Multiple Pseudocysts. A Potential Complication Following Progressive Tension Sutures.

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ABSTRACT

Pseudocyst formation after abdominoplasty is a rare complication. The pathogenesis of these cysts is due to the encapsulation of the potential dead space resulting after undermining of the abdominal flap. The potential incidence of these cysts is likely to be enhanced if liposuction is performed together wit abdominoplasty. Lymphatic draining system is overwhelmed with the overload of lymph, blood, fat, extravasated fluid and wetting solution used as infiltrate. Two raw surfaces created as a direct result of undermining result in shearing and rubbing, the process further exacerbates extravasation of fluid. To reduce friction between two raw surfaces of abdominoplasty flap and anterior abdominal musculature, progressive tension sutures are used. These sutures compartmentalized and stabilized the raw surfaces. Progressively enlarging multiple pseudo cysts arising from these compartments following the use of progressive tension is described as a case report.

Key Words:

Seroma, Progressive tension sutures, Abdominoplasty complications, Pseudo cyst, Quilting, Liposuction.

CASE REPORT:

Liposuction with abdominoplasty performed in 83.2 kg, 5.2 ft, active and healthy 56-year-old Caucasian female. Patient was a smoker with a history of thyroidectomy and was on thyroxine replacement therapy. She was fit and healthy otherwise. Preoperative assessment revealed excessive abdominal skin redundancy, severe lipodystrophy of abdomen, flanks and hips (Fig 1). She had minimal rectus diastasis. No inguinal, umblical or paraumblical hernias were noticed on preoperative examination.

Procedure was performed under general anaesthetics with endotracheal intubation and liposuction of the hips and flanks was performed first in prone position. Abdominoplasty was done in supine position and supraumblical dissection was limited medial to the superior epigastric artery perforators. No rectus plication was performed due to the lack of rectus diastasis. Progressive tension sutures were applied using 2-0vicryl in three rows, each having four to five stitches. Neo umbilicus was marked and excess abdominal skin flap was excised (802gm) and suction lipectomy of flanks and anterior abdominal wall included another 1200 cc of fat. Single drain was placed before relocating the umbilicus and final closure. Total blood loss was 6gm with overnight drainage of <20cc. Abdominal corset was applied for pressure with instruction to wear it for 6-weeks. Patient was encouraged to mobilise early and had uneventful recovery. Good wound healing was noted on early postoperative appointments but two months after her surgery, a small swelling on her right iliac fossa was noted. The swelling was progressive in size and became quite noticeable in next few weeks (Fig 2a-b). Due to a high suspicion of a pseudocyst, an ultrasound of right iliac fossa revealed a cyst (2.52X1.65CM) containing fluid (fig 3a). No other cysts were reported on ultrasound imaging. Excision of cyst was planned through old low transverse incision. Exploration under general anaesthetics revealed three cysts, one in right iliac fossa (Fig 3b-e), second in left iliac fossa (Fig 4) and a small third cyst in the epigastric region. All three cysts were excised completely. Posterior walls were intimately fused with the abdominal musculature and require careful dissection to avoid abdominal wall damage. Patient had an overnight stay with a suction drain and was discharged following day. Recovery was uneventful with good results (Fig 5).

Discussion:

Pseudocysts following abdominoplasty are uncommon. Ersek and Schade[1] in 1990 reported the formation of pseudo bursa in patients after abdominoplasty and the incidence was high when liposuction was combined with abdominoplasty. It was postulated that simultaneous liposuction with abdominoplasty compromise the lymphatic system and results in accumulation of fluid between the two raw surfaces. The overwhelmed vascular and lymphatic draining channels results in seroma formation preventing the two raw surfaces coming together leading to pseudo bursa formation.[1] Similarly, simultaneous liposuction and abdominoplasty was described as a triggering factor for the pathogenesis of pseudocysts formation.[2,3] However in a scientific and detailed retrospective analysis done by the author, it was found that there is no statistical difference between abdominoplasty alone and simultaneous liposuction with abdominoplasty.[4] Quilting of the anterior abdominal wall prevents the shearing of the two raw surfaces between abdominal flap and rectus muscle and helps to reduce the seroma formation.[5,6] Similar observations were made when progressive tension sutures were used, which is a similar concept as quilting and has the potential advantage of reducing wound complications.[7,8,9] However no reduction in wound complication was seen in the study done by the author.[4] It has been shown that simultaneous liposuction and abdominoplasty did not reduce the incidence of seroma formation, however the incidence of seroma was statistically reduced when progressive tension sutures were applied in abdominoplasty patients with or without liposuction.[4] The preservation of lymphatic system in the lower abdominal region has also been reported to reduce the incidence of seroma formation.[6]

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Approximation of two raw surfaces, using progressive tension sutures, potentially decrease the incidence of seroma formation by preventing the two raw areas rubbing and shearing against each other.[1-8] Absence of seroma eliminates the triggering of the inflammatory response that lead to encapsulation of the collected fluid (blood, lymph, fat). The progressive tension in abdominoplasty can be applied by using barbed sutures and the use of these sutures has been extended to reverse abdominoplasty. The application of these sutures, on one hand, prevents shearing and movement of two raw areas but on the other hand, it results in compartmentalization of dead space into many small compartments or dead spaces. Each of these spaces or compartments has a theoretical possibility of retaining or accumulating blood, fat and lymph with the potential of triggering an inflammatory response[3] leading to encapsulation of the cavity. These cystic walls have no true epithelial lining[3] but the contents of the cavity persistently generate an inflammatory response resulting in transudation of fluid into the cavity leading to progressive enlargement of these cysts. These cysts may theoretically be aspirated that can remove the triggering agents. However these cysts can be small and blind localisation can be difficult and may result in incomplete evacuation of its contents leading to recurrence of cysts. A high suspicion is mandatory and an ultrasound-guided aspiration can be diagnostic and therapeutic at an early stage. Surgical excision is preferred by the author for complete removal of the contents along with the cystic wall to eliminate the possibility of the recurrence.

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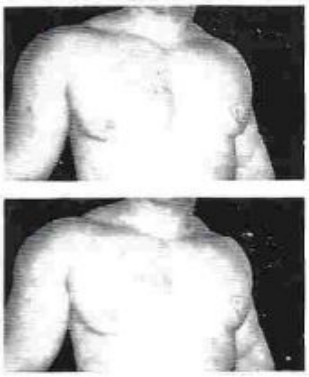
LEGENDS:

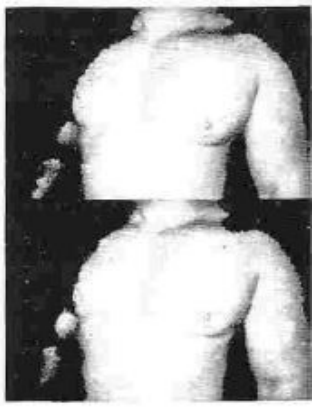
Figure-1:
Preoperative view of the patient showing abdominal skin excess with lipodystrophy.

Figure-2a-b:
Three month postoperative views showing progressively enlarging bulge in right iliac fossa.

Figure-3a-e:

a. Preoperative ultrasound imaging of the right iliac fossa showing a cyst measuring 2.52 and 1.65cm containing fluid.



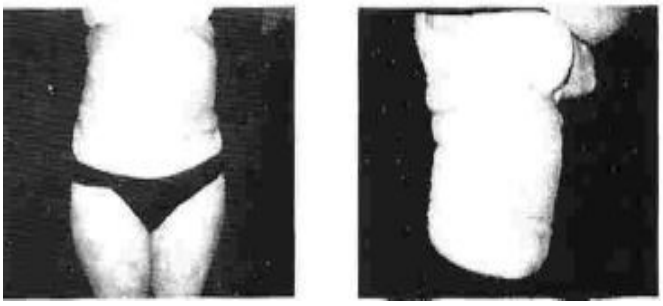


b-e. Intraoperative findings showing a cyst larger in dimension than measured on ultrasound(b), with its anterior wall removed showing capsular lining of the cavity (c) and posterior wall dissection off the anterior wall musculature (d,e).

Figure-4:

Intraoperative photograph showing second cyst, with its capsular lining, in left iliac fossa. The presence of this cyst was missed on ultrasound imaging.

Figure-5a-b:



Anterior and side views of the patient, showing final result after excision of multiple cysts.