

# Evaluation of Recovery Quality Following Different Anesthetic Techniques

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## ABSTRACT

**Background:** The choice of anesthetic technique may influence the quality of postoperative recovery, yet comparative data using validated recovery assessment tools remain limited. Understanding these differences is essential for optimizing perioperative care protocols and enhancing patient outcomes. **Objective:** To evaluate and compare the quality of recovery following different anesthetic techniques using a validated recovery scoring system. **Methods & Materials:** This prospective cohort study was conducted at Sherpur 250-bed District Sadar Hospital and Private Chamber, Bangladesh, from January to June 2025. A total of 67 adult patients undergoing elective surgery were enrolled using purposive sampling. Quality of recovery was assessed using the validated Quality of Recovery-40 (QoR-40) questionnaire at 24 hours postoperatively. Data were analyzed using SPSS version 23.0. **Results:** The mean global QoR-40 score was  $168.4 \pm 14.2$ . Patients receiving regional anesthesia demonstrated significantly higher QoR-40 scores compared to those receiving general anesthesia ( $175.6 \pm 10.8$  vs.  $161.2 \pm 15.6$ ,  $p < 0.001$ ). Regional anesthesia was associated with superior scores across all five dimensions of the QoR-40, particularly in physical comfort and pain domains. **Conclusion:** Regional anesthesia is associated with significantly better quality of early postoperative recovery compared to general anesthesia. These findings support the preferential use of regional techniques where clinically appropriate to optimize patient recovery and satisfaction.

**Keywords:** General anesthesia, Patient-reported outcomes, Quality of recovery, QoR-40, Regional anesthesia

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## INTRODUCTION

The quality of postoperative recovery has emerged as a central metric in contemporary perioperative medicine, reflecting a paradigm shift from traditional morbidity-based outcomes toward patient-centered assessments of surgical and anesthetic success [1]. Patients increasingly expect not only survival and freedom from major complications but also a rapid and comfortable return to normal function following anesthesia and surgery [2]. This evolving focus has driven the development and validation of instruments capable of quantifying the multidimensional nature of recovery, encompassing physical comfort, pain, emotional state, physical independence, and psychological support [3]. Among these instruments, the Quality of Recovery-40 (QoR-40) questionnaire has become the most widely used and extensively validated patient-reported outcome measure for assessing postoperative recovery quality [4]. The QoR-40 provides a global score and sub scores across five dimensions, offering a comprehensive evaluation of the patient's recovery experience [5]. Its proven reliability, validity, and responsiveness across diverse surgical populations and cultural contexts have established it as the

gold standard for recovery assessment in clinical research [6]. The choice of anesthetic technique represents a potentially modifiable factor that may influence postoperative recovery quality. Regional anesthesia techniques, including neuraxial blocks and peripheral nerve blocks, offer theoretical advantages over general anesthesia, including superior analgesia, reduced opioid consumption, decreased postoperative nausea and vomiting, and earlier mobilization [7]. However, the evidence comparing recovery quality between general and regional anesthesia remains inconclusive. A prospective observational study of 97 patients undergoing orthopedic forearm surgery found no significant difference in global QoR-40 scores between general and regional anesthesia groups at postoperative day 1 or day 7 [8]. Similarly, another investigation reported that the type of anesthesia did not affect patient-focused quality of postoperative recovery in patients undergoing orthopedic forearm surgery [9]. Conversely, other studies have demonstrated superior recovery quality with regional techniques. A prospective comparison of cervical epidural anesthesia versus general anesthesia for upper-arm vascular surgery in patients with end-stage

renal disease found significantly higher total QoR-40 scores in the epidural group at postoperative day 1, along with reduced opioid consumption and lower incidence of postoperative nausea [10]. In the context of video-assisted thoracic surgery, ultrasound-guided erector spinae plane block combined with general anesthesia significantly improved global QoR-40 scores at postoperative day 1 compared to general anesthesia alone [11]. Moreover, a recent observational study evaluating anesthetic recovery quality in postoperative patients reported that recovery quality was significantly higher with regional anesthetic techniques compared to balanced general anesthesia [12]. The discordant findings in the literature suggest that the recovery advantage of regional anesthesia may be procedure-specific, patient-dependent, or influenced by variations in perioperative management protocols [13]. Furthermore, many studies have focused on specific surgical populations or regional techniques, limiting the generalizability of their conclusions. In Bangladesh, as in many low- and middle-income countries, systematic evaluation of recovery quality using validated instruments remains uncommon, and comparative data on recovery following

different anesthetic techniques in district hospital settings are scarce. Understanding these patterns is essential for optimizing perioperative care pathways, improving patient outcomes, and guiding evidence-based policy decisions in resource-constrained environments. This prospective cohort study was therefore undertaken to evaluate and compare the quality of postoperative recovery following general versus regional anesthesia in adult surgical patients at a district hospital in Bangladesh, using the validated QoR-40 questionnaire. By generating locally relevant evidence, we aim to inform anesthetic practice and contribute to the growing body of knowledge on patient-centered recovery outcomes.

METHODS & MATERIALS

This prospective cohort study was conducted at Sherpur 250-bed District Sadar Hospital and Sherpur doctor’s Hospital Private Chamber, Bangladesh, from January to June 2025. Adult patients scheduled for elective surgical procedures under either general or regional anesthesia were consecutively screened for enrollment.

**Table I**  
Demographic and clinical characteristics of the study population (n=67).

| Variable          | Category      | n (%)     |
|-------------------|---------------|-----------|
| Age group (years) | 18–30         | 14 (20.9) |
|                   | 31–50         | 31 (46.3) |
|                   | 51–75         | 22 (32.8) |
| Sex               | Male          | 36 (53.7) |
|                   | Female        | 31 (46.3) |
| ASA status        | I             | 43 (64.2) |
|                   | II            | 24 (35.8) |
| Type of surgery   | Hernia repair | 22 (32.8) |
|                   | Orthopedic    | 18 (26.9) |
|                   | Abdominal     | 15 (22.4) |
|                   | Other         | 12 (17.9) |

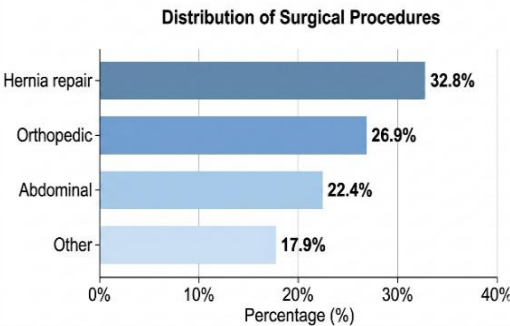


**Figure 1** Distribution of surgical procedures.

The bar chart illustrates the distribution of surgical procedures among the cohort, with hernia repair (32.8%) and orthopedic procedures (26.9%) being the most common.

**Inclusion criteria:** Patients aged 18 years or older, of either sex, with American Society of Anesthesiologists (ASA) physical status I or II, undergoing elective surgery under general or regional anesthesia were eligible for inclusion.

**Exclusion criteria:** Patients with cognitive impairment preventing accurate questionnaire completion, psychiatric disorders, chronic pain conditions, inability to understand the questionnaire, or those requiring emergency surgery were excluded.

**Study procedure:** After obtaining written informed consent, demographic and baseline clinical data were recorded. Anesthetic technique was determined by the attending anesthesiologist. Quality of recovery was assessed at 24 hours postoperatively using the validated Quality of Recovery-40 (QoR-40) questionnaire, a 40-item instrument providing a global score (range 40–200) and five-dimensional sub scores covering physical comfort, pain, emotional state, physical independence, and psychological support [14]. All

assessments were performed by trained research personnel.

**Data analysis:** Data were entered into a predesigned proforma and analyzed using SPSS version 23.0. Continuous variables were expressed as mean ± standard deviation, and categorical variables as frequencies and percentages. An independent t-test was used to compare QoR-40 scores between groups. A p-value <0.05 was considered statistically significant.

RESULT

A total of 67 patients completed the study. The baseline demographic and clinical characteristics of the cohort are summarized in *Table I*. The mean age was 43.1 ± 14.5 years (range 18–75), with male patients comprising 53.7% of the cohort. The majority of patients (64.2%) were classified as ASA physical status I. Hernia repair (32.8%) and orthopedic procedures (26.9%) were the most common surgical types. The distribution of surgical procedures is further illustrated in *Figure 1*.

The global QoR-40 scores at 24 hours postoperatively are presented in *Table II*. Patients receiving regional anesthesia demonstrated significantly higher global QoR-40 scores compared to those receiving general anesthesia (175.6 ± 10.8

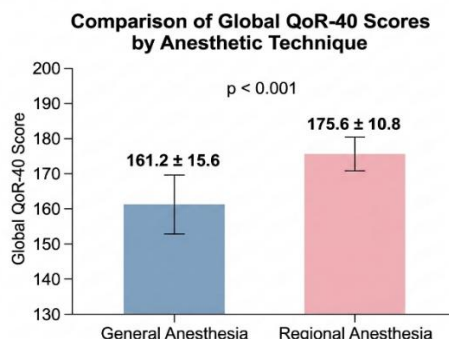
vs. 161.2 ± 15.6, p<0.001). The comparison of global QoR-40 scores between the two groups is visually represented in *Figure 2*.

**Table II**

Global QoR-40 scores at 24 hours postoperatively by anesthetic technique.

| Anesthetic technique | n  | Mean QoR-40 score $\pm$ SD | Range   | p-value |
|----------------------|----|----------------------------|---------|---------|
| General anesthesia   | 35 | 161.2 $\pm$ 15.6           | 132–189 | <0.001  |
| Regional anesthesia  | 32 | 175.6 $\pm$ 10.8           | 154–196 |         |

An independent t-test was used to compare global QoR-40 scores between groups.

**Figure 2** Comparison of global QoR-40 scores between anesthetic techniques.

The bar chart shows that patients receiving regional anesthesia achieved significantly higher global QoR-40 scores than those receiving general anesthesia (175.6  $\pm$  10.8 vs. 161.2  $\pm$  15.6,  $p < 0.001$ ). Error bars represent standard deviation. QoR-40 = Quality of Recovery-40 (range 40–200).

The five-dimensional QoR-40 subscores comparing general and regional anesthesia groups are presented in Table 3. Regional anesthesia was associated with superior scores across all five dimensions. The differences were most pronounced in the physical comfort (45.2  $\pm$  4.3 vs. 39.8  $\pm$  5.6,

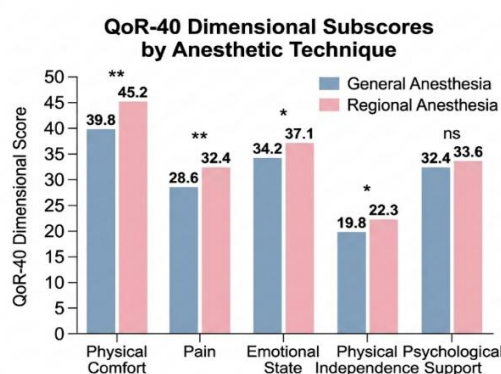
$p < 0.001$ ) and pain (32.4  $\pm$  3.8 vs. 28.6  $\pm$  4.5,  $p < 0.001$ ) domains. The comparison of dimensional subscores between the two groups is visually represented in Figure 3.

**Table III**

QoR-40-dimensional sub-scores by anesthetic technique.

| Dimension             | Anesthesia     |                 | p-value |
|-----------------------|----------------|-----------------|---------|
|                       | General (n=35) | Regional (n=32) |         |
| Physical comfort      | 39.8 $\pm$ 5.6 | 45.2 $\pm$ 4.3  | <0.001  |
| Pain                  | 28.6 $\pm$ 4.5 | 32.4 $\pm$ 3.8  | <0.001  |
| Emotional state       | 34.2 $\pm$ 4.8 | 37.1 $\pm$ 4.2  | 0.009   |
| Physical independence | 19.8 $\pm$ 3.6 | 22.3 $\pm$ 3.1  | 0.003   |
| Psychological support | 32.4 $\pm$ 3.2 | 33.6 $\pm$ 2.9  | 0.112   |

Independent t-tests were used to compare dimensional subscores between groups.

**Figure 3** QoR-40-dimensional subscores by anesthetic technique.

The grouped bar chart illustrates that regional anesthesia was associated with superior scores across all five dimensions of the QoR-40. The differences were most pronounced in the physical comfort and pain domains. \*\*\* indicates  $p < 0.001$  (physical comfort and pain domains), \*\*

indicates  $p < 0.01$  (emotional state and physical independence domains), and ns indicates not significant (psychological support domain,  $p = 0.112$ ). Error bars represent standard deviation. QoR-40 = Quality of Recovery-40.

## DISCUSSION

This prospective cohort study of 67 patients demonstrates that regional anesthesia is associated with significantly better quality of early postoperative recovery compared to general anesthesia, as measured by the QoR-40 questionnaire.

Patients receiving regional anesthesia achieved substantially higher global QoR-40 scores at 24 hours postoperatively ( $175.6 \pm 10.8$  vs.  $161.2 \pm 15.6$ ,  $p < 0.001$ ), with superior performance across all five dimensions of the instrument. These findings support the preferential use of regional techniques where clinically appropriate and contribute to the growing body of evidence on patient-centered recovery outcomes. The QoR-40 has emerged as the most extensively validated instrument for measuring postoperative quality of recovery, providing a global score and subscores across five dimensions: physical comfort, pain, emotional state, physical independence, and psychological support [14]. A quantitative systematic review encompassing 17 studies and 3,459 patients confirmed the QoR-40's excellent psychometric properties, with pooled content and construct validity ( $r = 0.58$ , 95% CI: 0.51–0.65), excellent internal consistency (pooled  $\alpha = 0.91$ , 95% CI: 0.88–0.93), and test-retest reliability (pooled  $r = 0.90$ , 95% CI: 0.86–0.92) [15]. The mean completion time of 5.1 minutes further supports its clinical feasibility in routine perioperative settings [15]. The substantial difference in global QoR-40 scores observed in this study (14.4 points) exceeds the minimal clinically important difference previously established for this instrument, indicating that the recovery advantage of regional anesthesia is not merely statistically significant but also clinically meaningful [16]. The most pronounced differences between anesthetic techniques were observed in the physical comfort and pain domains of the QoR-40. This finding is consistent with the established physiological advantages of regional anesthesia, which provides targeted neural blockade that delivers sustained postoperative analgesia while avoiding the systemic effects of volatile anesthetics and opioids [17]. A prospective randomized controlled trial comparing neuraxial and general anesthesia for abdominal hysterectomy reported a median difference in global QoR-40 scores of 17 points (95% CI: 11–21.5) at 24 hours, with superior scores across all QoR-40 subcomponents in the neuraxial group [18]. Similarly, a prospective comparison of cervical epidural anesthesia versus general anesthesia for upper-arm vascular surgery in patients with end-stage renal disease found significantly higher total QoR-40 scores in the epidural group at postoperative day 1, along with reduced opioid consumption and lower incidence of postoperative nausea [19]. In the context of video-assisted thoracic surgery, ultrasound-guided erector spinae plane block combined with general anesthesia significantly improved global QoR-40 scores at postoperative day 1 compared to

general anesthesia alone, with a median difference of 11 points [20]. The present study's finding of significantly better physical independence scores in the regional anesthesia group ( $22.3 \pm 3.1$  vs.  $19.8 \pm 3.6$ ,  $p = 0.003$ ) is clinically significant, as early mobilization is a cornerstone of enhanced recovery protocols [21]. Regional anesthesia facilitates earlier ambulation by providing effective analgesia without the sedation and motor impairment associated with systemic opioids [22]. The earlier return to physical independence observed in this cohort may translate into reduced risk of thromboembolic complications, shorter hospital stays, and faster return to normal activities [23]. Interestingly, the psychological support domain showed no significant difference between groups ( $p = 0.112$ ), suggesting that both anesthetic techniques provide comparable levels of patient reassurance and informational support. This finding may reflect the standardized perioperative communication and psychological preparation provided to all patients, regardless of anesthetic technique. It also suggests that the primary drivers of improved recovery quality with regional anesthesia are physiological rather than psychological in nature [24]. Despite some limitations, this study provides valuable evidence from a district hospital setting in Bangladesh, where such comparative data are scarce. The use of the validated QoR-40 instrument strengthens the reliability of the findings and facilitates comparison with international studies. The results support the integration of regional anesthesia into enhanced recovery protocols and suggest that regional techniques should be considered the preferred approach when clinically appropriate, particularly in resource-limited settings where rapid recovery and early discharge can significantly reduce healthcare costs and improve patient flow.

### LIMITATIONS

The single-center design, purposive sampling, and modest sample size ( $n=67$ ) limit generalizability. Lack of blinding and the absence of follow-up beyond 24 hours are additional constraints. Unmeasured confounding variables, including surgical type and patient expectations, may have influenced outcomes.

### CONCLUSION

Regional anesthesia is associated with significantly better quality of early postoperative recovery compared to general anesthesia, as measured by the QoR-40 questionnaire. Patients receiving regional anesthesia achieved superior global scores and demonstrated better outcomes across all five dimensions, particularly in physical comfort and pain. These findings support the preferential use

of regional techniques where clinically appropriate.

### RECOMMENDATION

We recommend routine use of the QoR-40 for recovery assessment and preferential use of regional anesthesia for eligible surgical patients. Larger multicenter randomized controlled trials with extended follow-up are warranted to validate these findings.

### CONFLICT OF INTEREST

The authors declare no conflicts of interest. No funding was received for this study. The corresponding author had full access to all data and final responsibility for the decision to submit for publication.

### AI DECLARATION

Artificial intelligence tools contributed marginally to manuscript preparation and development. All core scientific content was human-verified.

### REFERENCES

- Berning V, Laupheimer M, Nübling M, Heidegger T. Influence of quality of recovery on patient satisfaction with anaesthesia and surgery: a prospective observational cohort study. *Anaesthesia*. 2017 Sep;72(9):1088-96. <https://doi.org/10.1111/anae.13906>
- Myles PS, Shulman MA, Reilly J, Kasza J, Romero L. Measurement of quality of recovery after surgery using the 15-item quality of recovery scale: a systematic review and meta-analysis. *British Journal of Anaesthesia*. 2022 Jun 1;128(6):1029-39. <https://doi.org/10.1016/j.bja.2022.03.009>
- Myles PS, Weitkamp B, Jones K, Melick J, Hensen S. Validity and reliability of a postoperative quality of recovery score: the QoR-40. *British journal of anaesthesia*. 2000 Jan 1;84(1):11-5. <https://doi.org/10.1093/oxfordjournals.bja.a013366>
- Beck J, Cramp P, Noden J. Paroxysmal extreme pain disorder. *British journal of anaesthesia*. 2013 May 1;110(5):850-1. <https://doi.org/10.1093/bja/aet099>
- Lin OS, Weigel W. Nonoperating room anesthesia for gastrointestinal endoscopic procedures. *Current Opinion in Anesthesiology*. 2018 Aug 1;31(4):486-91. <https://doi.org/10.1097/aco.0000000000000610>
- Karaman S, Arici S, Dogru S, Karaman T, Tapar H, Kaya Z, Suren M, Gurler Balta M. Validation of the Turkish version of the Quality of Recovery-40 questionnaire. Health and quality of life outcomes. 2014 Jan 15;12(1):8. <https://doi.org/10.1186/1477-7525-12-8>
- Liu SS, Strödtbeck WM, Richman JM, Wu CL. A comparison of regional versus general anesthesia for ambulatory anesthesia: a meta-analysis of randomized controlled trials. *Anesthesia & Analgesia*. 2005 Dec;101(6):1634-42. <https://doi.org/10.1213/01.ane.0000180829.70036.4f>
- Doo AR, Kang S, Kim YS, Lee TW, Lee JR, Kim DC. The effect of the type of

- anesthesia on the quality of postoperative recovery after orthopedic forearm surgery. *Korean journal of anesthesiology*. 2020 Feb 1;73(1):58-66.  
<https://doi.org/10.4097/kja.19352>
9. Kim SH, Ju HM, Choi CH, Park HR, Shin S. Inhalational versus intravenous maintenance of anesthesia for quality of recovery in patients undergoing corrective lower limb osteotomy: a randomized controlled trial. *PLoS One*. 2021 Feb 19;16(2): e0247089.  
<https://doi.org/10.1371/journal.pone.0247089>
  10. Cho H, Kwon H, Song S, Yoo J, Kim M, Park S, Chung J, Kim S, Park S, Ok S. Quality of postoperative recovery after upper-arm vascular surgery for hemodialysis in patients with end-stage renal disease: A prospective comparison of cervical epidural anesthesia vs general anesthesia. *Medicine*. 2020 Jan 17;99(3): e18773.  
<https://doi.org/10.1097/md.00000000000018773>
  11. Yao Y, Fu S, Dai S, Yun J, Zeng M, Li H, Zheng X. Impact of ultrasound-guided erector spinae plane block on postoperative quality of recovery in video-assisted thoracic surgery: a prospective, randomized, controlled trial. *Journal of clinical anesthesia*. 2020 Aug 1; 63:109783.  
<https://doi.org/10.1016/j.jclinane.2020.109783>
  12. Navarro-Benítez LM, García-Posada LD, Landeros-Navarro IY, López-Garcés VM. Evaluation of the quality of anesthetic recovery in postoperative patients. *Revista Médica del Instituto Mexicano del Seguro Social*. 2023;61(Suppl 2): S323.
  13. Quinn TJ, McMahon D. Commentary: Evaluating the Landscape of Clinical Research in Neurosurgery. *Neurosurgery*. 2019 Sep 1;85(3): E494-5.  
<https://doi.org/10.1093/neuros/nyz155>
  14. Stark PA, Myles PS, Burke JA. Development and psychometric evaluation of a postoperative quality of recovery score: the QoR-15. *Anesthesiology*. 2013 Jun 1;118(6):1332-40.  
<https://doi.org/10.1097/aln.0b013e318289b84b>
  15. Gornall BF, Myles PS, Smith CL, Burke JA, Leslie K, Pereira MJ, Bost JE, Kluivers KB, Nilsson UG, Tanaka Y, Forbes A. Measurement of quality of recovery using the QoR-40: a quantitative systematic review. *British journal of anaesthesia*. 2013 Aug 1;111(2):161-9.  
<https://doi.org/10.1093/bja/aet014>
  16. Myles PS, Myles DB, Gallagher W, Chew C, MacDonald N, Dennis A. Minimal clinically important difference for three quality of recovery scales. *Anesthesiology*. 2016 Jul 1;125(1):39-45.  
<https://doi.org/10.1097/aln.0000000000001158>
  17. Graff V, Gabutti L, Treglia G, Pascale M, Anselmi L, Cafarotti S, Regina DL, Mongelli F, Saporito A. Perioperative costs of local or regional anesthesia versus general anesthesia in the outpatient setting: a systematic review of recent literature. *Brazilian Journal of Anesthesiology*. 2023 Apr 21;73(3):316-39.  
<https://doi.org/10.1016/j.bjane.2021.09.012>
  18. Catro-Alves LJ, De Azevedo VL, de Freitas Braga TF, Gonçalves AC, De Oliveira GS. The effect of neuraxial versus general anesthesia techniques on postoperative quality of recovery and analgesia after abdominal hysterectomy: a prospective, randomized, controlled trial. *Anesthesia & Analgesia*. 2011 Dec;113(6):1480-6.  
<https://doi.org/10.1213/ane.0b013e3182334d8b>
  19. Rehfuess JP, Berceli SA, Barbey SM, He Y, Kubilis PS, Beck AW, Huber TS, Scali ST. The spectrum of hand dysfunction after hemodialysis fistula placement. *Kidney international reports*. 2017 May 1;2(3):332-41.  
<https://doi.org/10.1016/j.ekir.2016.11.006>
  20. Yao Y, Li H, He Q, Chen T, Wang Y, Zheng X. Efficacy of ultrasound-guided erector spinae plane block on postoperative quality of recovery and analgesia after modified radical mastectomy: randomized controlled trial. *Regional Anesthesia & Pain Medicine*. 2020 Jan;45(1):5-9.  
<https://doi.org/10.1136/rapm-2019-100983>
  21. Ljungqvist O, Scott M, Fearon KC. Enhanced recovery after surgery: a review. *JAMA surgery*. 2017 Mar;152(3):292-8.  
<https://doi.org/10.1001/jamasurg.2016.4952>
  22. Kehlet H, Dahl JB. Anaesthesia, surgery, and challenges in postoperative recovery. *The Lancet*. 2003 Dec 6;362(9399):1921-8.  
[https://doi.org/10.1016/s0140-6736\(03\)14966-5](https://doi.org/10.1016/s0140-6736(03)14966-5)
  23. Quinn TJ, McMahon D. Commentary: Evaluating the Landscape of Clinical Research in Neurosurgery. *Neurosurgery*. 2019 Sep 1;85(3): E494-5.  
<https://doi.org/10.1093/neuros/nyz155>
  24. Lee WK, Kim MS, Kang SW, Kim S, Lee JR. Type of anaesthesia and patient quality of recovery: a randomized trial comparing propofol–remifentanyl total iv anaesthesia with desflurane anaesthesia. *British journal of anaesthesia*. 2015 Apr 1;114(4):663-8.  
<https://doi.org/10.1093/bja/aeu405>