Prophylactic muscle flaps in spine surgery: Factors associated with post-operative complications

Price M1, Howell E1, Mehta V1, Tillis R2, Ramirez L1, Villalobos D1, Bukenya G1, Park C1, Abd-el-Barr M1, Karikari I1, Brown D2, Goodwin CR1

1Duke University Department of Neurosurgery; Duke University Medical Center; Durham, NC; 2Duke University Department of Plastic Surgery, Duke University; Durham, NC

Introduction

• Multiple pre-operative factors have been demonstrated to impact post-operative site infection and wound dehiscence.
• Prophylactic paraspinal flaps can decrease the likelihood of post-operative complications.
• The objectives of our study were to:
  1. Identify pre-operative factors that impact the decision to perform prophylactic trunk flap closure
  2. Assess factors that predict post-operative wound disruption following flap closure

Methods

• National Surgical Quality Improvement Program (NSQIP) database was queried for all patients undergoing spinal surgeries from 2005-2017
• Pre-operative factors including steroid use, wound infection, preoperative transfusion, medical comorbidities, and American Society of Anesthesiologists (ASA) classifications were extracted.
• Peri-operative factors included wound classification and operative time.
• Univariate and multivariate analyses were performed to delineate risk factors associated with an increased likelihood of receiving muscle flap closures a priori.
• Pre-operative propensity matching was utilized to determine perioperative factors with increased the risk of post-operative complications and infections.

Results

• SSI Rates: 29 (3.83%) in the flap group versus 5154 (1.71%) in the non-flap group (p < 0.0001).
• Factors associated with utilization of a trunk flap:
  • Pre-operative steroid use (OR 0.5; p < 0.0001)
  • Wound infection (OR 0.24; p < 0.0001)
  • Elevated WBC count (OR 1.034; p < 0.0001)
  • Low hematocrit (OR 0.94; p < 0.0001)
  • Preoperative transfusion (OR 0.22; p = 0.0068)
• Perioperative factors associated with postoperative wound disruption:
  • Contaminated or infected wound (OR 4.72; p < 0.0001)
  • ASA classification of severe disease (OR 1.92; p=0.024)
  • Longer operative time (OR 1.001 ; p = 0.0024)

Figure 1: Odds Ratios of factors that significantly increased risk of post-operative SSI after multivariate analysis for flap and non-flap group

Conclusion

✓ Nationally, patients with more comorbidities/higher burden of illness are more likely to receive prophylactic trunk flaps at the time of spinal procedures.
✓ Wound status, ASA class, and functional status were associated with increased risk of wound disruption or SSI irrespective of prophylactic flap.

References