Computerized Tomography providing definitive diagnosis of Colonic Lipoma: A Case series

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Background:

Lipoma of the large intestine is a rare, benign fatty tumor. Reported incidence ranges between 0.2% and 4.4%\textsuperscript{1}. Lipomas of the large intestine represent the third most common benign tumors after hyperplastic and adenomatous polyps\textsuperscript{2}. The most common site for lipomas in the large intestine is the right hemi colon. They arise from the sub mucosa in approximately 90% of cases\textsuperscript{3}. Colonic lipomas are benign adipose tumors that are rarely symptomatic and are usually detected incidentally during colonoscopy. Gentle palpation with a biopsy forceps reveals the soft nature of the sub mucosal mass. A biopsy specimen of the mucosa may reveal underlying fat, the so-called naked fat sign. As with lipomas in other locations, colonic lipomas may cause pain but can also present with intestinal obstruction or intussusception.

Most colonic lipomas are asymptomatic requiring no treatment. Only 25% of patients with colonic lipoma develop symptoms, including bowel obstruction and intussusception\textsuperscript{4}.

Case Presentation:

Case report 1

A 49-year-old woman was referred by her GP with intermittent colicky abdominal pain. She denied any rectal bleeding but complained of possible change in bowel habit over last three months. She did not have any significant past medical history. She previously had laparoscopic appendicectomy. No significant findings were obtained on abdominal examination. She underwent a barium enema which revealed a large polypoidal mass causing incomplete obstruction. A colonoscopy examination was carried out to evaluate the lesion further. It was assumed that the lesion was in the hepatic flexure. The macroscopic appearance was that of a large suspected malignant looking mass which was causing near complete obstruction. It was not possible to negotiate the scope beyond the lesion and the biopsies were inconclusive. Therefore a CT colonography was arranged which showed a 9 cm colonic mass. Patient underwent laparoscopic extended
right hemoileectomy for a tumour seen in the mid transverse colon. Macroscopically the lesion appeared like a lipoma and the histology confirmed the diagnosis of colon lipoma.

**Case report 2**

A 65 years old man was referred to the surgical outpatient clinic with a history of altered bowel habit & rectal bleeding. He had a six months history of passing excessive flatus and mucus per rectum. In the past, had undergone an open right adrenalectomy for phaeochromocytoma. Abdominal examination including rectal examination was unremarkable. Routine blood investigations were normal. Stool cultures and faecal occult blood was negative. Colonoscopy showed a large sessile tumor 45 cm from the anal verge (Figure 1). Biopsy of the lesion revealed ulcer slough and granulation tissue. Patient underwent CT scan of abdomen and pelvis, which showed an 8cm long intussusception of the sigmoid colon with a 3.5 cm well defined rounded lesion of fat density acting as a lead point. The radiological diagnosis was a definitive sub mucosal lipoma causing intussusception (Figure 2). There was marked proximal colonic faecal loading with no evidence of dilatation to suggest obstruction (Figure 3). Diagnosis of colonic lipoma causing a sizable sigmoid intussusception & no evidence of metastatic disease was made. As the lipoma was large, laparoscopic assisted limited sigmoid resection was performed as a definite treatment. Macroscopic assessment of the specimen revealed a 4 cm sub mucosal mass with ulceration of the mucosal surface (Figure 4) with scarring on the serosal side and there was full thickness invagination of the bowel wall leading to intussusception. It was clear that if endoscopic removal had been attempted this might have led to full thickness damage to the sigmoid leading to perforation or bleeding. Histopathological assessment of the resected specimen revealed a 3 cm benign sub mucosal lipoma with overlying mucosal ulceration with no extension into the muscularis propria. Patient was discharged five days post procedure with no complications.
Discussion

Generally colonic lipomas are minimally symptomatic or asymptomatic. Lipomas larger than 20 mm are likely to be symptomatic. Clinical features are non-specific for an accurate preoperative clinical diagnosis. However few investigations show characteristics findings and can guide in the management appropriately.

Colonoscopy may allow direct visualization of the submucosal lipoma, which appears as a mass covered by normal mucosa, and some of endoscopic features have been described. It may show a mass with tenting sign of mucosa (on grasping the overlying mucosa). Closed biopsy forceps can indent the mass and as pressure is withdrawn tumor resumes its original shape (Pillow or cushion sign). Fatty tissue may protrude after biopsy of the colonic mucosa (naked fat sign). However at colonoscopy there may be mucosal ulceration mimicking a carcinoma. Barium enema may show ovoid well-demarcated filling defect. Tumor can deform because of external pressure or peristalsis (squeeze sign). CT and other cross-sectional imaging can provide a definitive diagnosis and is not operator dependent and clearly reveals the characteristic fatty densitometric features of lipomas. Most lipomas demonstrate homogenous fatty density with thin fibrous septa, depending on the tumor size. If prominent fibrous septa and nodularity are evident, the most important differential diagnosis is liposarcoma. Recent reports in the literature have suggested that abdominal CT scanning is the preferred non-invasive radiologic modality for diagnosing intussusception from colonic lipomas.

However for small lipomas diagnostic value of CT is low. Endoscopic ultrasound has been shown to assist in the diagnosis and guide snare polypectomy of small colonic lipomas but needs expertise in both colonoscopy and imaging. Biopsy often done does not provide a confirmatory diagnosis as the lesion is in the sub mucosal layer. Non-diagnostic biopsies generally lead to surgical intervention.

For symptomatic patients with large lipoma i.e. > 3 cm endoscopic removal is associated with increased morbidity. This is mainly because fatty tissue does not conduct electricity & the energy used to snare may lead to damage to the bowel wall with subsequent perforation. It should only be attempted if can be done safely mainly for small and pendunculated polyps. Those with broad base are best managed by surgical
Extent of surgery can be limited if an accurate pre-operative diagnosis is made. Asymptomatic small lipomas may be kept under regular surveillance as it remains uncertain whether small lipomas grow to become bigger & symptomatic tumors & as most important differential diagnosis is liposarcoma despite few reports of gastrointestinal liposarcoma in literature. We recommend symptomatic large colonic lipomas (> 3 cm) be dealt by laparoscopic colonic resection. Preoperative abdominal CT assists with definitive diagnosis; hence surgical resection can be limited to the resection of the tumor. This case series emphasizes the importance of CT in providing the definitive diagnosis of submucosal colonic lipoma.

**Role of CT:**

In patients with symptomatic colonic pathology and in the absence of emergency situation the preferred diagnostic study is abdominal CT scan. The need for immediate definitive diagnosis outweights the concerns regarding ionizing radiation. The effective dose for CT scan is usually expressed in Sieverts (Sv). A conventional abdominal x-ray examination results in a dose to the stomach of approximately 0.25 mSv, which is at least 50 times smaller than the corresponding abdominal CT scan. Reliable detection of other conditions enables their appropriate further management and avoids unnecessary or unwarranted surgery, it also allows more comprehensive patients counselling and permits elective planned surgery. CT characteristics of lipoma include a spherical or ovoid shape; smooth, sharply demarcated margins with thin fibrous septa; and homogeneous fatty density.
Conclusion

Colonic lipoma is a rare condition, which can be confirmed by cross-sectional imaging. Since no specific symptoms and physical signs are available, accurate clinical preoperative diagnosis is difficult to achieve. Regarding the age and symptoms of these patients, malignant colon tumors are often considered. With the advancement in cross-sectional imaging characteristic findings of colon lipomas on CT may be useful in making a preoperative diagnosis of Colonic lipoma. This helps to plan the treatment and in large lipomas i.e. > 3 cm limited colonic resection can be performed safely with minimal morbidity rather than radical surgery as demonstrated by these cases.
**Fig. 1:** Colonoscopy showed a large sessile tumor 45 cm from the anal verge

**Fig. 2:** The radiological diagnosis was a definitive sub mucosal lipoma causing intussusception.
**Fig. 3:** A 65 year old male with colonic lipoma with marked proximal colonic faecal loading with no evidence of dilatation to suggest obstruction [Contrast enhanced Computed Tomography (CT) examination-axial image. 16 Slice MX8000 CT scanner, Philips medical systems. 200mAs, 120kVp (subject to dose modulation). Contrast 120mls Iohexol (Omnipaque, GE healthcare) at 3mls per second with bolus tracking to determine timing of arterial phase, 1.5mm collimation with 3mm reconstruction at 1.5 mm increments].
Fig. 4: Macroscopic assessment of the specimen revealed a 4 cm sub mucosal mass with ulceration of the mucosal surface.
References:


