ISSN No. 2456-4400
Int J Med Lab Res 2022, 7(1):49-52

IJMLR International Journal of Medical Laboratory Research

CASE STUDY

ENCAPSULATED FAT NECROSIS OF THE MESENTERY: SURGICAL INTERVENTION BY INQUISITIVE OBSTRETRICIAN LEADING TO NEWER INSIGHTS FOR THE PATHOLOGIST!

Nidha Gaffoor[1], Archana Shetty[2], Nirupama M[3], Supriya TR[4]

[1]*Senior resident, Department of Pathology, CDSIMER, Harohalli, Ramanagara Taluk Karnataka, India*
[2]*Associate Professor, Department of Pathology, CDSIMER, Harohalli, Ramanagara Taluk. Karnataka, India.*
[3]*Professor & HOD, Department of Pathology, CDSIMER, Harohalli, Ramanagara Taluk, Karnataka, India.*
[4]*Senior resident, Department of Pathology, CDSIMER, Harohalli, Ramanagara Taluk Karnataka, India.*

Received: 25 Jan, 2022/Revision: 20 Feb, 2022 /Accepted: 26 March, 2022

ABSTRACT: Lesions of the mesentery encompass a wide variety of neoplastic and non-neoplastic entities. Being a metabolically active tissue, it is often subject to trauma and ischemia, which in turn can give rise to encapsulated masses. Encapsulated fat necrosis is one such nodular lesion which is often encountered by radiologists. It presents clinically with nonspecific abdominal symptoms, and many a times is discovered incidentally when imaging is done for other obvious pathologies. Though the lesion is known to shrink over time, surgical resection is often done to rule out other mimics, liposarcoma being the closest. Encapsulated mesenteric fat necrosis is a rare lesion and more so uncommonly found in association with pregnancy. Vascular hypoperfusion can be one of the hypotheses, although fetal role cannot be ruled out, especially in obese gravid females. We wish to document one such lesion detected intraoperatively, picked up incidentally suspecting to be a mesenteric cyst in a gravid obese female without history of trauma or predisposing factors, who underwent caesarian section at an institute in rural set up. The case also describes histopathological features of this interesting lesion for the pathologists.

KEYWORD: Fat necrosis, histopathology, liposarcoma, lipoma, Mesenteric cyst

INTRODUCTION:

Intraperitoneal component of the abdominal fat is represented by the greater omentum and mesentery. Being a metabolically active tissue, it can be the tissue of origin for a variety of inflammatory, infective, reparative and neoplastic lesions. Encapsulated fat necrosis is a distinct benign entity first described in breast in 1975 by Schmidt-Hermes and Loskant but can occur anywhere in the body. [1,2]

This lesion characterized by degeneration of the fat, that is secondary to trauma or ischemic insult, the hallmark of which is an outer fibrotic capsule. Alternate terminologies include nodular-cystic fat necrosis, mobile encapsulated lipoma, encapsulated necrosis, or posttraumatic fat necrosis. Causative factors are usually thought to be rapid infarction of adipose tissue secondary to trauma or interrupted vascularization.

Corresponding Author:
Dr Nirupama Murali,
Professor & HOD, Department of Pathology, CDSIMER, Harohalli, Ramanagara Taluk, Karnataka, India

We report one such case of encapsulated fact necrosis in a young female while being operated for a planned elective caesarian section. Though an incidental finding and suspected to be a mesenteric cyst clinically, histopathological examination revealed it to be a case of encapsulated fat necrosis. This case is reported to highlight the histopathology of this lesion which is less known to pathologists and the importance of submitting tissues for histopathological examination (HPE) for the operating surgeons.

CASE REPORT:

A twenty-nine-year-old obese female who had registered for regular antenatal checkup was admitted for delivery under caesarian section. All three trimesters of the current pregnancy and previous history were uneventful with routine medical parameters being within normal limits. It was a term delivery with non-dilatation of the cervix being an indication for caesarian section. Per-operatively, after delivering the fetus, a dark brown coloured cyst was noted by the operating obstetrician. An antimesenteric well-formed cystic mass was seen in the small intestine. A non-compressive lesion was incidentally detected and was suspected to be a hemorrhagic mesenteric cyst, which was excised and sent for histopathological examination.

On gross examination, a single nodular hemorrhagic mass was noted with a small stalk (base) measuring 2x 1.5 x 1 cms. Outer surface showed brownish discoloration with a firm consistency. Cut section showed a well encapsulated mass with outer border being hemorrhagic. The inside of the cavity was solid, grey to yellow resembling fat and fibrous tissue (**Figure 1a, 1b**). Entire cut section of the same was given for processing.

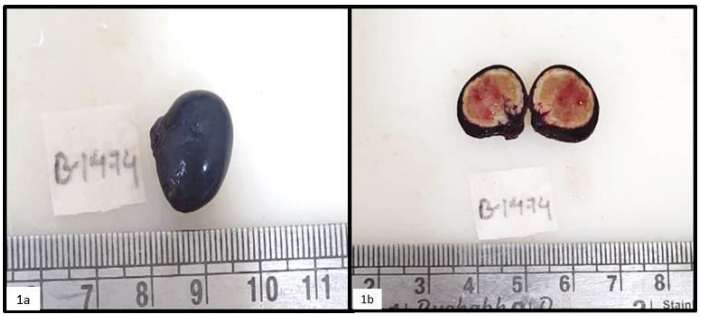

Figure 1a. Encapsulated hemorrhagic nodular mass. 1b. Cut section showing a well-defined lesion with subcapsular hemorrhage.

Microscopic sections showed a well encapsulated nodule covered all over by flattened mesothelial cells. The subcapsular area throughout the lesion showed hemorrhage with good number of small to medium sized congested blood vessels. The tissue beneath, comprised of mature adipose tissue in lobules, separated by fibrous septae (**Figure 2a, 2b**). Focal areas of fat necrosis in the form of loss of nuclei in the adipocytes was noted. Also seen were focal collections of fat globules, histiocytes and macrophages with ingested fat droplets. Mild inflammatory infiltrate was also noted (**Figure 2c**). The base of the stalk comprised of plenty of feeding blood vessels and fibrous tissue.

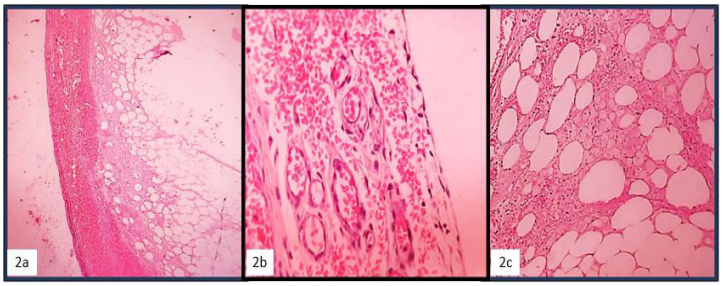

Figure 2a. Microphotograph showing a capsulated nodule with hemorrhage beneath. 2b. Flattened mesothelial lining with congested blood vessels. 2c. Lobules of necrosed adipocytes with fat ingested macrophages.

Based on the above features a final histopathological impression of encapsulated fat necrosis of mesentery (mobile encapsulated lipoma) was conferred.

DISCUSSION:

Fat within the omentum, mesentery, and mesocolon constitute the intraperitoneal compartment and fat in retroperitoneal, preperitoneal, and abdominal wall constitute the extraperitoneal component. Being a metabolically active tissue, it is often subject to a wide variety of neoplastic and non-neoplastic lesions. [3] Symptoms like abdominal pain, vomiting though common, a good number of cases can be completely asymptomatic. Such masses are accidentally detected on surveillance imaging for other obvious symptomatic pathology.

Encapsulated fat necrosis is a rare inflammatory disorder of the fatty tissue, which can exist as an intra-abdominal mass without pancreatitis, trauma, or abdominal surgery, etiology of which is unclear. This entity falls within the umbrella term of 'intraperitoneal focal fat infarction' (IFFI) lesions, a few of which include - torsion and infarction of the greater omentum or epiploic appendage, epiploic appendagitis, perigastric appendagitis, omental infarct, and torsion of fatty appendage of falciform ligament. [3,4]

Ultrasound examination of encapsulated fact necrosis shows a hyper echogenic mass with a very discrete hypoechogenic rim and edematous surrounding adipose tissue corresponding to inflammation. [5] The capsule which enhances with contrast is the hallmark of encapsulated fat necrosis. This appearance mimics liposarcoma and can be differentiated by its noninvasive nature, tenderness on palpation, and either static or progressive decrease in size of the lesion on follow-up. Liposarcomas are commonly retroperitoneal and hence location can also be a useful differentiator. [3] **Table 1** describes the distinguishing imaging and histopathological features of encapsulated fat necrosis and liposarcoma.

Table 1: Distinguishing imaging and histopathological features of encapsulated fat necrosis and liposarcoma

	Encapsulated fat necrosis	Liposarcoma
Imaging	Predominantly affects intraperitoneal fat compartment No organ invasion, tender on palpation. Decrease in size over time.	Commonly retroperitoneal, Organ invasion can be seen Enlarges in size over time.
Histopathology	Fat lobules with histiocytes, hemorrhage and mixed inflammation with an overlying fibrous capsule.	Lipoblasts and atypical bizarre cells with ill-defined borders

Encapsulated fat necrosis can be monitored as an alternative to surgical resection due to its nature of shrinking in size over the time**.** [6] Though ultrasound abdomen was done in our case, it was purely for ante natal follow ups, with no other significant finding being detected throughout the three trimesters. The lesion was picked up accidentally on operative table and resected suspecting it to be a mesenteric cyst which have a soft cystic consistency.

Although the clinical features of encapsulated fat necrosis in terms of imaging is published to a good extent in medical literature, its histopathological features are described in sparse. The microscopic appearance changes of this lesion change over time: firstly, hemorrhagic infarction with fat necrosis is appreciated, followed by infiltration by lymphocytes, histiocytes and fibroblasts, the latter leading to fibrosis and scar tissue formation. [7] As the main cause is infarction of adipose tissue secondary to trauma or interrupted vascularization/ischemia, like in our case, this process histologically initiates the organization of the fatty tissue within a fibrous capsule. [8] Absence of invasion and other classical features help differentiate it from liposarcomas which more often are large retroperitoneal tumors.

CONCLUSION:

Encapsulated fat necrosis of the mesentery is an uncommon lesion attributed to trauma or compromised vasculature. Though self-limiting, importance lies in its precise recognition by radiologists and operating surgeons. The case presented highlights the benign nature and histopathological features for the practicing pathologists. As this was an incidental finding without predisposing factors follow up was not required in post-natal period unlike larger lesions which mandate follow up.

ACKNOWLEDGEMENTS: We thank faculty from the Department of Obstetrics and Gynecology, CDSIMER.

REFERENCES:

[1]. Devos H, Goethals L, Belsack D, De Brucker Y, Allemeersch GJ, Ilsen B, Vandenbroucke F, de Mey J. Fat misbehaving in the abdominal cavity: a pictorial essay. Polish journal of radiology. 2020;85: e32.

[2]. Kamaya A, Federle MP, Desser TS. Imaging manifestations of abdominal fat necrosis and its mimics. Radiographics. 2011;31(7):2021-2034.

[3]. Patil AR, Nandikoor S, Jagannath P, Bansal A. Not Just Fat: Imaging in Abdominal Fat Pathology. Journal of Gastrointestinal and Abdominal Radiology. 2021;4(01):049-57.

[4]. De Kock I, Delrue L. Encapsulated mesenteric fat necrosis. Journal of the Belgian Society of Radiology. 2016;100(1):53.

[5]. Mitrovic M, Velickovic D, Micev M, Sljukic V, Djuric P, Tadic B, Skrobic O, Djokic Kovac J. Encapsulated Omental Necrosis as an Unexpected Postoperative Finding: A Case Report. Medicina. 2021;57(9):865.

[6]. Watanabe J, Osaki T, Tatebe S, Goto K, Endo K, Nakamura S, Hirooka Y. Encapsulated fat necrosis mimicking abdominal liposarcoma: A case report and literature review. Clin Case Rep. 2020; 8:2255–2258.

[7]. Lourenço AL, Lopes Dias J, Marques J, Bernardino V. A Very Rare Case of Mass-Like Mesenteric Fat Necrosis in a Patient with Antiphospholipid Syndrome. GE Port J Gastroenterol. 2021;28(2):139-143.

[8]. Oh HB, Arab N, Teo L, Lieske B. Snapshot in surgery: intraperitoneal encapsulated fat necrosis. Clinical case reports. 2015;3(2):131.

Cite of article: Gaffoor N, Shetty A, Nirupama M, Supriya TR**.** Encapsulated fat necrosis of the mesentery: surgical intervention by inquisitive obstretician leading to newer insights for the pathologist. Int. J. Med. Lab. Res. 2022; 7, 1:49-52 ***http://doi.org/10.35503/IJMLR.2022.7107***

CONFLICT OF INTEREST: Authors declared no conflict of interest
SOURCE OF FINANCIAL SUPPORT: Nil