneous fistula is very rare and constitutes 1 % of cases[19,20]. There are instances operated colo-cutaneous fistula is due to colon cancer arising in the diverticulum. Therefore, colon cancer arising in the diverticulum should be suspected when there are complications associated with diverticulitis[21].

Case 7: ABNORMAL GASTRO-JEJUNAL COMMUNICATION IN A CASE OF CARCINOMA STOMACH.

A 60-year male patient known case of carcinoma stomach presented with complaints of abdominal pain. No history of previous surgery. Contrast enhanced CT was done showing asymmetrical thickening of cardia, antro-pyloric canal , infiltrating adjacent jejunum causing abnormal communication with contrast leak.

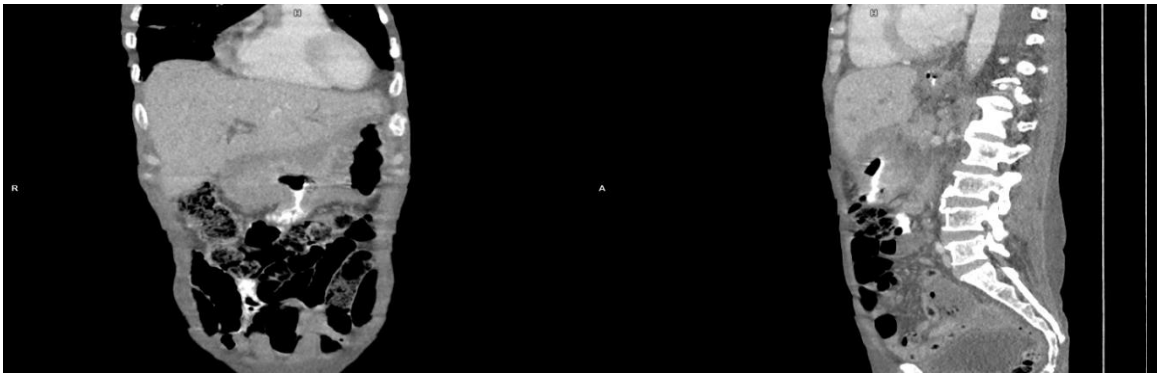

Figure 7(a) (b)

Fig 7 (a) & (b). Sagittal and coronal plain CT sections with oral contrast shows asymmetrical wall thickening of antropyloric region infiltration jejunum with abnormal contrast opacified tract between antropyloric region of stomach and proximal jejunum.

CASE DISCUSSION:

Gastro-jejunal fistulas are rare when compared to gastro-colic fistulas because stomach is separated from jejunum by transverse colon and mesocolon. Therefore, combined gastro-colic and gastro-jejunal fistulas are seen usually[22,23]. The common causes of gastro-jejunal fistulae are ulcers (NSAIDS, H. Pylori), malignancy, gastroduodenectomy for peptic ulcer disease[22]. Spontaneous gastro-jejunal fistulas have been reported in literature[22]. Isolated gastrojejunal fistula without gastrocolic fistula owing to malignancy are very rare[24]. There are instances where gastric cancer can be presented initially with a fistulous communication. Therefore, gastroenteric fistulas should be evaluated for malignancy with endoscopy and appropriate imaging modalities. The distal stomach when involved in fistulous communication can lead to poor nutrition and debilitation of patient[22]. In cachectic cancer patients due to decreased mesenteric adipose tissue, infiltration of gastric cancer through the tissue extending into jejunum is a possibility. Patient can be treated conservatively with total parenteral nutrition and palliative pain control.

REFERENCES

I. V. Azzu, "Gastropericardial fistula: getting to the heart of the matter," *BMC Gastroenterology*, vol. 16, no. 1, p. 96, 2016.View at: Publisher Site | Google Scholar

II. K. Hervik, I. Vognild, L. M. Bjerke, and S. M. Almdahl, "Gastropericardial fistula presenting with cardiac arrest: a case report," *European Heart Journal-Case Reports*, vol. 2, no. 2, 2018.View at: Publisher Site | Google Scholar

III. J. P. Davidson, T. M. Connelly, E. Libove, and R. Tappouni, "Gastropericardial fistula: radiologic findings and literature review," *Journal of Surgical Research*, vol. 203, no. 1, pp. 174–182, 2016.View at: Publisher Site | Google Scholar

IV. Abdullah Rathur, Hussein Al-Mohamad, Jeffrey Steinhoff, Ronald Walsh, "Chest Pain from Pneumopericardium with Gastropericardial Fistula", Case Reports in Cardiology, vol. 2021, Article ID 5143608, 3 pages, 2021. https://doi.org/10.1155/2021/5143608

V. Al-Taweel, Ahmad & Ayub, Adil & Huang, Chyun-yin & Rehmani, Sadiq Saleem & Al-Ayoubi, Adnan & Bhora, Faiz. (2015). Pneumopericardium Leading to Cardiac Tamponade in a Patient with Lung Cancer. The Thoracic and Cardiovascular Surgeon. 5. 10.1055/s-0036-1571360.

VI. Hirani, Samina & Martinez, Carol & Patan, Shajadi & Kavanaugh, Mindie. (2020). Cancer-Related Pneumopericardium: A Case Report and Literature Review. Case Reports in Oncology. 13. 23-28. 10.1159/000504935.

VII. Bussani, R et al. "Cardiac metastases." *Journal of clinical pathology* vol. 60, 1 (2007): 27-34. doi:10.1136/jcp.2005.035105

VIII. Hegde, R. G., Kalekar, T. M., Gajbhiye, M. I., Bandgar, A. S., Pawar, S. S., & Khadse, G. J. (2013). Esophagobronchial fistulae: Diagnosis by MDCT with oral contrast swallow examination of a benign and a malignant cause. *The Indian journal of radiology & imaging*, *23*(2), 168–172. https://doi.org/10.4103/0971-3026.116562

IX. Masarapu, V., Xia, E. & Son, H. Esophageal emergencies: another important cause of acute chest pain. *Insights Imaging* 11, 109 (2020). https://doi.org/10.1186/s13244-020-00915-1

X. Lukens RM, Ono J (1934) Syphilitic tracheoesophageal fistula. Report of a case. Laryngoscope 44:334–339 https://doi.org/10.1288/00005537-193404000-00013Return to ref 37 in article

XI. Hopkins JD. Duodeno-colic fistula. A case report. J Natl Med Assoc. 1965 May;57(3):231-2. PMID: 5898484; PMCID: PMC2610950.

XII. Majeed, T. A., Gaurav, A., Shilpa, D., Preeti, J., Sanjay, S., Manisha, S., Kumar, S. J., & Bhushan, P. B. (2011). Malignant coloduodenal fistulas-review of literature and case report. *Indian journal of surgical oncology*, *2*(3), 205–209. https://doi.org/10.1007/s13193-011-0099-x

XIII. Keighley MRB, Williams NS (1993) Intestinal fistulas. In: Surgery of the anus, rectum and colon. WB Saunders Co Ltd., London. 2, pp 2013–2102

XIV. Butler P, Mitchell A, Healy JC. Applied Radiological Anatomy. Cambridge University Press. (2012) ISBN: 0521766664.

XV. Joyce M R, Dietz D W. Management of complex gastrointestinal fistula. *Curr Probl Surg.* 2009;46(5):384–430. [PubMed] [Google Scholar] [Ref list]

XVI. Felipe de Campos-Lobato, Luiz, and Jon D Vogel. "Enterocutaneous fistula associated with malignancy and prior radiation therapy." *Clinics in colon and rectal surgery* vol. 23, 3 (2010): 176-81. doi:10.1055/s-0030-1262985

XVII. Paris F, Fuks Z, Kang A, et al. Endothelial apoptosis as the primary lesion initiating intestinal radiation damage in mice. *Science.* 2001;293(5528):293–297. [PubMed] [Google Scholar] [Ref list]

XVIII. Wedam S B, Low J A, Yang S X, et al. Antiangiogenic and antitumor effects of

bevacizumab in patients with inflammatory and locally advanced breast cancer. *J Clin Oncol.* 2006;24(5):769–777. [PubMed] [Google Scholar] [Ref list]

XIX. Bahadursingh A.M., Virgo K.S., Kaminski D.L., Longo W.E. Spectrum of disease and outcome of complicated diverticular disease. *Am J Surg.* 2003;186:696–701. [PubMed] [Google Scholar] [Ref list]

XX. Strollman N., Raskin J.B. Diverticular disease of the colon. *Lancet.* 2004;363:631–639. [PubMed] [Google Scholar] [Ref list]

XXI. Kayano, H., Ueda, Y., Machida, T., Hiraiwa, S., Zakoji, H., Tajiri, T., Mukai, M., & Nomura, E. (2019). Colon cancer arising from colonic diverticulum: A case report. *World journal of clinical cases*, *7*(13), 1643–1651. https://doi.org/10.12998/wjcc.v7.i13.1643

XXII. Baek, Il & Doh, Young Seok & Paik, Kyu-Hyun & Jang, Ji-Woong & Kim, Sae & Jung, Sung & Min, Kyeong. (2018). Immaculate Fistulas without Original Sin between the Stomach and the Jejunum. Surgery, Gastroenterology and Oncology. 23. 355. 10.21614/sgo-23-5-355.

XXIII. Choi, S. W., Yang, J. M., Kim, S. S., Kang, S. H., Ro, H. J., Song, K. S., Ha, H. K., Lim, K. W., & Kim, J. S. (1996). A case of combined gastrojejunal and gastrocolic fistula secondary to gastric cancer. *Journal of Korean medical science*, *11*(5), 437–439. https://doi.org/10.3346/jkms.1996.11.5.437

XXIV. Shoji S, Soeno T, Takahashi T. Case of spontaneous gastrojejunal fistula due to gastric cancer. Am J Gastroenterol. 1981 Mar;75(3):218-21. PMID: 7234845.