Surgical decision making

Although it is known that intersurgeon variability in offering elective surgery can have major consequences for patient morbidity and healthcare spending, data addressing variability within neurosurgery are scarce.

Ramayya et al. performed a prospective peer-review study of randomly selected neurosurgery cases in order to assess the extent of consensus regarding the decision to offer elective surgery among attending neurosurgeons across one large academic institution.

All consecutive patients who had undergone standard inpatient surgical interventions of 1 of 4 types (craniotomy for tumor [CFT], nonacute redo CFT, first-time spine surgery with/without instrumentation, and nonacute redo spine surgery with/without instrumentation) during the period 2015-2017 were retrospectively enrolled (n = 9156 patient surgeries, n = 80 randomly selected individual cases, n = 20 index cases of each type randomly selected for review). The selected cases were scored by attending neurosurgeons using a need for surgery (NFS) score based on clinical data (patient demographics, preoperative notes, radiology reports, and operative notes; n = 616 independent case reviews). Attending neurosurgeon reviewers were blinded as to performing provider and surgical outcomes. Aggregate NFS scores across various categories were measured. The authors employed a repeated-measures mixed ANOVA model with autoregressive variance structure to compute omnibus statistical tests across the various surgery types. Interrater reliability (IRR) was measured using Cohen's kappa based on binary NFS scores.RESULTSOverall, the authors found that most of the neurosurgical procedures studied were rated as “indicated” by blinded attending neurosurgeons (mean NFS = 88.3, all p values < 0.001) with greater agreement among neurosurgeon raters than expected by chance (IRR = 81.78%, p = 0.016). Redo surgery had lower NFS scores and IRR scores than first-time surgery, both for craniotomy and spine surgery (ANOVA, all p values < 0.01). Spine surgeries with fusion had lower NFS scores than spine surgeries without fusion procedures (p < 0.01).

There was general agreement among neurosurgeons in terms of indication for surgery; however, revision surgery of all types and spine surgery with fusion procedures had the lowest amount of decision consensus. These results 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 [1)].

1)
Ramayya AG, Chen HI, Marcotte PJ, Brem S, Zager EL, Osiemo B, Piazza M, Sharma N, McClintock SD, Schuster JM, Ali ZS, Connolly P, Heuer GG, Grady MS, Kung DK, Ozturk AK, O'Rourke DM, Malhotra NR. Assessing variability in surgical decision making among attending neurosurgeons at an academic center. J Neurosurg. 2019 May 31:1-7. doi: 10.3171/2019.2.JNS182658. [Epub ahead of print] PubMed PMID: 31151100.