**A Strict Protocol-Based Approach to Treat Pressure Ulcers in Spinal Cord Injury (SCI) Patients – An Outcome Analysis.**

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**Abstract**

**Introduction:** The short and long-term outcome of pressure ulcer (PU) treatment with tissue flaps in spinal cord injury (SCI) patients has been very variable in the literature. Overall complication rates are reported from 4-50%, and PU recurrence rates are reported from 3-82%[1-3]. We describe our experience after implementing a strict protocol-based approach to treat SCI PU patients at the Minneapolis VAMC in 2008.

**Methods and Materials:** All SCI patients who underwent flap surgery for pressure ulcers went through a strict post-operative protocol. A retrospective study of SCI patients who underwent PU flap surgery from January 2008 – December 2013 was performed. Patient demographics, risk factors, complications, and treatment data were collected and analyzed. A p-value of <0.05 was considered significant.

**Results:** A total of 54 flaps were performed on 42 patients (all males, Mean age: 60 years). The mean follow up period was 22.7 months (Range: 3.5 – 59.8 months). There were 28 (51.8%) ischial, 18 (33.3%) sacral, 6 (11.1%) trochanteric, and 2 (3.7%) 'other' PU's treated. There were 33 (61.1%) patients with a history of smoking, but only one (1.9%) patient who quit smoking < 6 weeks prior to the flap. Twenty-five patients (59.5%) had flaps for previous PU in the past. The mean size of the defects needing coverage was 70.17 $cm^2$. There were 28 (51.8%) minor complications (minor wound issues, cellulitis) that all healed within 6 weeks, and 6 (11.1%) major complications (late major flap loss potentially requiring a second flap). On univariate analysis, ex-smokers who quit <1yr (OR=4.8, p=0.005), increased size of PU (OR=1.02, p=0.003), poor bowel regimen (OR=2.1, p=0.05), and low albumin levels (OR=1.1, p<0.0001) were associated with higher minor complications. Colostomy presence tended to be protective for minor complications (OR=0.5, p=0.07). On multivariate analysis, BMI (OR=1.1, p=0.0005), and smoking cessation <1yr prior to flap (OR=11.6, p=0.0002) were risk factors for minor complications, whereas, presence of a colostomy (OR=0.322, p=0.009), and a normal prealbumin (OR=0.9, p=0.05) were protective for minor complications. Analysis of the 6 major flap losses showed that 5 (83.3%) were quadriplegics, 5 (83.3%) had prior flaps for PU's, and 5 (83.3%) had minor complications in the early post-operative period that healed completely. All, but one, occurred after discharge from the hospital at a mean of 11.3 months due to compliance issues.

**Conclusions:** Despite a strict protocol-based approach to treating SCI PU's, minor complications were very common but easily treated, and had little effect on late outcome. Major flap losses were few, occurred late, and were secondary to compliance issues.

**References:**

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