Journal of Plastic, Reconstructive & Aesthetic Surgery (2014) 67, 295–301

JPRAS
An International Journal of Surgical Reconstruction
www.JPRASurg.com

REVIEW

Complications following body contouring surgery after massive weight loss: A meta-analysis

Emir Hasanbegovic, Jens Ahm Sørensen*

Department of Plastic Surgery, OUH Odense University Hospital, Sdr. Boulevard 29, DK-5000 Odense C, Denmark

Received 28 June 2013; accepted 21 October 2013

KEYWORDS
Post-bariatric;
Massive weight loss;
Body contouring;
Complications

Summary *Background:* Bariatric surgery is a way to achieve lasting weight loss in the obese. Body contouring surgery seeks to alleviate some of the discomfort caused by the excessive loose skin following massive weight loss. Higher complication rates are described in this type of surgery when done post-bariatric. The purpose of this article is to compare complication rates of body contouring surgery when performed on patients with weight loss due to bariatric surgery compared to patients who lost weight due to dietary changes and/or exercise.
Methods: A total of 253 studies were identified by searches in PubMed/Medline databases as well as two hand-search strategies. Three levels of screening resulted in seven studies being considered suitable for inclusion in the meta-analysis. All statistical calculations were performed with Review Manager (RevMan) Version 5.2.3.
Results: The fixed-effects pooled risk ratio (RR) of developing complications after body contouring surgery when comparing post-bariatric and non-bariatric patients is 1.60 (95% confidence interval (CI) 1.30–1.96; $P < 0.00001$; $I^2 = 48\%$) showing that there is a 60% increase in the risk of developing complications if the patient lost weight due to surgery.

A subgroup analysis of studies with patients only having one body contouring procedure shows an 87% higher increase in the risk of developing a complication when being post-bariatric (RR = 1.87; 95% CI 1.46–2.40; $P < 0.00001$; $I^2 = 0\%$).

If we exclusively look at the studies with a less uniform patient population that included patients who had one procedure performed as well as patients who had several procedures performed, there seems to be a non-significant 4% lower risk of developing a complication in the case of post-bariatric patients compared to the non-bariatric patients (RR = 0.96; 95% CI 0.65–1.42; $P = 0.84$; $I^2 = 0\%$).

* *Corresponding author.* Tel.: +45 65 41 24 36, +45 22 13 67 07.
E-mail addresses: jens.sorensen@rsyd.dk, jens.ahm@dadlnet.dk (J.A. Sørensen).

http://dx.doi.org/10.1016/j.bjps.2013.10.031

Conclusion: The analysis shows a 60—87% increased risk of complications in the post-bariatric group compared to the non-bariatric group with statistical significance.

Background

The number of individuals that can be classified as obese, class I or higher is increasing. The latest figures from the USA show that 36.7% of the adult population is obese,[1] while the corresponding number in UK is 26.7%.[2] Class I obesity is defined as a body mass index (BMI) of 30—34.9 kg m^{-2}.

Some of the obese are able to lose weight by dietary changes and exercise, while others have to resort to surgery. Bariatric surgery is a way to achieve lasting weight loss in the obese and to reduce the prevalence of risk factors such as diabetes, hypertriglyceridaemia, hyperuricaemia and not least, total mortality.[3—5]

With bariatric surgery, the mean weight loss is 47.5% of the total body weight when performed as adjustable gastric banding, 61.6% when performed as gastric bypass, 68.2% when performed as gastroplasty and 70.1% when performed as duodenal switch or biliopancreatic diversion.[6]

Most patients are content with the achieved weight loss, but it usually includes undesirable elements in the shape of loose skin, especially corresponding to the abdomen, upper arms, thighs, chest, back, laterally on the back, silverside, proximal to the knee as well as on the cheek. This loose skin causes discomfort, such as infections with fungi and itching, physical discomfort, and hampers physical activity, which patients may experience as psychologically and socially inhibiting.[7,8]

Body contouring surgery seeks to alleviate some of the discomfort caused by the excessive loose skin with the following procedures — abdominoplasty, lower body lift, upper body lift, brachioplasty or thigh lift.[9]

Long-term follow-ups show that the quality of life is significantly improved by body contouring surgery and that this improvement appears to be permanent.[10]

The post-massive-weight-loss body contouring surgery is not free of risks. It is often necessary with long incisions in the skin, which is not of the best quality, and the patients typically have other co-morbidities. The most frequent observed complications are: haematoma, infection, seroma, wound dehiscence, necrosis, asymmetry, lymphoedema, unsightly scarring, influenced sensibility/neuropathy and deep venous thrombosis (DVT).[11] Higher complication rates are described in this type of surgery when done post-bariatric when compared to the same procedures performed on patients who have not undergone weight-loss surgery.[12,13]

As this is a field of plastic surgery, which in recent years has increased in popularity due to the increasing number of bariatric procedures, a review/meta-analysis that sheds light on the frequency of complications across studies seems relevant.

Method

The purpose of this article is to compare complication rates of body contouring surgery when performed on patients with weight loss due to bariatric surgery compared to patients who lost weight due to dietary changes and/or exercise. Is there a significant difference in the complication rate?

The analysis will provide the clinician with a tool to advise the patient prior to surgery and thus help to ensure realistic expectations towards the operative procedure and possible complications.

The meta-analysis was prepared according to the guidelines described by the Meta-analysis of Observational Studies in Epidemiology (MOOSE) Group.[14]

Search strategy

A literature search was conducted in March 2013 in PubMed/Medline databases. The keywords were 'weight loss', 'plastic surgery' and 'complications'. The search resulted in 251 studies. Abstracts of all identified studies were retrieved.

The search was limited to studies which have been published between 1 January 1995 and 1 January 2013, with a minimum of 15 patients in the studies, which also must be in one of the following languages: English, German or one of the Scandinavian languages. Excluded were: animal studies, abstracts, reviews, letters and studies in languages other than those mentioned above. This reduced the number of studies to 203.

Of the 23 studies that were outside the included timeframe, 21 were published before 1995 and would not be qualified to be included in the analysis, even if the timeframe was extended. No relevant study published after 1 January 2013 was identified.

A total of 203 studies were subjected to a new screening, which resulted in 75 studies being discarded as they were not related to body contouring surgery. An additional 108 studies were discarded because they were studies describing surgical techniques, or studies that did not compare complication rates between post-bariatric and non-bariatric weight-loss patients who have undergone body contouring surgery.

Full-text articles were retrieved for the remaining 20 studies, of which 15 studies were discarded because they failed to differentiate between weight-loss methods (bariatric vs. non-bariatric) and subsequent complications following body contouring surgery, that is, the data were not comparable.

This resulted in five studies[13—18] being considered suitable for inclusion in the final analysis.

Further, two hand-search methods were applied. Reference lists of all 20 full-text studies, as well as