Impact of Community Distress on Long-Term Outcomes Following Ventral Hernia Repair

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BACKGROUND & INNOVATION

The distressed communities index (DCI) is a measure of socioeconomic distress within a community based on zip codes. It has been correlated with inequity in postoperative outcomes following ventral hernia repair (VHR).[1]

HYPOTHESIS

We hypothesized that greater community distress would be correlated with worse long-term outcomes in patients undergoing VHR.

METHODS

This was a retrospective cohort study of patients undergoing VHR at a single tertiary care institution between 2010-2016. Patient and operative factors including demographics, insurance status, comorbidities, hernia size and location, hernia type, recurrence status, and mesh placement were recorded. Long-term outcomes (>30 days) were categorized as hernia recurrence reoperation (HRR), major complications requiring emergency surgery (MCES), and non-recurrence procedural interventions (NRPI). Using the DCI database, zip codes were used to correlate levels of community distress (distressed, at risk, mid-tier, comfortable, and prosperous) with rates of long-term outcomes following index VHR. Ten-year Kaplan Meier survival curves were obtained for each outcome.

RESULTS

A total of 846 patients were included in the study (distressed n=160, at risk n=226, mid-tier n=93, comfortable n=105, prosperous n=265). Significant differences were present in age distribution (p=0.047), race (p<0.0001), and insurance status (p<0.0001) between groups. More prosperous communities had lower rates of diabetes (p=0.028), COPD (p=0.0018), and nicotine use (p=0.043), but not BMI (p=0.10) or steroid use (p=0.72). At the time of index VHR, distressed communities were more likely to have recurrent hernias (p=0.0031) that were incisional (p=0.0001). More prosperous areas tended to have smaller hernia widths (p=0.0004) and clean wound status (p=0.024). Presence (p=0.15), location (p=0.13), and type (p=0.08) of mesh were not correlated with levels of community distress.

No significant difference was found in HRR (logrank p=0.42, Fig 1), MCES (logrank p=0.32, Fig 2), or NRPI (logrank p=0.16, Fig 3) on Kaplan Meier survival curves. Only HRR showed a significant difference on univariate analysis in relation to community distress level when evaluating both overall rate (n=90, 10.6%, p=0.04) and months to recurrence (81.5[64.7,99.7], p=0.04). HRR rates and months to recurrence were as follows: distressed 6.3% (n=10), 84[66.9,100.9]; at risk 11.5% (n=26), 81.3[65.5,102.2]; mid-tier 5.4% (n=5), 86.7[66.9,101.9]; comfortable 16.2% (n=17), 75.3[60,97.9]; and prosperous 12.1% (n=32), 80.8[62.3,96.4].

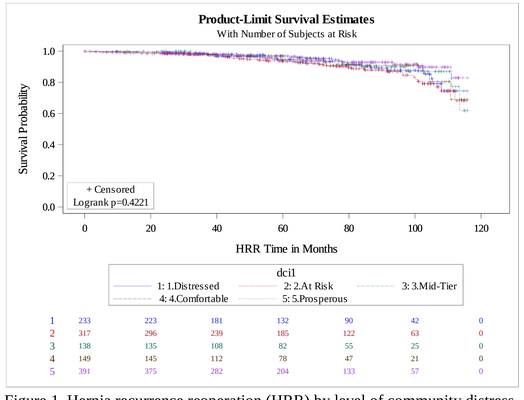


Figure 1. Hernia recurrence reoperation (HRR) by level of community distress.

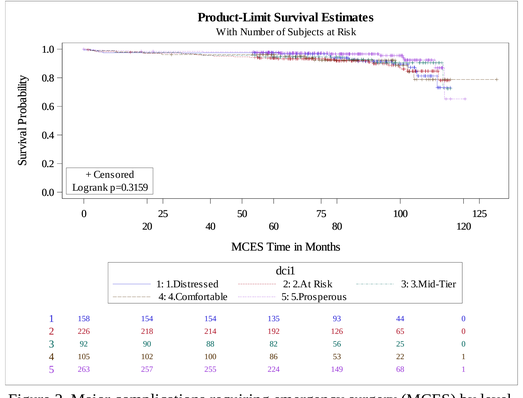


Figure 2. Major complications requiring emergency surgery (MCES) by level of community distress.

CONCLUSIONS

Greater socioeconomic distress was correlated with higher rates of HRR, but not MCES or NRPI. Levels of community distress do not appear to be correlated with need for urgent or emergent procedural intervention following VHR. Further analysis is needed to identify factors that contribute to poor long-term outcomes following VHR.

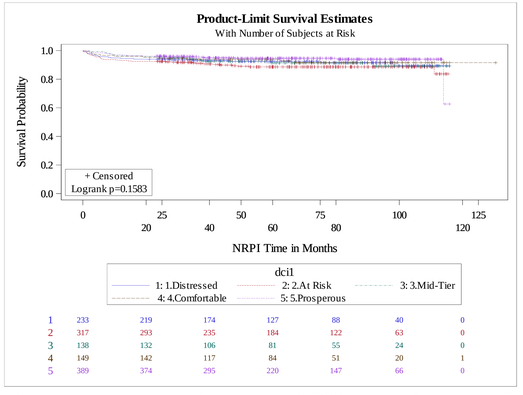


Figure 3. Non-recurrence procedural interventions (NRPI) by level of community distress.

REFERENCES

1. Maskal SM, Chang JH, Ellis RC, Phillips S, Melland-Smith M, Messer N, Beffa LRA, Petro CC, Prabhu AS, Rosen MJ, Miller BT. Distressed community index as a predictor of presentation and postoperative outcomes in ventral hernia repair. Am J Surg. 2023 Nov;226(5):580–585. PMID: 37331908

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