



**ORIGINAL RESEARCH PAPER**

**Pathology**

**INJECTION SITE LIPODYSTROPHY WITH FAT NECROSIS: A RARE CASE REPORT**

**KEY WORDS:** Lipoatrophy, lipohypertrophy, Enoxaparin

<b>Dr. Navdeep Kaur</b>	Resident, Department of Pathology, MGM Medical college, Navi Mumbai, Maharashtra-410209.
<b>Dr. Reeta Dhar</b>	Professor, Department of Pathology, MGM Medical college, Navi Mumbai, Maharashtra-410209.
<b>Dr. Arpita Singh*</b>	Resident, Department of Pathology, MGM Medical college, Navi Mumbai, Maharashtra-410209. *Corresponding Author
<b>Dr. Vishakha Malhotra</b>	Resident, Department of Surgery, MGM Medical college, Navi Mumbai, Maharashtra-410209.

**ABSTRACT** Lipodystrophies are dermatological complications due to repetitive subcutaneous injections leading to subsequent loss of adipose tissue at the site of injection. Fat necrosis occurs due to concentrated pressure on microlobules of adipocytes causing disruption of septa between these microlobules, leading to permanent changes in the injured site. In this report we present a case of 63 year old female who developed lipodystrophy following subcutaneous injection in left lower abdomen.

**INTRODUCTION**

Lipodystrophies are a heterogeneous group of disorders that are generally complications of long-term injections. The loss of subcutaneous fatty tissue is termed as lipoatrophy. Lipohypertrophy and lipoatrophy are interchangeable terms. The most common form of lipodystrophy is Acquired Lipodystrophy. Steroid injections, penicillin injections, insulin injections and vaccines like DPT are known to lead to acquired form of lipodystrophy.<sup>1</sup> It is one of the most common complication of subcutaneous insulin injection. Cases are often also found to be idiopathic without any clinical/histological inflammation in play. Trauma due to the simple process of injecting the drug can trigger lipodystrophy due to inhibition of lipogenesis and heightened catabolism of lipocytes.<sup>2</sup> Fat consists of microlobules of fat cells, each microlobule serviced by a blood vessel. When there is sudden pressure on the fat compartments, they burst and cause disruption of surrounding septa and vessels rupture, leading to damage of the fat cells. Fat necrosis was described in breast injuries in 1920.<sup>3</sup> The main cause of fat necrosis is trauma which can be due to surgery, injections and minor procedures.<sup>4</sup>

**Case History:**

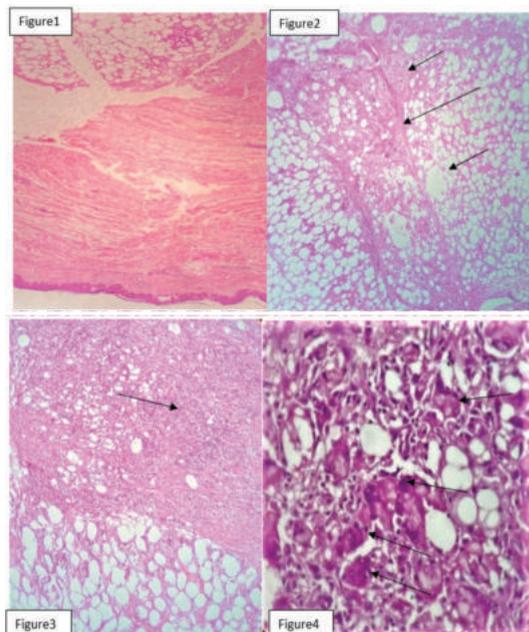
A 63-year-old female presented to the hospital with the complaints of soft painless, swelling in left side of abdomen for 3 months. Patient is a known case of Hypertension, Chronic Kidney Disease and Deep Venous Thrombosis. She had a history of injection at the site of swelling with subcutaneous injection of Enoxaparin in the lower abdominal wall in view of Deep Venous Thrombosis.

The physical examination revealed an indentation with a diameter of 6x5 cm on left lower abdomen with a discharging sinus. The systemic examination was normal. The patient's laboratory values were normal. USG abdomen revealed multiple hyperechoic ill-defined areas in subcutaneous planes of bilateral inguinal region ?lipohypertrophy. Incision and debridement under local anaesthesia was done and excised tissue was sent for histopathological examination.

**Gross examination:** Received multiple pieces of tissue partially skin covered; largest measuring 5.5x3.5cm, smallest measuring 1.5x1cm. Cut section showed grey-white homogenous areas.

**Microscopic examination:** Hematoxylin and eosin stained

sections studied showed fibrocollagenous tissue and necrotic adipocytes embedded amongst the fibrous septae along with perivascular, periadnexal and diffusely scattered dense mixed inflammatory infiltrate comprising of lymphocytes, monocytes, neutrophils and histiocytes. Loss of adipocytes (atrophy) was noted in the subcutaneous tissue with variable and large sized adipocytes (hypertrophy) surrounded by hyaline material along with focal areas of necrosis. Numerous multinucleated giant cells and focal collection of neutrophils were also identified.



**Figure 1:** H&E stained sections showing Epidermis, dermis and varying sizes of fat microlobules underneath. **Figure 2:** H&E (10x) stained sections showing variable sized adipocytes embedded amongst the fibrous septae. **Figure 3:** H&E (10x) microphotograph showing dense mixed inflammatory infiltrate (arrow). **Figure 4:** High power (40x) showing numerous multinucleated giant cells (arrow).

**DISCUSSION:**

Lipodystrophy is a pathological disorder of adipose tissue which can be genetic or acquired and have a generalised

distribution or a partial distribution. Lipoatrophy refers to absence of subcutaneous fat tissue after a period of inflammation. Lipoatrophy can be classified as primary or as secondary to minor repetitive trauma injuries, injections of various drugs (penicillin, amikacin, methotrexate, corticosteroids, insulin)<sup>7-9</sup>, vaccines,<sup>9</sup> and connective tissue diseases (lupus erythematosus, morphea, dermatomyositis).

Although we can diagnose Lipoatrophy clinically, still in some cases a skin biopsy is important in order to rule out any other underlying disease. Histological examination reveals a normal epidermis and dermis. There is a marked reduction in the subcutaneous tissue without the involvement of muscular tissue.<sup>10</sup> No treatment is required as lipoatrophy resolves spontaneously with the omission of the causative agent. Only for cosmetic disfigurement some treatment can be indicated. For this corticosteroid injections are used but since intralesional corticosteroid injection can itself cause lipoatrophy, hence steroids should be indicated with caution.<sup>11-12</sup>.

#### CONCLUSION:

Since lipodystrophy can occur quite commonly in patients on long term subcutaneous injections, it is advised to examine the injection sites annually by health professionals. Even the patients should be explained the importance of changing the sites of self-administering injections since the start of such medication.<sup>13</sup> Once the abnormal tissue is noted at the site of injection, patient should not inject into that areas until the abnormal tissue becomes normal.

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