TITLE: Loose Skin After Massive Weight Loss: Risks and Guidelines

DATE: 01 December 2011

RESEARCH QUESTIONS

1. What is the clinical evidence on the risks associated with loose skin after massive weight loss?

2. What are the evidence-based guidelines regarding the excision of loose skin after massive weight loss?

KEY MESSAGE

No evidence was identified regarding the risks associated with loose skin after massive weight loss; therefore, no conclusions can be made.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2011, Issue 11), Canadian and abbreviated list of major international health technology agencies, as well as a focused Internet search. Methodological filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies containing safety data, and guidelines. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2006 and November 25, 2011. Internet links were provided, where available.

RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, and evidence-based guidelines.
No health technology assessment reports, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, or evidence-based guidelines were identified regarding the risks associated with loose skin after massive weight loss. Additional references of potential interest are provided in the appendix.

**Health Technology Assessments**
No literature identified.

**Systematic Reviews and Meta-analyses**
No literature identified.

**Randomized Controlled Trials**
No literature identified.

**Non-Randomized Studies**
No literature identified.

**Guidelines and Recommendations**
No literature identified.

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APPENDIX – FURTHER INFORMATION:

Non-Randomized Studies – panniculectomy complications


BACKGROUND: Morbid obesity continues to increase in the United States, which accounts for the increase in bariatric procedures performed. After these patients experience massive weight loss, many are left with a redundant pannus that poses physical limitations and psychosocial disturbances. An increasing proportion of bariatric patients are returning for body-contouring procedures. METHODS: This is a retrospective cohort study set in a tertiary care center. We evaluated 126 post-bariatric panniculectomies performed over a 3-year period. Perioperative and postoperative data were collected through chart review. Descriptive and inferential analyses were performed using SPSS 11.0. RESULTS: Ninety-six percent of patients were female. Mean age of the population was 42 (+/-12). The average post-bariatric weight loss and pre-panniculectomy weight were 53 (+/-16) kg and 78 (+/-14) kg, respectively. Complication rates were as follows: seroma 17%, hematoma 13%, surgical site infection (SSI) 17%, transfusion 6%, skin breakdown/necrosis 11%, and re-exploration 11%. Forty percent of patients experienced a complication. Using multivariate logistic regression, we evaluated age, pre-panniculectomy body mass index (BMI), American Society of Anesthesiologists (ASA) class, specimen weight, and operative duration; only pre-panniculectomy BMI was an independent predictor for developing a postoperative complication (odds ratio 3.3, confidence interval 1.2 to 8.4, P < .01). CONCLUSIONS: Post-bariatric patients who have sustained significant weight loss report subjective improvement after panniculectomy. Even though this population has experienced significant weight loss, they are still at an increased risk for postoperative complications. Maximal reduction in BMI should be stressed to these patients in order to reduce their risk of complications following panniculectomy.


BACKGROUND: Massive weight loss, defined as loss of 50 percent of excess weight, often results in laxity and redundancy of the abdominal skin, causing disabling rashes, pain, physical limitation, back strain, and cosmetic deformity. The heavier the panniculus, the more marked the symptoms. Panniculectomy can treat these symptoms, but the approach must be customized because of complex medical and surgical histories related to obesity and the size of the panniculus. The aim of this study was to analyze a series of massive panniculectomies greater than 10 pounds following massive weight loss and to investigate the outcomes achieved. METHODS: All patients undergoing massive abdominal panniculectomy by a single plastic surgeon at an academic hospital from October of 2000 to December of 2003 were retrospectively studied. Seven men and 17 women qualified: one woman had a two-stage abdominal panniculectomy, each time with greater than 10-pound abdominal skin resections. All but one patient had gastric bypass. Average weight loss was 171
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pounds, with an average maximum body mass index of 70.5 and a minimum body mass index of 43.7 (morbid obesity is defined as a body mass index greater than 40). Patient presentation was regularly complicated by abdominal scars. Abdominal panniculectomy was performed with conservative undermining. Hernias were repaired at the time of surgery. Routine prophylaxis against thromboembolism was performed. RESULTS: Average abdominal skin resection was 16.1 pounds, ranging from 10.3 to 49 pounds. Hernia repair was necessary in 13 patients. Additional surgery performed at the time of panniculectomy included skin reduction surgery of the back (40 percent), chest (32 percent), inner thigh (28 percent), and arm (28 percent). Blood transfusion was necessary in five of the cases (20 percent). Length of stay averaged 3 days. Complications included wounds requiring debridement, dressings, vacuum-assisted closure therapy and/or delayed primary closure (20 percent), and seroma requiring drain replacement or dressings (28 percent). Uncomplicated healing occurred in 44 percent of cases. CONCLUSION: Massive abdominal panniculectomy is challenging to plan, execute, and manage after surgery. The authors present their approach to these patients, with acceptable results.

Non-Randomized Studies – dermal composition after weight loss


BACKGROUND: Collapsed skin folds after bariatric weight loss are often managed by plastic procedures, but changes in dermal composition and architecture have rarely been documented. Given the potential consequences on surgical outcome, a prospective histochemical study was designed. The hypothesis was that a deranged dermal fiber pattern would accompany major changes in adipose tissue. METHODS: Female surgical candidates undergoing postbariatric abdominoplasty (n=40) and never obese women submitted to control procedures (n=40) were submitted to double abdominal biopsy, respectively in the epigastrium and hypogastrium. Histomorphometric assessment of collagen and elastic fibers was executed by the Image Analyzer System (Kontron Electronic 300, Zeiss, Germany). RESULTS: Depletion of collagen, but not of elastic fibers, in cases with massive weight loss was confirmed. Changes were somewhat more severe in epigastrium (P=0.001) than hypogastrium (P=0.007). Correlation with age did not occur. CONCLUSIONS: (1) Patients displayed lax, soft skin lacking sufficient collagen fiber network. (2) Elastic fiber content was not damaged, and was even moderately increased in epigastrium; (3) Preoperative obesity negatively correlated with hypogastric collagen concentration; (4) Future studies should pinpoint the roles of obesity, and especially of massive weight loss, on dermal architecture and response to surgery.

Additional References

Insurance coverage criteria

A dramatic increase in bariatric surgery has increased the number of patients with redundant skin/large panniculus after massive weight loss. This is best treated by surgery; however, not all patients with redundant skin/panniculus get authorization from insurance providers. There are certain insurance coverage criteria for panniculectomy that need to be met by patients for approval. Our search also demonstrated that there are not established criteria/guidelines for different body parts such as inner arms and thighs other than the pannus amongst third-party payers. These cases are appraised individually by third-party payers based on presented signs and symptoms. It is of utmost importance that members of a bariatric team are knowledgeable on these guidelines and should be able to discuss if necessary; however, currently utilized criteria should be discussed with patients, preferably in pre-bariatric surgery phase, and ideally by a plastic surgeon. Advantages are several-fold and discussed in the article.

There is certain insurance coverage criteria for panniculectomy and redundant skin surgery that every plastic surgeon participating in the surgical treatment of massive weight loss patients should be familiar with to accurately document and present the clinical findings of their patients. This article reviews the medical necessity guidelines used by most third-party payers for panniculectomy in massive weight loss patients after bariatric surgery. In addition, insurance coverage criteria for redundant skin surgery and panniculectomy recommended by American Society of Plastic Surgeons (ASPS) for third-party payers were reviewed. Although the criteria used by third-party payers are conceptually similar to those recommended by ASPS, in practice they are harder to meet by most weight loss patients. This discrepancy leads to a group of denied patients who would otherwise be authorized for plastic surgery after massive weight loss, when actual ASPS recommendations are taken into consideration. Furthermore, our search demonstrated that there are no established criteria or guidelines used for different body parts such as inner arms and medial thighs, other than the pannus among third-party payers. This review article points out to the fact that there is a need for development of new set of guidelines for those sites and for modification of current guidelines for medical necessity determination of panniculectomy used among third-party payers, according to actual ASPS recommendations.