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Prevalence and factors associated with persistent pain following body contouring surgery

Harold Chatel [a,*], Yoni Madar [a], Patrick Leyder [a], Claire Bonneau [b], Christophe Barrat [c,d], Julien Quilichini [c,d]

[a] Department of Plastic Surgery, CH Ballanger, 93600 Aulnay-sous-Bois, France
[b] Curie Institute, 35 Rue Dailly, 92220 Saint-Cloud, France
[c] Department of Bariatric and Metabolic Surgery, CHU Avicenne, 93000 Bobigny, France
[d] Paris North University, 99 Avenue Jean Baptiste Clément, 93430 Villetaneuse, France

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Summary *Background and aim:* Persistent postsurgical pain (PPP) has been reported by patients following various surgeries. Body contouring procedures are being performed more frequently, but no data are available regarding the effects of these procedures. Long-term disability occurring after performing "functional" procedures on healthy subjects is a particular concern. The aim of this study was to describe the risk factors, prevalence, characteristics, and effects of persistent pain after body contouring procedures.
Methods: Patients who underwent body contouring surgery (e.g., abdominoplasty, lower body lift, medial thigh lift, brachioplasty, and abdominal liposuction) between January 1 2009 and December 31 2013 were included in this retrospective, monocentric cohort study. Pain evaluation was performed using a visual analog pain scale (VAS) and the Douleur Neuropathique 4 (DN4) questionnaire. Major risk factors previously identified in the literature were evaluated.
Results: The study included 199 patients. Pain was reported by 42 patients (21%). Seventy-one percent ($n = 30$) of these 42 patients presented with neuropathic pain. Risk factors that were significantly associated with PPP were acute postoperative pain ($p = 0.0003$), medical history of bariatric surgery ($p = 0.002$), longer period of hospitalization ($p = 0.04$), depressive status during the operative period ($p = 0.03$), substantial stress before surgery ($p = 0.03$), and major complications after surgery ($p = 0.03$).
Conclusion: Persistent chronic pain is frequent after body contouring procedures. Preemptive approaches and early postoperative diagnosis are important measures that can be used to limit

* Corresponding author. CH Ballanger, Plastic and Reconstructive Surgery Department, Bd Robert Ballanger, 93602 Aulnay-sous-Bois, Villepinte, France. Tel.: +33 1 49 36 71 23; fax: +33 1 49 36 72 79.
E-mail address: chatel_harold@hotmail.com (H. Chatel).

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the effects of this complication on the patient's quality of life.

Introduction

Persistent postsurgical pain (PPP) was defined by Macrae in 1999. It generally appears after surgery and persists for >2 months; it is diagnosed after eliminating other causes and should not be associated with preoperative pain.[1] The incidence of PPP is approximately 30% after common operation.[2] It develops following major surgeries (e.g., mastectomy[3] and thoracic surgery[4]) and minor surgery (e.g., hernia repair[5]). The pain is severe in 5–10% of the patients[6] and often reported as neuropathic.[7] Although PPP is a prevalent complication after surgery, it is also a relatively neglected problem.

Body contouring procedures are being performed more frequently as bariatric surgery procedures have become more common, which lead to high and long-term patient satisfaction.[8] However, procedures such as abdominoplasty and medial thigh lift require extensive undermining of tissue, which may result in nerve damage. This nerve damage could be responsible for postoperative pain experienced by patients. However, to date, no data are available regarding this topic, and postoperative persistent pain seems to be underdiagnosed.

Long-term disability is a particular concern following "functional" or "comfort" procedures performed on healthy subjects. The aim of this study was to describe risk factors, prevalence, characteristics, and effects of the PPP that occurs after body contouring procedures.

Patients and methods

Population

In this retrospective study, all patients who underwent one or more body contouring procedures in our department between January 1 2009 and December 31 2013 were identified and invited to participate. The body contouring procedures included abdominoplasty, lower body lift (circumferential dermolipectomy from the lower abdomen), brachioplasty, medial thigh lift, and abdominal liposuction. Breast procedures were not included.

All of the patients eligible for the study were contacted by phone and were invited to attend a consultation. During this consultation, each patient was interviewed and examined, and his/her medical record was reviewed by the same surgeon; this surgeon was not involved in the previous surgical procedures. Patients with a follow-up time <6 months, with an incomplete chart, or who refused to attend the consultation or complete the questionnaire, were excluded from the study.

Patient and surgical data

The demographic and surgical data were obtained from each patient's chart (i.e., age, body mass index, nature and length of the procedure, medical history of bariatric surgery, work status, mean time since the surgery, length of hospitalization, postoperative pain, and medication).

Data on surgical outcomes and complications were also recorded. Each postoperative complication was assigned to one of the two categories: minor complications (i.e., those treated conservatively) or major complications (i.e., life-threatening events or complications that required surgical treatment).

Anesthetic data regarding the drugs used during the procedure and the length of stay in the postoperative room were also collected. We also recorded whether the procedure was covered by health insurance or whether the patient was required to pay for it because it was an esthetic procedure.

Patient examination and persistent pain assessment and evaluation

The same surgeon examined each patient. Patients who reported painful symptoms >3 months after the procedure without any apparent cause other than the procedure were considered to be presenting with persistent pain.

Pain severity was evaluated using a visual analog pain scale (VAS). The range of possible scores was from 0 (no pain) to 10 (worst pain imaginable). Pain was considered to be mild, moderate, or severe, and the corresponding VAS scores were 1–3, 4–7, and 8–10.

The previously validated Douleur Neuropathique 4 (DN4) questionnaire[9] was used to determine the neuropathic component of the pain experienced by each patient. This seven-item questionnaire included a series of questions consisting of sensory descriptors and signs (burning, painful cold, electric shocks, tingling, pins and needles, numbness, and itching), which were evaluated during a bedside sensory examination. A score ≥4 indicated the presence of neuropathic pain with 83% sensitivity and 90% specificity.

The intermittent or permanent nature of the pain was noted. Other isolated symptoms evocating sensory disturbances without pain (e.g., hypoesthesia) were also detected and recorded.

Questionnaire

In addition to the pain scale and the DN4 questionnaire, patients were asked to complete a study-specific questionnaire that included risk factors for persistent pain previously identified in the literature. Each patient