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Suction-assisted lipectomy fails to improve cardiovascular metabolic markers of disease: A meta-analysis

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Summary *Background:* The purpose of this study was to determine whether suction-assisted lipectomy (SAL) decreases the incidence of early cardiovascular disease risk factors or its biochemical and clinical risk indicators.
Methods: A systematic review of the literature was performed by conducting a predefined, sensitive search in MEDLINE without limiting the year of publication or language. The extracted data included the basal characteristics of the patients, the surgical technique, the amount of fat extracted, the cardiovascular risk factors and the biochemical and clinical markers monitored over time. The data were analysed using pooled curves, risk ratios and standardised means with meta-analytical techniques.
Results: Fifteen studies were identified involving 357 patients. In all of the studies, measurements of predefined variables were recorded before and after the SAL procedure. The median follow-up was 3 months (interquartile range (IQR) 1–6, range 0.5–10.5). The mean amount of extracted fat ranged from 2063 to 16,300 ml, with a mean $\pm$ standard deviation (SD) of 6138 $\pm$ 4735 ml. After adjusting for time and body mass index (BMI), leptin and fasting insulin were the only markers that were significantly associated with the amount of aspirated fat. No associations were observed for high sensitive C-reactive protein (hCRP), interleukin-6 (IL-6),

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adiponectin, resistin, tumour necrosis factor-α (TNF-α), Homeostasis Model of Assessment (HOMA), total cholesterol, high-density lipoprotein (HDL), low-density lipoprotein (LDL), triglycerides, free fatty acids or systolic blood pressure.

Conclusions: Based on the results of our analysis, we conclude that there is no evidence to support the hypothesis that subcutaneous fat removal reduces early cardiovascular or metabolic disease, its markers or its risk factors.

Since Illouz[1] reported the aspiration of subcutaneous adiposity using blunt cannulas in the early 1980s, liposuction has gained wide acceptance and popularity. However, the physiologic consequences of suction-assisted lipectomy (SAL) are poorly understood. Large-scale studies assessing the impact of SAL on cardiovascular (CV) events have never been performed, but there are increasing reports of the possible beneficial effects of SAL on CV disease risk factors (RFs).[2] Consequently, it is reasonable to suggest that fat tissue removal could decrease the incidence of CV disease, type 2 diabetes mellitus (DM) or metabolic syndrome.

The objective of our study was to determine whether SAL decreases the incidence of CV RFs or reduces its biochemical and clinical risk indicators. We conducted a systematic review of the literature and performed a meta-analysis of published studies addressing this topic.

Methods

Inclusion criteria

Criteria for considering studies for this review
Human studies with a cohort-type design in which the appearance of CV disease or its early markers or RFs were measured before SAL and at least once 1 month following the surgery were included.

Types of participants
Human subjects of any gender, weight or race comprised the study.

Types of interventions
Any lipectomy procedure assisted by suction, LASER or ultrasound, excluding direct lipectomy, performed for abdominoplasty or body lift applications was included.

Outcome measures

We did not pre-define the early markers of CV risk because there are many markers used in the literature. The markers chosen by the authors of the selected studies were extracted and analysed, if feasible.

Search methods for the identification of studies

Electronic searches
The studies in MEDLINE were searched using the PubMed (http://www.pubmed.com) interface with no date or language restriction. A MeSH term for lipectomy was used; also, the search was limited to human studies and clinical trials or randomised controlled trials. The search date was 27 July 2012, and the keyword and strategy are depicted in Figure 1.

Searching other resources
The references of the selected studies were searched manually and retrieved in full-text format whenever possible.

Data collection and analysis

Selection of studies
The identified studies were independently selected based on the title and abstract by two of us (SD and CL); disagreements were resolved by consensus.

Data extraction and management
The data were extracted from the retrieved studies. We classified the variables into four categories:
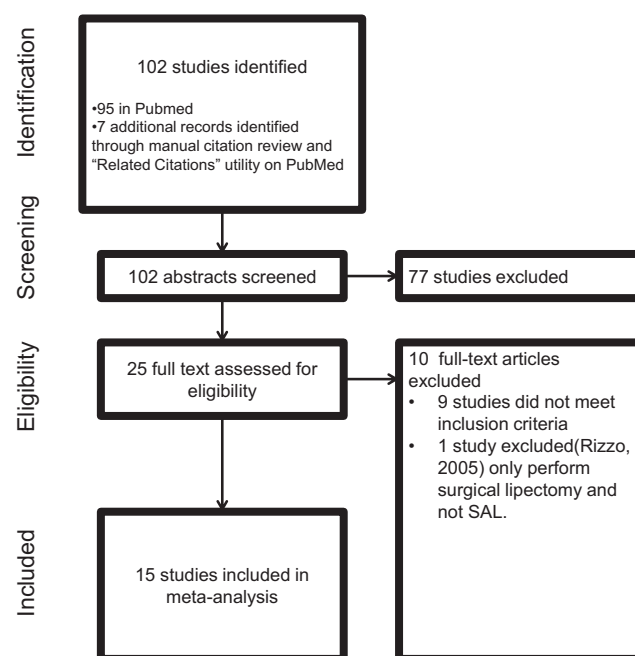

Figure 1 Search strategy. PubMed Keyword: "Lipectomy" [Mesh] AND ("humans" [MeSH Terms] AND (Clinical Trial [ptyp] OR Randomised Controlled Trial [ptyp])).