Clinical case

Visceral perforation during liposuction

Perforación visceral durante una liposucción

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Palabras clave:
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ABSTRACT

The case reported is of a 43-year-old woman weighing 67 kg, with a history of several abdominal surgeries, including liposuction. On examination a globose abdomen, the presence of scars and adhesions, important adipose panicle and a sagging abdominal wall were found. A liposuction of the abdomen, trunk and extremities with straight cannulas of 3 mm x 35 cm in length was performed; access was through two incisions made in the pubic area. Surgeons infiltrated 4,000 mL of solution with vasoconstrictors and aspirated 3,000 mL. The surgeons did not notice the perforation. The patient was discharged 5 hours after surgery. Nine hours later, she ate at home and in doing so severe pain occurred in the abdomen. In the hours that followed abdominal distension was added, and difficulty in channeling gases, with deterioration of her general conditions. At 48 hours the discomfort became intolerable, she was treated by a general surgeon, had some laboratory tests and simple x-rays of the abdomen and chest were taken, finding sub-diaphragmatic free air. Exploratory laparotomy was performed, finding an abdominal wall perforation site 6 cm below the navel, evidence of peritonitis and a jejunum perforation. Resection of the affected segment and an anastomosis of the intestinal handles were carried out. The patient managed to survive with minimal functional sequelae. The perforation occurred in the area considered the most critical. The conditions of the periumbilical area, thin and long cannulas and a distant access are the factors related to perforation.

RESUMEN

Se describe el caso de una mujer de 43 años, con antecedente de importancia de varias cirugías abdominales, incluyendo una liposucción, y cuyo peso es de 67 kg. En la exploración física, tenía el abdomen globoso con presencia de cicatrices y adherencias, panículo adiposo importante y flacidez de la pared abdominal. Se le realizó liposucción de abdomen, tronco y extremidades con cánulas rectas de 3 mm x 35 cm de longitud; los accesos fueron por dos incisiones realizadas en el área púbica. Al infiltrarse 4,000 mL de solución con vasoconstrictores, se aspiraron 3,000 mL. Sin embargo, los cirujanos no se percataron de la perforación. La paciente fue dada de alta cinco horas después de la cirugía. Nueve horas después, comió en su domicilio e, inmediatamente después de hacerlo, presentó dolor intenso en el abdomen. En las siguientes horas, se agregó distensión abdominal y dificultad para canalizar gases, con deterioro de sus condiciones generales. A las 48 horas posteriores, las molestias se volvieron intolerables, por lo que fue atendida por un cirujano general: se le tomaron algunos exámenes de laboratorio y radiografías simples de abdomen y tórax, encontrando aire libre en cavidad. Le realizaron una laparotomía exploradora, la cual encontró: sitio de perforación de la pared abdominal a 6 cm por debajo del ombligo, datos de peritonitis y una perforación del yeyuno. Por esto, se le realizó resección del segmento afectado y anastomosis de las asas intestinales. La paciente logró sobrevivir con mínimas secuelas funcionales, pese a que la perforación se produjo en el área considerada como la más crítica. Las condiciones del área periumbilical, cánulas delgadas y largas y un acceso distante son los factores relacionados con la perforación.

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INTRODUCTION

Several authors consider that visceral perforations by liposuction cannulas are attributed to the surgeon's lack of experience, associated with the structural conditions of the patient such as obesity, globose abdomen, presence of hernias, eventrations, abdominal scars and fibrotic adhesions caused for previous liposuctions.[1-11] The area of greatest risk is located around the navel. The most frequently damaged structure is the ileum. In cases of perforation of the intestines, the cardinal findings are persistent abdominal pain and intestinal obstruction. Intestinal perforations are for the most part diagnosed late. The chronological order of the manifestations are persistent abdominal pain, abdominal

distension, stiff abdomen and difficulty in passaging gases and alterations of generalized deterioration, with no tendency for clinical improvement.[12-21]

Damage and survival depend on a timely diagnosis and proper treatment. Perforations of the small intestine, if treated before the third day, can be repaired with direct closure of the affected intestinal loop. After this time, a stoma is required and the prognosis darkens.[12-21]

In a period of 6 years, the Security Committee of the Mexican Association of Plastic Surgery has detected 8 cases of visceral perforations in lipoaspiration procedures. Seven patients died due to lack of timely and adequate care. The objective of this report is to show a very illustrative case of intestinal perforation produced by a cannula during a liposuction. Several risk factors attributable to the surgeon and the structural conditions of the patient's abdomen were combined. Timely diagnosis and adequate treatment resulted in patients' survival. The data was provided by the patient and the surgeon's assistants.

CLINICAL CASE

Data of the surgical team: Six years of professional experience, the training it had in liposuction was acquired during the residency of plastic surgery. The team did not intentionally look for risk factors in the patient and was not aware of the complications that might arise, how to diagnose them and how to be prepared to solve them. The surgical team was composed of the surgeon and two assistants with the same experience as the surgeon. They all participated in liposuction.

Patient data: The patient was 43 years old on the date of the liposuction. She weighed 67 kg and was 1.60 m tall. Her body mass index was 26.1 (overweight). The abdomen was globose with an important adipose panicle and sagging abdominal wall, adipose-cutaneous scars were present and adhesions due to appendectomy (20 years ago). Pfannenstiel caesarean section (10 years ago) and lipoaspiration (4 years ago). She has an irregular abdominal contour due to several scar retractions. They did not perform imaging studies such as ultrasound, CT or magnetic resonance imaging to determine abdominal wall conditions; thickness and uniformity of the adipose panicle, adhesions, hernias or eventrations or periumbilical conditions.

Scheduled procedures included: liposuction of the abdomen, sides periareolar mammary pexia and excision biopsy of breast cyst.

GENERAL ANESTHESIA

Infiltration of tumescent solution: they used a 0.9% saline solution + 1 vial of epinephrine + lidocaine and bicarbonate in an unspecified amount. They infiltrated four liters with 3 mm cannulas and syringes.

Liposuction: The areas worked on were: the abdomen, sides, back, thighs and arms. They aspirated 3 liters, did not infiltrate fat in the buttocks. The team used straight, 3 and 4 mm x 35 cm long cannulas for aspiration. If the condition was poor, the suction was done with syringes. The access routes for the abdomen were two incisions placed in the pubis at the ends of the pubic hair. The aspiration planes were superficial and deep. They did not use device-assisted liposuction. The abdomen was suctioned with the patient in a dorsal position, no pillows or lumps were placed to achieve the patient's hyperextension during the procedure. The aspiration of the back was carried out with the patient in the ventral position. The surgeon and his assistants deny having felt or suspected the perforation, but they did not finish the aspiration of the upper quadrants of the abdomen (area located above the perforation site). The duration of the surgery was 4 hours.

She remained in observation for 5 hours. At the time she was discharged, she had tolerated the oral route and had no pain. At home, 10 hours after surgery, she was hungry, intense burning pain occurred in the abdomen when eating. In the hours that followed, she lost her appetite and the abdomen began to distend. She informed the surgeon who did not acknowledge it as important. The discomfort intensified, abdominal distension increased; she had difficulty breathing, could not defecate or expel gas. After 48 hours the discomfort became unbearable, the pain was very intense, and she could not stand the post-surgical girdle

that was put on her; she had generalized edema and her general conditions deteriorated.

Not having the support of her surgeon, she went to the emergency room of a regional hospital. The general surgeon who examined her found a distended abdomen without peristaltic noises, abdominal resistance, hyperesthesia and hyperbaralgesia. He requested basic exams finding an Hb of 11.7, leukocytes of 12,000, glucose of 110 mg/dL. They performed simple abdominal and chest X-rays with the patient standing, finding air in the cavity *(Figure 1)*. He decided to perform an exploratory laparotomy suspecting a visceral perforation. Her general conditions improved. At 72 hours postoperative, the patient was operated with an access in the midline. The surgeon found a punctiform perforation in the musculoskeletal wall, 8 cm from the midline and 6 cm distal to the navel. When opening the cavity, he found data confirming peritonitis and a single punctiform perforation of the small intestine (jejunum) 70 cm from the ileocecal valve *(Figure 2)*. He performed an intestinal resection of the perforation site, an anastomosis of the handles and washed the abdominal cavity with 8 liters of saline solution. Seven days after the exploratory laparotomy, the patient had an intestinal obstruction; so, it was necessary to reoperate to free adhesions. The patient survived with sequelae of intestinal transit, abdominal distension, and chronic pain.

Figure 1: In the simple X-ray of the abdomen and thorax, the characteristic image of a pneumoperitoneum was found.

Figure 2: During the exploratory laparotomy, they found a perforation of the ilium.

DISCUSSION AND ANALYSIS OF THE CASE

The main factor related to visceral perforations during liposuction is the lack of experience of the surgeon.[4-7,14-17] The surgical team that operated on the patient was composed of 3 surgeons with 6 years of experience. The team received liposuction training only during their residency and had no extra instruction that would prepare them in this type of procedures. They were not prepared to identify risk factors, identify inquest and resolve it satisfactorily. They performed the aspiration of the back, arms and thigh. They only performed the aspiration of the lower half of the abdomen. It is likely that they had suspected the perforation, but refused to recognize it. Liposuction is a high-risk procedure and requires personalized training directed by professors with experience in this field. Surgeons will not be able to perform it, until they master the abilities that make liposuction a safe procedure.

There are several risk factors that have been related to the structural conditions of the patients.[2-7] The patient had several risk factors: globose, flaccid abdomen, with an irregular contour, and presence of scars and abdominal adhesions due to previous surgeries, including a liposuction, which were factors that were not identified in the preoperative evaluation. In patients with many abdominal defects, it is necessary to

perform an ultrasound or magnetic resonance imaging to determine the conditions of the abdominal wall more objectively, rule out hernias or eventrations and irregularities of the adipose panicle.

The area of greatest risk is located around the navel. Some structural characteristics make it a very vulnerable area. Umbilical hernias, globose abdomen, periumbilical adhesions for cutaneous ligaments and for fibrotic scar tissue from previous surgeries contribute to the resistance found when cannulas are introduced, and an increase in the bending factor. These alterations can divert the direction of the tip of the cannula, with a greater possibility of visceral perforation, around this area. The most frequently damaged structure is the ileum.[4-7,17-21] The perforation of the abdominal wall was 6 cm below the navel and the affected viscera was the ileum, which coincides with what was reported. The accesses for the introduction of the cannulas were in the pubis, from this site they introduced the cannulas and tried to reach the upper quadrants of the abdomen passing through the periumbilical area. The cannulas they used were thin and long (3 and 4 mm x 35 cm long) with an important flexion factor which was increased by trying to insert the cannulas from the pubic region. The conditions of the periumbilical area, the type of cannulas used and the distant access produced cannula resistance and increased flexion and were the main factors related to perforation in this patient. The drilling occurred in the area considered the most critical. Surgeons' lack of abilities was a key drawback to prevent this complication *(Figures 3 to 6)*.

Figure 3: In the scheme the access sites are marked for the introduction of the suction cannulas; 2 incisions in the pubis and the perforation site, the periumbilical area, considered the most critical.

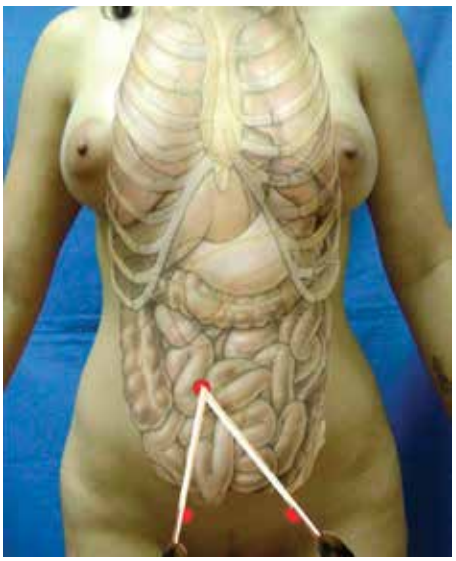

Figure 4: The path of the aspiration cannulas and the site where the perforation occurred, 6 cm below the navel, is marked on the scheme.

The perforations of the small intestine are of an insidious presentation and the signs and symptoms are subtle.[4-7,17-21] The clinical manifestations range from persistent pain, bloating and abdominal stiffness, difficulty in passaging gases, fever, tachycardia, tachypnea, dehydration, deterioration of the patient's general conditions and metabolic acidosis. When the diagnosis is carried out and the treatment is given before 72 hours are up, a primary repair can be done with a better prognosis.[4-7,10,17-21] The patient was operated within 72 hours with the resection of the segment where the perforation occurred with a terminal anastomosis. This treatment allowed her to survive with minimal sequelae. Patients

Figure 5: A patient without support in the lumbar region, as it was in the present case, favors the introduction of the cannulas at an angle of 30 to 45 degrees to the plane of the abdomen, with greater risk of perforation.

Figure 6: A support in the lumbar region, tightens the abdomen and improves the angle of introduction of the cannulas. The trajectory is parallel to the plane of the abdomen.

who undergo a lipoaspiration should have a close surveillance and if they have a good evolution, the patient should be reassessed carefully and not rush to discharge him/her; establish strict monitoring, assessment by a gastroenterologist general surgeon and request some laboratory tests and X-rays of the abdomen and chest. Surveillance should be extended to the first 7 days.

CONCLUSIONS

Mortality in intestinal perforations during a lipoaspiration is related to a delay in the diagnosis and treatment of affected patients. The case we present is about an intestinal perforation that occurred during a liposuction in a 43-year-old woman. The conditions of the patient's periumbilical area, the type of cannulas used and the distant access produced cannula resistance and increased flexion and were the main factors related to perforation in this patient. The drilling occurred in the area considered, the most critical. The surgeon's lack of abilities was a key drawback to prevent this complication.

The intestinal perforation was of the ileum and the perforation of the abdominal wall was 6 cm below the navel.(periumbilical area) The site of entry to the cavity was in the periumbilical area, considered the most critical and the affected viscera was the ileum which is the viscera most frequently damaged in a visceral perforation by an aspiration cannula. The diagnosis and treatment before 72 hours allowed the survival of the patient with minimal functional sequelae.

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