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Case Report and Review of the Literature

A Giant Pre-Peritoneal Lipoma: A Report of an Uncommon Presentation of a Rare Entity and a Review of the Literature

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ABSTRACT

Background: A lipoma is one of the commonest benign tumors in surgical practice. Lipomas are usually found on the trunk and limbs but less commonly within the abdomen, where they occur frequently in the mesentery as well as the subserosa and submucous layer of the gastrointestinal tract. Pre-peritoneal lipomas are rare.

Case Presentation: A 44-year-old woman presented with a painless and progressive right-sided abdominal swelling of 5 months duration. Examination revealed a 16cm x 14cm slightly mobile and non-tender firm-to-hard hour-glass-shaped mass extending from the right hypochondrial to right iliac and the suprapubic regions. Abdominal ultrasonography showed a 5cm x 6cm bowel thickening in the right iliac fossa suggestive of an ileocecal mass while a computerized tomography showed a 20.8cm x 6.3cm x 20.1cm hypodense mass within the peritoneal cavity, extending from the epigastric region to the pelvis, anterior to the bowel loops and more to the right. At laparotomy, a huge, well encapsulated yellowish mass in the pre-peritoneal space, weighing 1,520g was excised. Histology confirmed a lipoma.

Conclusion: A preperitoneal lipoma is an uncommon soft tissue tumor and the giant ones are extremely rare. Although a rare cause of a painless abdominal swelling, pre-peritoneal lipoma should be considered as a differential diagnosis in patients presenting with an unremarkable feature suggestive of an intra-abdominal pathology.

Background

Lipomas are benign tumors of mature adipose tissue commoner between the ages 40-60 years with a predilection for the male gender [1]. Lipomas may be solitary or multiple, superficial or deep in location and are usually painless. Painful lipomas may be multiple (Dercum's disease) or solitary in which case pain is usually due to a torsion. Superficial lipomas occur commonly in the trunk, head and neck regions and the limbs where cosmetic concerns or pain are indications for their removal. The relatively uncommon deep-seated lipomas occur in the thorax, retroperitoneum or abdominal cavity [2]. Intra-abdominal lipomas usually affect the omentum, mesentery, the submucosa and subserosa of the gastrointestinal tract [3]. Involvement of the preperitoneal layer of the anterior abdominal wall is rare with only 8 cases reported so far in the literature (Table 1) [4-11]. Sanchez *et al.* defined a giant lipoma as one that is at least 10cm in diameter or at least 1000g in weight [12]. Only 1 case of a giant lipoma of the parietal peritoneum (LPP) has been reported by Choi *et al.* [11]. Because of its rarity, we are presenting this case of preperitoneal abdominal lipoma. This case is reported in line with the SCARE criteria for case reports [13].

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Table 1: A summary of case reports on lipoma involving the parietal peritoneum.

s/n	Author / year	Age / gender	Presenting feature	Possible /stated Risk factor	Initial diagnosis	Intra-op findings	Procedure (size)	Reported largest size (& weight) of lesion	LOS (days)	Histology	Follow up
1	Barut [4] / 2006	67y / F	Acute abdominal pain x 4/7	Obesity	NS	Thin-walled soft yellow mass from the parietal peritoneum onto the median umbilical ligament	Complete excision via laparotomy	6cm (NS)	2	Lipoma	1yr
2	Bunker [5] / 2013	34y / F	Right iliac fossa pain x 3/7	NS	-Appendicitis -Ovarian pathology -Renal colic	Torted, pedunculated, parietal wall lipoma in the right iliac fossa + acute hemorrhage; normal appendix	Laparosocpic excision + Appendicectomy	NS (NS)	1	NS	NS
3	Shrestha [6] / 2014	32y / M	Right iliac fossa pain x 1/7	NS	Acute Appendicitis	Torted, pedunculated lipoma, 3cm in size on the right lower parietal peritoneum	Laparosocpic excision + Appendicectomy	3cm (NS)	3	Lobulated adipose tissue Lympoid hyperplasia of appendix	NS
4	Sathyakrishna [7] / 2014	21y / F	Right lower abdominal pain x 1/12	NS	-Appendicitis -Ovarian pathology -Renal colic	A torted, pedunculated lipoma in the right lower quadrant of the anterior abdominal wall	Laparoscopic resection	NS (NS)	1	Infarcted lipoma	NS
5	Bang [8] / 2014	75y / M	Right lower abdominal pain x 1/52, post right hemicolectomy	Operative trauma / intra-op adipose tissue seeding/ high BMI	-Epiploic appendagitis -Dermoid -Lipoma -Liposarcoma	Large, soft, right lower abdominal wall mass; small bowel adhesion	Complete excision + adhesiolysis via laparotomy	6.5cm (NS)	NS	Lipoma	>1yr
6	Salgaonkar [9] / 2016	79y / M	Left lower abdominal pain x 8/12	NS	NS	Large lipomatous lesion apparently arising in the extraperitoneal layer in the left iliac fossa	Complete Laparosocpic excision + cholecystetcomy	6.3cm (NS)	1	Lipoma Chronic cholecystitis	1yr
7	Özemir [10] / 2016	35y /F	Right lower quadrant abdominal pain x 2/7	NS	Acute appendicitis	Pre-peritoneal, torsed and gangreneous lipoma in the right lower quadrant with 40ml of reactive pericecal fluid	Laparoscopic excision	4cm (NS)	2	Lipoma	NS
8	Choi [11] / 2018	36 / M	Urinary frequency x 6/12	NS	NS	A huge, mobile, soft mass in the external peritoneal layer of the lower abdomen	Laparoscopic excision with preservation of parietal peritoneum	22cm (942g)	6	Lipoma	NS

9	Present case	44 / F	Painless Abdominal swelling x 5/12	Not known	Ileocecal tumor	A giant, pedunculated pre-peritoneal mass attached to the midline; had soft and firm areas and weighed 1,520g	Complete excision	20.8cm (1,520g)	4	Lipoma	6mo

LOS: Length of Hospital Stay; NS: Not Stated.

Case Presentation

A 44-year-old woman presented with a painless but progressive right-sided abdominal swelling of 5 months duration. She had no history suggestive of gastrointestinal bleeding or change in bowel habit. There was no preceding history of abdominal trauma or previous abdominal surgery. She had no personal or family history of malignancies. Examination revealed a full abdomen with an hour-glass-shaped, non-tender, slightly mobile mass extending from the right hypochondrial to right iliac regions and extending medially to the suprapubic region. It measured 16cm x 14cm. The mass was firm in consistency and extended below the pubic ramus. Vaginal and rectal examination findings were normal.

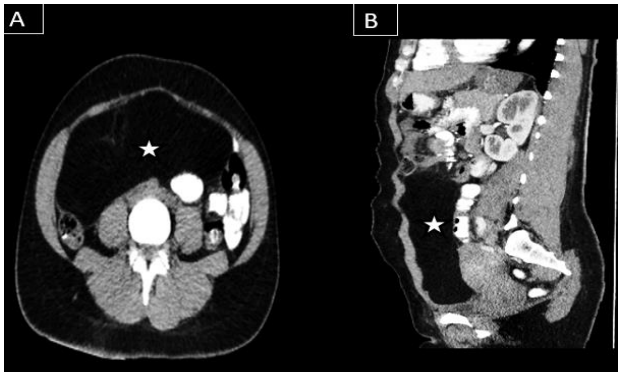

Figure 1: A) Axial computed tomography image of the abdomen taken at the level of the mid abdomen showing huge well-defined homogenous fat-density mass (star) deep to the anterior abdominal wall muscles. The mass is seen exerting some mass effect on the bowel loops. **B)** Sagittal computed tomography image of the abdomen showing the same mass (star) deep to the anterior abdominal wall muscles displacing the intra-abdominal structures around it. No features of infiltration are seen.

An abdominal ultrasonography that showed a 5cm x 6cm bowel thickening in the right iliac fossa suggestive of an ileocecal mass. A computerized tomography showed a 20.8cm x 6.3cm x 20.1cm hypodense mass within the peritoneal cavity, extending from the epigastric region to the pelvis, anterior to the bowel loops and more to the right. It had multiple thin internal non-enhancing linear densities in keeping with fibrous septations (Figures 1A & 1B). At exploratory, the findings were an encapsulated giant pre-peritoneal yellowish soft mass with a thin capsule attached to the umbilicus by a short stalk (Figure 2A). The parietal peritoneum which formed the capsule of the mass was opened (Figure 2B) and the mass was completely excised. The resected specimen (Figure 2C) weighed 1,520g and measured 20cm x 6cm x 18cm. She was discharged home on the 4th post-operative day. Histology of the resected specimen (Figures 3A & 3B) showed a lipoma. She remains in good condition 6 months post-operatively.

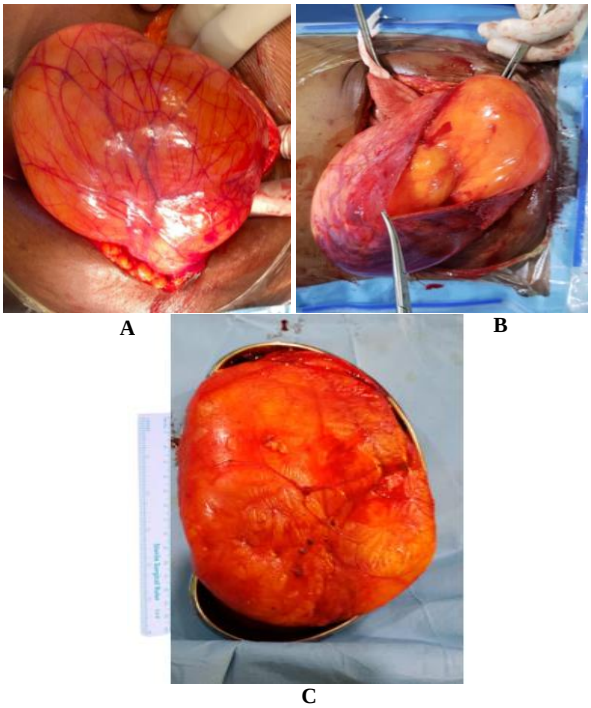

Figure 2: Intra-operative findings: **A)** Mobilization of the giant mass. **B)** Opening of the thin capsule of the mass prior to excision. **C)** Resected specimen.

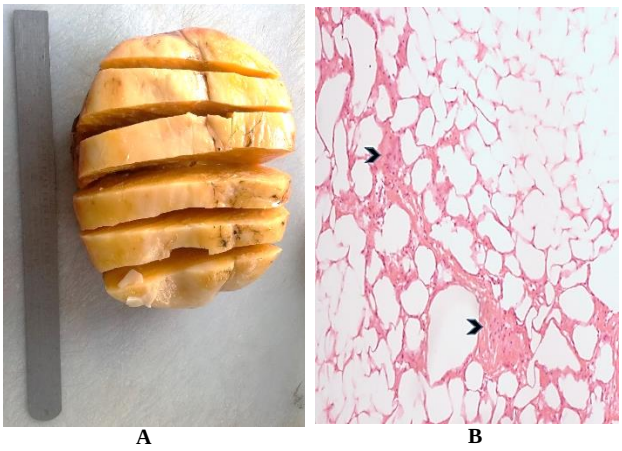

Figure 3: A) Gross appearance of specimen, **B)** H & E stain at x 400 magnification showing lobules of mature adipocytes separated by intervening fibrous stroma (black arrow heads).

Discussion

Lipomas are one of the commonest superficial lumps in surgical practice, especially the subcutaneous lipomas [14]. Deep-seated lipomas are unique in being obscure, at higher risk of malignant transformation and rare [15-17]. The incidence of LPP is rare with only 8 cases reported in the literature. Out of these, 7 cases presented with an abdominal pain while the remaining case presented with urinary frequency (Table 1). We had a case of a painless giant pre-peritoneal lipoma that presented with progressive abdominal swelling.

Although a slight predilection for males had been noted in the developed clime, recent studies done locally showed a slight female preponderance, similar to reports about 3 decades ago [18-21]. Lipomas are usually asymptomatic in nature. Patients only present when pain or cosmesis becomes a concern. This insidious nature of presentation makes them unnoticed especially when deep-seated, manifesting only when they grow big enough to cause pain or when there is a torsion of even a small but pedunculated lesion. Other patients had features of urinary frequency [11]. Our patient is the first where an obvious abdominal swelling was the only presenting feature of an LPP. Lipomas grow slowly over time except there is a malignant transformation. Yet the duration of symptom in our patient was just 5 months for a lesion that well qualifies as a giant lipoma. One explanation for this is the deep nature of the lesion and the fact that it was not torsed.

Whilst the diagnosis of superficial lipomas can be made clinically, that of deep-seated lipomas requires an extreme level of suspicion. Clinical manifestations depend on the size and location of mass. Symptoms are few or absent. Pain may be caused by partial or complete intestinal obstruction, torsion or volvulus. Ultrasonography depicts these intra-abdominal lipomas as well-defined homogeneous, echogenic masses. Computed tomography depicts intraabdominal lipomas as masses with low attenuation like adipose tissue. In most cases, the diagnosis is made intra-operatively, as seen in the previous case reports, including ours. In this patient we considered a diagnosis of Ileocecal malignancy which is the commonest cause compared to other causes painless right-sided abdominal swelling (ileocecal tuberculosis, Crohn's disease, amoeboma, tubo-ovarian and renal pathology).

An important differential diagnosis of a lipoma is an atypical lipoma/well-differentiated liposarcoma which is known to possess similar features with a giant lipoma: they both have a variable consistency, are usually non-tender, and both show positivity for vimentin and S-100 protein on immunostaining [22]. Molecular testing has been recommended by Zhang *et al.* for relapsing lipomas, lipomas with cytologic atypia and large lipomatous tumors (>15cm) without cellular atypia like ours [23]. However, molecular evaluation is not readily available in many developing countries. Hence, the possibility of these lesions being malignant, especially the deep-seated ones, should always be considered. Consequently, complete surgical excision of such lesions should be performed. This reduces the possibility of relapse, if the histopathological examination suggests a malignancy. To the best of our knowledge, the only case of a giant LPP in the literature was reported by Choi *et al.* which measured 22 x 16 x 7.5cm and weighed 942g [11]. Our report is the second reported case of a giant LPP and the first with a weight of up to 1,520g.

It is noteworthy from the case reports under this review that adipose tissue tumors of the parietal peritoneum are usually pedunculated, situated in the right lower quadrant of the parietal peritoneum of the anterior abdominal wall, amenable to complete excision with good post-operative outcome and are usually benign. We postulate that the weight of the lipoma on the thin parietal peritoneum in supine position and the effect of gravity in erect position may explain the pedunculated nature and predilection of LPP for the lower abdomen respectively, but not the right-sided preponderance.

We recommend a uniform nomenclature for these lipomas in the vicinity of the parietal peritoneum. Most reporters of this surgical entity have used the term "lipoma of the parietal peritoneum" while the rest used the terms "parietal wall lipoma" and "preperitoneal lipoma" [4-11]. We propose the use of the term "preperitoneal lipoma" as used by Ozemir *et al*. This is because the preperitoneal layer, otherwise called the endo-abdominal or extraperitoneal fat is the deepest layer of the anterior abdominal wall overlying the parietal peritoneum. Since the tissue of origin of this lipoma is in this layer of the abdominal wall, and not the parietal peritoneum (which is just a layer of mesothelial cells), it would be more appropriate to associate its nomenclature with the anatomical tissue of origin.

Conclusion

A preperitoneal lipomas is an uncommon soft tissue tumor and the giant ones are extremely rare. Although a rare cause of a painless abdominal swelling, a pre-peritoneal lipoma should be considered as a differential diagnosis in patients presenting with an unremarkable feature suggestive of an intra-abdominal pathology.

Author Contributions

Each of the authors has significantly contributed to the design, data acquisition and analysis, data interpretation and final editing of the submitted manuscript.

Ethical Approval

Ethical Approval was obtained.

Consent

A written informed consent was obtained from the patient to report this case.

Conflicts of Interest

None.

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