Prevention of Seroma and Other Post-Operative Complications Using Continuous Negative Pressure Drain Devices Following Panniculectomy in Massive-Weight Loss Patients

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Goals/Purpose: To compare the immediate application of continuous negative pressure drain system (NP) versus standard, closed-suction drains (CS) in prevention of seroma and other complications in massive weight loss, body-contouring patients.

Methods/Technique: In a prospective, randomized-controlled, single-surgeon study, patients seeking panniculectomy were randomized to NP or CS drains. Patients were compared on multiple demographic criteria including age, gender, BMI, incision length, pannus weight, nutritional status, comorbidities, prior surgery and duration of drain placement. Drains were removed when fluid output was below 30ml/day. Nutrition labs were collected at the time of drain removal. Abdominal ultrasound was performed 2 weeks following drain removal to objectively quantify persistent fluid collections. Quantitative and binomial statistical analysis were performed using, T-test, Chi-square, and logistic regression.

Results/Complications: The NP (n=22) and CS (n=21) groups showed no statistically significant differences in age (p=0.275), BMI (p=0.417), incision length (p=0.396), pannus weight (p=0.685), smoking status (p=1.000), diabetes (p=0.229), nutritional status (all p>0.05), or prior abdominal surgeries (p=0.229). Both BMI (r=0.679, p=0.001) and pannus weight (r=0.536, p=0.010) showed strong positive correlations with presence of seroma. No significant correlations were identified between age, incision length, and drain duration and presence of seroma (p>0.05). Following drain removal, the mean fluid volumes on ultrasound were 1.69cm3 (0-132) and 10.1cm3 (0-46) for CS and NP, respectively (p=0.375). There is a marginally significant difference is seroma presence in favor of NP (p=0.10). Controlling for age, BMI, incision length, and drain duration, the drainage system is a significant predictor of seroma presence (p=0.05) and NP drain systems confer a 79% risk reduction in seroma presence when compared to standard, closed-suction drains in panniculectomy patients. Overall complication rate was decreased in the NP group almost 3-fold, and this difference is marginally significant as well (p=0.143).

Conclusion: Continuous negative pressure drain systems may reduce the drain duration and may reduce the risk of seroma presence compared to standard, closed suction bulb drains. Continuous negative pressure connected directly to drains may impact the post-operative outcomes by reducing overall complication rate in massive weight loss patients undergoing panniculectomy and other body-contouring procedures. Formal cost analysis and quality of life measures need to be obtained in order to comprehensively review the value and cost of adopting this new technology.

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