

Lethal complications of laser assisted liposuction. Case report

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Abstract: Suction assisted lipectomy is the most frequent plastic surgery procedure in many Western countries, and in general is considered as a safe surgical technique. However, even if severe complications are extremely rare they do occur, and the physician must be aware of them, and take the necessary precautions to limit their effects. Most deaths associated with liposuction were cited in the scientific literature as being associated with tumescent liposuction. Laser assisted liposuction is considered a safer procedure and the complication rate is lower. The purpose of this article is to present a case of pulmonary thromboembolism associated with lipid embolization secondary to laser assisted lipolysis, with lethal consequences.

Key Words: laser assisted liposuction; fat embolic syndrome; pulmonary thromboembolism; surgical related death.

The number of plastic surgery procedures increased rapidly worldwide [1]. Suction assisted Lipectomy (Liposuction) is the most frequent plastic surgery procedure in many Western countries, including US and Germany [1]. It is usually considered a safe surgical technique, this being one of its major “selling points”.

However, even if severe complications are extremely rare they do occur, and the physician must be aware of them, and take the necessary precautions to limit their effects. The purpose of this article is to present a case of pulmonary thromboembolism associated with lipid embolization secondary to laser assisted lipolysis, with lethal consequences.

CASE REPORT

A 56 years old woman was admitted for laser lipolysis associated with suction aspiration at the level of the thighs, bilaterally. The patient was diagnosed with minor localized lipodystrophy and skin laxity on the anterior part of the thighs and under the buttocks. She was put under local anesthesia. The lipolysis is conducted at 12 W and the material was suctioned from each thigh. Data about the quantity of aspirate was not available. She was released at home in the same day. The treatment after surgery consisted of Fraxiparin and Metamisole. The next day she called for an Ambulance; at arrival she had cyanosis in the upper part of the body, erythematous

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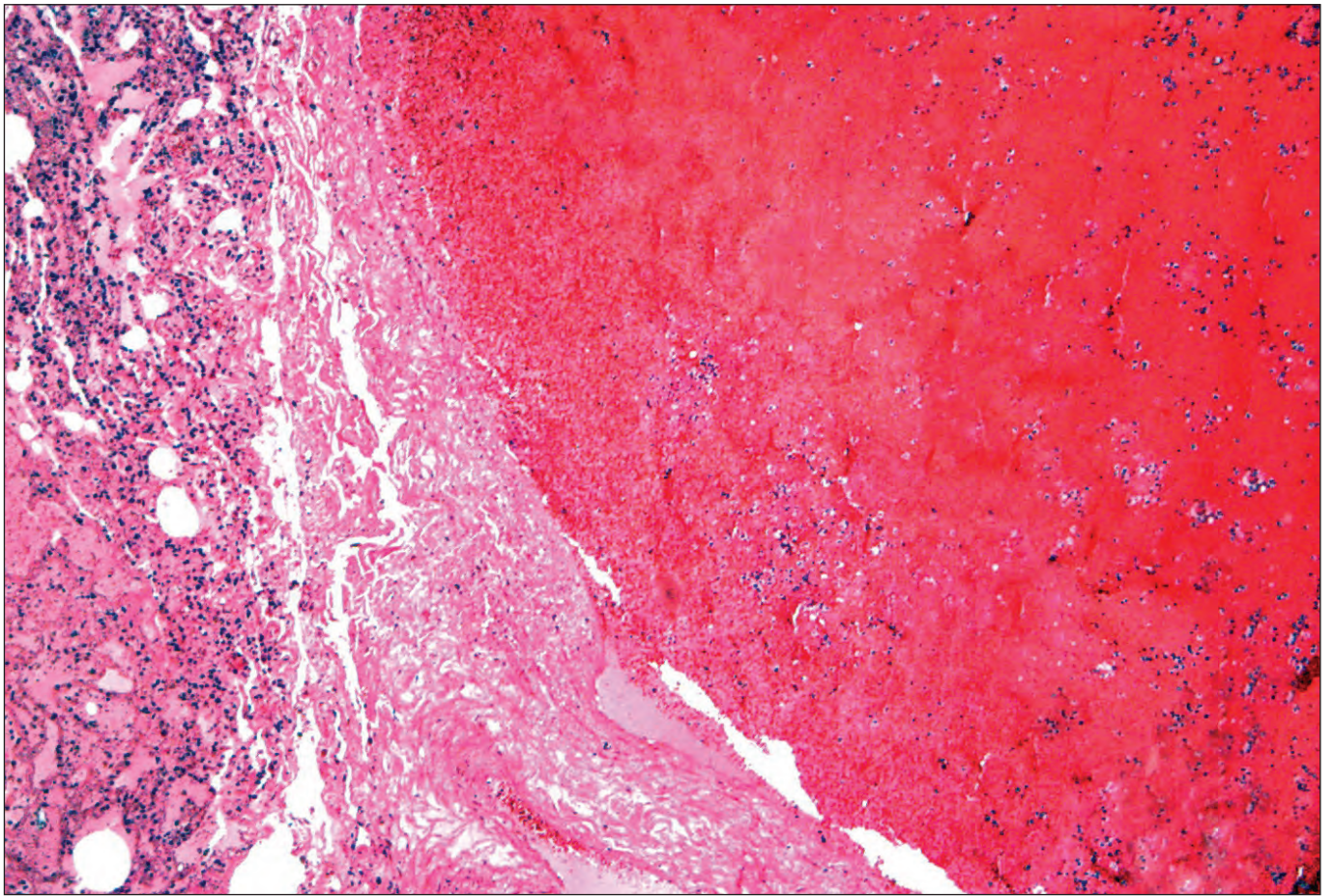


Figure 1. Pulmonary thromboemboli in medium vessels, with partial hematic lysis. Hematoxylin-Eosin, 5X.

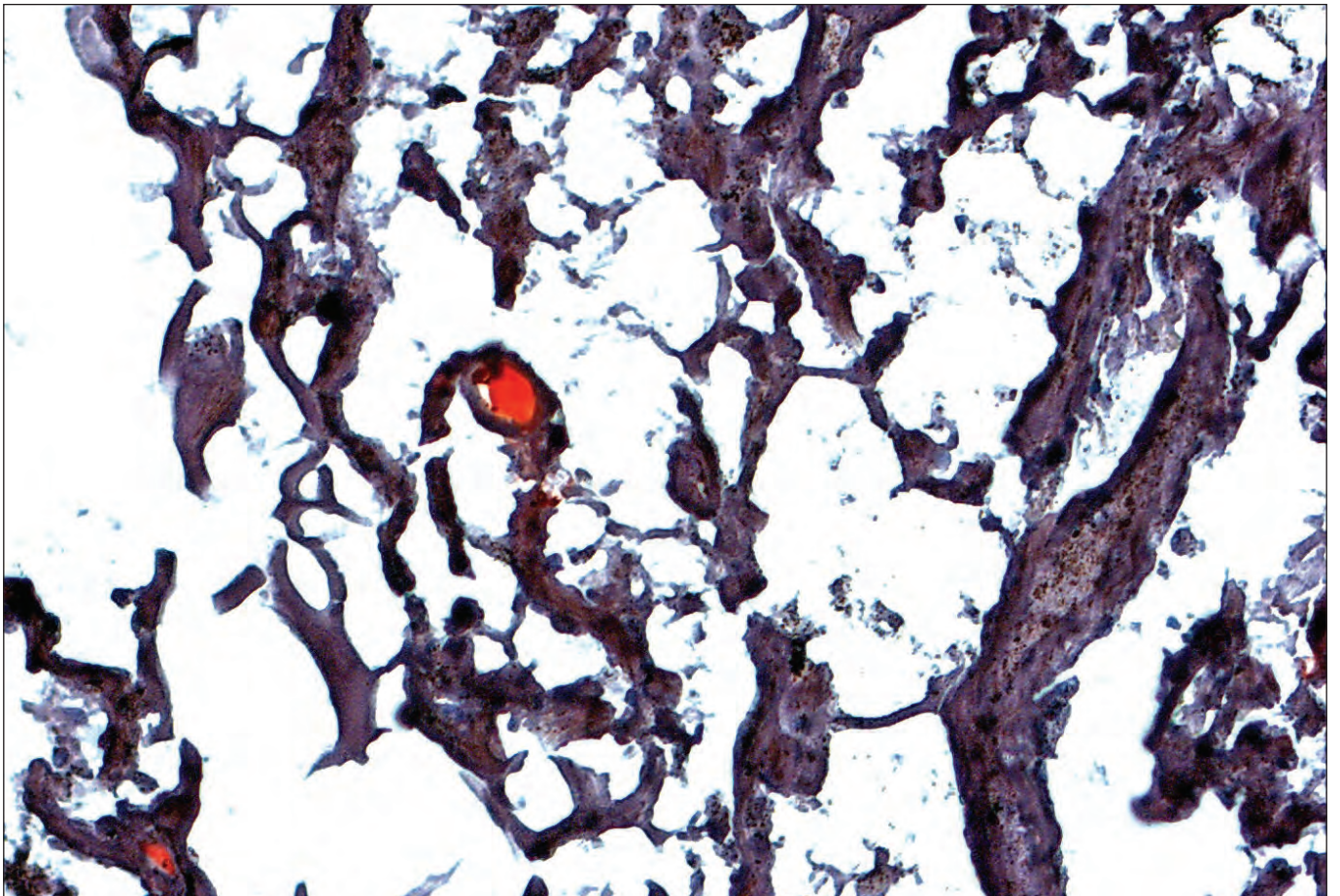


Figure 2. Pulmonary fat embolization in a capillary. Scharlach, 20X.

cyanotic spots on skin and mucosa (petechial rash), signs of acute thoracic ischemia, hypoglycemia (60 mg/dL), and BP undetectable in both lower limbs. She was given hemisuccinate, glucose and saline but entered almost immediately in cardiac arrest (asystole), non-resuscitable. Autopsy findings. The lungs were well expanded, with diminished crepitation, signs of acute pulmonary edema, and thrombo-emboli in medium vessels. On the thighs were identified large bruises, diffuse hemorrhagic infiltrate in the fat tissue, and incisions after surgery.

Histopathology findings. Femoral vein contained thrombi with partial hematic lysis. In lung vessels were identified thrombo-emboli (Fig. 1), atelectasis, areas of emphysema and moderate pulmonary edema. Scharlach stain has identified frequent lipid droplets in pulmonary capillaries (Fig. 2). On brain slides were identified recent micro-thrombi, stasis and cerebral edema. On cerebellum slides were identified a focal depletion of Purkinje cells and marked amassment of lipofuscin in the cytoplasm of the neuronal bodies.

DISCUSSION

According to Grazer and de Jong the mortality rate for liposuction is 20‰, similar to the one associated with traffic road accidents in the United States [2]. They have identified a total number of 130 deaths in almost 500,000 surgical procedures, of which the most important causes were thromboembolism (23.1%), abdomen or viscus perforation (14.6%), anesthesia/sedation/medication (10), fat embolism (8.5%) and others (43.9%) [2]. Most reported cases in which liposuction had a lethal outcome were done using the tumescent liposuction [2, 3], laser assisted lipo-aspiration being known to led less frequently to severe complications [4].

About 80% of plastic surgeons had at least one patient whose surgical procedure lead to deep venous thrombosis (DVT) and 53% had at least one patient with pulmonary thromboembolism (PTE) [5]. The most important risk factors for DVT in liposuction are combined procedures and large volume liposuction [2, 6, 7].

Fat embolism syndrome (FES) is an uncommon, severe complication occurring usually after long bone fractures, but has been cited after liposuction as well [8-15], and is suggested clinically by the presence of a petechial rash associated with respiratory insufficiency and cerebral involvement [9].

Fat embolization is present in practically every liposuction procedure, as was proven in animal models [16, 17]. The fat from the surgical area may enter into microvascular ruptures, and from there are transported toward the pulmonary vascular bed and the systemic circulation as fat emboli [9]. It can lead to obstruction of the pulmonary arterial vessels (with subsequent hypoxia), interstitial and alveolar hemorrhage, edema and chemical pneumonitis (with subsequent acute respiratory distress syndrome). Also, at the surgical site there is a release of vasoactive amines, that can lead to vasoconstriction (including pulmonary)[9].

In our case neither the thromboembolism nor the fat embolism were severe enough to explain the lethal outcome. However, keeping in mind the clinical appearance of the patient (with signs suggestive for FES), we considered that FES and PTE combined lead to acute respiratory insufficiency that was unresponsive to medical resuscitation.

In conclusion, we presented a case of laser assisted lipoaspiration with a fatal outcome through a combined mechanism.

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