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Variability in the Decision to Offer Surgery Among Attending Neurosurgeons at an Academic Center

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Introduction

Inter-surgeon variability in offering elective surgery can have major consequences for patient morbidity and healthcare spending (1). However, there is a paucity of data addressing such variability within neurosurgery (2,3). We performed a peer-review study to assess the decision making variability among attending neurosurgeons at one multi-hospital institution.

Methods

All consecutive patients undergoing four standard inpatient surgical interventions (craniotomy for tumor (CFT), redo-CFT, laminectomy, redo-laminectomy) were retrospectively enrolled (2015-2017; n=80 individual cases, n=20 index cases of each type were randomly selected for review). The selected cases were scored by independent, attending neurosurgeons using a 0-to-100 scale to evaluate the need for surgery (0-"surgery unnecessary", 100-"surgery absolutely indicated") based on clinical data (patient demographics, pre-operative notes, radiology reports and op notes; n=616 independent case reviews). Binary "yes" vs. "no" rating conversion was set to a score of 70 (based on surgeon survey) and inter-rater reliability was determined (Cohen's Kappa).

Results

We observed a high level of agreement among raters in the decision to offer surgery (proportion of agreement 81.78%, Repeated-measures ANOVA, $p = 0.0158$ as compared to an agreement by chance). Redo-CFT had the least amount of inter-rater reliability and showed significantly less agreement for surgical indication than first-time CFT and first-time laminectomy (ANOVA, $p's < 0.01$). CFT involving low-grade pathology (e.g., meningioma) had less agreement than high-grade pathology in terms of the need for surgery ($p < 0.01$). Spine surgery involving fusion procedures had less

References

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Learning Objectives

Several factors impact surgical decision making variability amongst attending neurosurgeons.

Conclusions

There was general agreement among neurosurgeons in terms of indication for surgery, however, we identified several factors that were associated with increased decision making variability. These factors should guide efforts aimed at reducing unnecessary variability in surgical practice with the goal of effective allocation of healthcare resources to advance the value paradigm in neurosurgery.

Figure 1

Results