



Risk Factors for Laminectomy Surgical Site Infection in a Majority Minority Patient Population

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Learning Objectives

By the conclusion of this session, participants should be able to: 1) Identify socioeconomic risk factors contributing to SSI in a majority minority population, 2) Generate ideas for how to mitigate against these risk factors

Introduction

Surgical site infection (SSI) following spine surgery remains a serious post-operative complication with rates of infection ranging from 1% to 12%. Several patient, microbiological and procedure-related risk factors have been identified in the literature, but how these findings differ based upon race and/or socioeconomic status has not previously been explored.

Methods

A retrospective review of surgical site infection in 199 consecutive laminectomy cases performed by a single surgeon at a Level-1 trauma center in an urban setting with a majority minority patient population. Regression analysis was performed to determine the effects of race, age, sex, use of drugs, alcohol or tobacco, co-morbidities including HIV, Hepatitis C, hypertension and diabetes mellitus, and homelessness upon the likelihood of developing a SSI.

Results

Overall incidence of SSI was 19.6% with a mean of 15 days until initial presentation. 55% of the patient population was female with a mean age of 54 years. 88% of the patient population identified as Black, 7% as Caucasian, 4% as Hispanic and 1% as another race. 92% of infections occurred in Black patients, with the remaining 8% occurring in Caucasians. Positive HIV or Hepatitis C status, or homelessness were identified as significant risk factors. 85% of all HIV and 89% of all homeless patients had Medicaid insurance.

Rate of Infection Amongst Homeless

| Homeless | Infection | | Total |
|----------|-----------|--------|--------|
| | 0 | 1 | |
| 0 | 147 | 25 | 172 |
| | 85.47 | 14.53 | 100.00 |
| | 91.88 | 64.10 | 86.43 |
| 1 | 13 | 14 | 27 |
| | 48.15 | 51.85 | 100.00 |
| | 8.13 | 35.90 | 13.57 |
| Total | 160 | 39 | 199 |
| | 80.40 | 19.60 | 100.00 |
| | 100.00 | 100.00 | 100.00 |

Pearson chi2(1) = 20.6240 Pr = 0.000

As an example, this diagram demonstrates that over 50% of homeless patients ultimately developed a surgical site infection.

Risk Factors for Surgical Site Infection

| infection | Odds Ratio | Std. Err. | z | P> z | [95% Conf. Interval] | |
|--------------|------------|-----------|--------|-------|----------------------|----------|
| age | .9582898 | .0234949 | -1.74 | 0.082 | .9133296 | 1.005463 |
| female | 1.244394 | .638244 | 0.43 | 0.670 | .4553867 | 3.400442 |
| _Irace_1 | 1.171956 | .9648223 | 0.19 | 0.847 | .233428 | 5.883962 |
| instrument~n | 1.12565 | .6278896 | 0.21 | 0.832 | .377226 | 3.358962 |
| multilevel | 1.107539 | .5827916 | 0.19 | 0.846 | .3948692 | 3.106453 |
| diabetes | .8745945 | .4591094 | -0.26 | 0.799 | .3125915 | 2.447013 |
| hiv | 6.300814 | 5.160402 | 2.25 | 0.025 | 1.265487 | 31.37152 |
| hepc | 8.177332 | 5.788542 | 2.97 | 0.003 | 2.042048 | 32.74592 |
| htn | 1.529939 | .8371644 | 0.78 | 0.437 | .523488 | 4.471379 |
| smoker | .3711881 | .2163798 | -1.70 | 0.089 | .1184121 | 1.163569 |
| alcohol | 1.439143 | .8461343 | 0.62 | 0.536 | .454617 | 4.555773 |
| druguse | .915207 | .6576158 | -0.12 | 0.902 | .2238176 | 3.742351 |
| homeless | 8.98e-08 | 6.87e-08 | -21.21 | 0.000 | 2.01e-08 | 4.02e-07 |

Highlighted in red are risk factors found to be significant contributors to infection after laminectomy.

Conclusions

Incidence of SSI following laminectomy in our majority minority population is significantly higher than rates previously reported. Factors contributing to this include positive HIV or Hepatitis C status, or homelessness, which disproportionately affect minorities. Insurance status can also present challenges for post-operative rehabilitation facility placement or extended wound care. When considering mainly elective procedures such as laminectomy, the decision to operate must include a comprehensive plan that demonstrates an awareness of socioeconomic factors unique to this population that can lead to postoperative complications.

References

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