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Hypnosis in Surgery: A Modern Adjunct to Anesthesia or a Forgotten Art? A Narrative Review

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Abstract: Hypnosis was used for surgical analgesia long before modern chemical anesthesia, yet its role in contemporary perioperative care remains contested. Interest has revived because of the need for opioid-sparing strategies. Still, the literature mixes robust trial evidence with overstated claims about physiological effects, recovery, and digital applications, and a balanced synthesis for anesthesiologists is lacking. This review aimed to clarify the neurophysiological basis, clinical applications, comparative position, and implementation barriers of clinical hypnosis in surgery. A narrative review was conducted of meta-analyses, systematic reviews, randomized controlled trials, neuroimaging studies, surveys, and methodological guidance published between 1996 and 2026, with each claim verified against its primary source. Hypnosis modulates distributed pain-processing networks. The most consistent clinical benefits are reductions in anxiety, pain, selected medication consumption, and postoperative nausea and vomiting, particularly when hypnosis is combined with local anesthesia and light sedation. In contrast, effects on stress biomarkers, wound healing, gastrointestinal recovery, and length of stay remain unproven. Effects are heterogeneous, and virtual reality-delivered hypnosis has yielded inconsistent results. The novelty of this review lies in its evidence-calibrated positioning of hypnosis as an optional, individualized adjunct within multimodal anesthesia that separates established benefits from unsupported claims.

Keywords: Clinical Hypnosis, Hypnosedation, Perioperative Care, Opioid-Sparing Anesthesia, Postoperative Nausea and Vomiting.

INTRODUCTION

Hypnosis is a state of consciousness involving focused attention and reduced peripheral awareness, characterized by an enhanced capacity to respond to suggestion (Elkins et al., 2015).

In clinical practice, it is delivered as a structured psychological intervention that modulates the experience of pain, anxiety, and procedure-related symptoms. Within anesthesiology, hypnosis is most appropriately positioned as a non-pharmacological adjuvant (Moss & Willmarth, 2019). Hypnosis has a long history in analgesia and surgery that predates modern chemical anesthesia. Historical accounts of James Esdaile describe the use of mesmerism during surgical procedures in nineteenth-century India. These reports, however, must be understood in the context of the clinical practices and scientific standards of their time and cannot be regarded as evidence of efficacy equivalent to that of modern clinical trials (Moss & Willmarth, 2019).

Once ether, chloroform, and, subsequently, modern anesthetic techniques became more predictable and easier to standardize, hypnosis ceased to be a primary means of producing surgical anesthesia. Interest nevertheless persisted in its use as an adjunctive technique for analgesia, anxiolysis, therapeutic communication, and procedural preparation (Moss & Willmarth, 2019). In the modern era, clinical evidence has positioned hypnosis principally as an adjunctive perioperative intervention. Meta-analytic data indicate average benefits for psychological distress, pain, medication consumption, and several recovery indicators; however, between-study heterogeneity is high, so these effects should not be assumed to be uniform across patients or types of surgery (Holler et al., 2021).

The renewed relevance of hypnosis reflects three converging developments. First, the need to reduce perioperative opioid exposure has encouraged multimodal and opioid-sparing strategies, within which hypnosis may be considered as a non-pharmacological component. Recent evidence shows reduced drug consumption in some studies, but hypnosis is not synonymous with opioid-free anesthesia (OFA) and does not replace pharmacological analgesia when it is clinically indicated (Holler et al., 2021; Lahoud et al., 2026). Second, there is increasing emphasis on limiting the adverse effects of pharmacological anesthesia. A potential advantage of hypnosis is its capacity to reduce symptom burden without adding the typical side effects of drugs; nevertheless, the magnitude of benefit depends on the type of procedure, the timing of the intervention, the comparator, and the outcome assessed. Hypnosis should therefore be regarded as an adjuvant that can reduce drug requirements in selected patients, not as a justification for administering less anesthesia than is clinically necessary (Lahoud et al., 2026). Third, multimodal and holistic approaches to perioperative pain management provide a natural place for hypnosis, which can be combined with general, regional, or local anesthesia or with monitored anesthesia care (MAC). This position is supported by evidence that perioperative hypnosis can improve several psychological and clinical outcomes while conventional anesthesia is maintained according to the needs of the patient and the procedure (El-Allam et al., 2026; Holler et al., 2021).

Despite this renewed interest, the evidence base is difficult to interpret. Trial results vary across procedures, comparators, and outcomes, and the average effects reported in meta-analyses are accompanied by substantial heterogeneity (Holler et al., 2021; Lahoud et al., 2026). Fixed percentage reductions in drug use, sedation requirements, or stress hormones, therefore, cannot be generalized across clinical settings, and benefits for outcomes such as wound healing, gastrointestinal recovery, or length of stay remain largely unconfirmed. Interpretation is further complicated by terminology, because “hypnosis” is also used pharmacologically to denote the hypnotic component of general anesthesia, and studies of anesthetic depth or sedative-hypnotic drugs are at risk of being conflated with evidence on clinical hypnotherapy. In addition, several important randomized trials and systematic reviews published between 2024 and 2026, including direct comparisons with mindfulness and trials of virtual reality-delivered hypnosis, have not yet been considered together with the mechanistic, comparative, and implementation literature in a single clinically oriented synthesis (Carella et al., 2025; Lahoud et al., 2026; Reme et al., 2026; Steinkraus et al., 2024; Waehner et al., 2026). The research gap addressed by this review is therefore the absence of an up-to-date, evidence-

calibrated synthesis that separates the established benefits of perioperative hypnosis from claims that remain unsupported.

The novelty of this review lies in its evidence-calibrated approach. It integrates neurophysiological, clinical, comparative, and implementation evidence. It explicitly distinguishes outcomes with consistent support (anxiety, pain, selected medication consumption, and postoperative nausea and vomiting or PONV) from those for which evidence is inconsistent or absent. It also reports negative and null findings alongside positive ones and clarifies the boundary between clinical hypnosis and pharmacological "hypnosis." Accordingly, this review aimed to answer the following questions:

1. What neurophysiological mechanisms underlie the effects of hypnosis on pain, anxiety, and the perioperative stress response?
2. What is the evidence for hypnosis as an adjunct to general anesthesia?
3. What is the evidence for hypnosis during conscious sedation, regional anesthesia, and MAC?
4. What role does hypnosis play in postoperative pain management and recovery?
5. How does hypnosis compare with other opioid-sparing, psychological, and digital modalities?
6. What barriers limit the implementation of hypnosis in clinical practice?
7. What are the priorities for the future integration of hypnosis into anesthesiology practice and research?

METHODS

This study is a narrative literature review designed to synthesize current evidence on clinical hypnosis as an adjunct to anesthesia and surgery. A narrative design was chosen because the review questions span heterogeneous domains, namely historical context, neurophysiology, clinical efficacy, comparative effectiveness, implementation, and emerging technology, which cannot be addressed by a single pooled analysis.

The final evidence base comprised 24 publications spanning 1996 to 2026. These included five meta-analyses or systematic reviews of hypnosis in surgical, procedural, or anesthetic settings (El-Allam et al., 2026; Holler et al., 2021; Lahoud et al., 2026; Tefikow et al., 2013; Waehner et al., 2026); ten randomized controlled trials (RCTs) (Amraoui et al., 2018; Carella et al., 2025; Enqvist et al., 1997; Faymonville et al., 1997; Ginandes et al., 2003; Lang et al., 2000, 2006; Montgomery et al., 2007; Reme et al., 2026; Steinkraus et al., 2024); three neurophysiological sources, comprising an activation likelihood estimation meta-analysis of neuroimaging studies, a review, and an experimental study (Bicego et al., 2022; Del Casale et al., 2016; Zeev-Wolf et al., 2016); one report of clinical experience in endocrine surgery (Meurisse et al., 1996); two surveys of anesthesia providers (Stone et al., 2016; Zaccarini et al., 2023); best-practice recommendations for hypnosis trials (Kekecs et al., 2024); and two sources addressing the definition and clinical-historical context of hypnosis (Elkins et al., 2015; Moss & Willmarth, 2019).

Sources were selected purposively according to their relevance to the review questions, with priority given to meta-analyses, systematic reviews, and RCTs. Older trials were retained when they remained the principal evidence for a specific clinical application, such as hypnosedation in plastic and endocrine surgery. Only studies of clinical hypnosis, defined as a structured, suggestion-based psychological intervention (Elkins et al., 2015), were accepted as evidence of effectiveness; studies of depth of anesthesia, sedative-hypnotic drugs, entropy, or nociception monitoring were excluded because they concern pharmacological hypnosis.

The evidence was synthesized qualitatively and organized thematically according to the seven review questions. No new statistical pooling was undertaken; effect directions, sample sizes, and conclusions are reported as presented in the original publications. Every substantive

statement was audited against its cited source, and claims that the sources did not substantiate, such as fixed percentage reductions in cortisol, drug use, or sedation requirements, or effects on gastrointestinal motility, ileus, and postoperative sleep, were removed or explicitly identified as unsupported. Positive, null, and unfavorable findings were reported with equal weight, and heterogeneity and study size were taken into account when interpreting the strength of the evidence. Because the review analyzed published literature only, ethical approval was not required.

RESULTS AND DISCUSSION

The findings are presented in seven thematic sections that correspond to the review questions. The principal clinical trials discussed are summarized in Table 1.

Table 1. Summary of Key Clinical Trials of Hypnosis in Surgical and Procedural Settings

Study	Setting and design	Intervention vs. comparator	Principal findings
Faymonville et al. (1997)	Plastic surgery under conscious sedation; RCT	Hypnosis vs. stress-reducing strategies	Less perioperative pain and anxiety; lower midazolam and alfentanil requirements; less PONV; greater satisfaction
Enqvist et al. (1997)	Breast surgery; prospective, randomized, blinded study	Preoperative hypnosis vs. control	Less postoperative vomiting
Lang et al. (2000)	Invasive radiological and interventional procedures; large RCT	Self-hypnotic relaxation vs. standard care	Attenuated increase in procedural pain; less anxiety and drug use; shorter procedure time
Ginandes et al. (2003)	Reduction mammaplasty; randomized trial, n = 18 (six per group)	Hypnosis vs. control conditions	Better objective wound healing; sample too small to support broad claims
Lang et al. (2006)	Large-core breast biopsy under local anesthesia; RCT	Self-hypnotic relaxation vs. standard care	Improved patient experience
Montgomery et al. (2007)	Breast surgery; RCT, n = 200	15-minute preoperative hypnosis vs. attention control	Less propofol and lidocaine use; fewer postoperative symptoms, including less nausea at discharge
Amraoui et al. (2018), HYPNOSEIN	Minor breast cancer surgery under general anesthesia; RCT	Preoperative hypnosis session vs. control	Less intraoperative opioid and hypnotic agent use; primary pain endpoint not met; higher pain immediately before PACU discharge
Steinkraus et al. (2024)	Port implantation under local anesthesia; pilot RCT	Virtual reality hypnosedation vs. control	No significant reduction in pain or anxiety; trend toward lower use of some drugs
Carella et al. (2025)	Total knee arthroplasty under spinal anesthesia; RCT	VRH vs. control	Less intraoperative midazolam; no improvement in quality of recovery, pain, or anxiety

Study	Setting and design	Intervention vs. comparator	Principal findings
Reme et al. (2026)	Breast cancer surgery; RCT, n = 203	Single preoperative hypnosis session vs. mindfulness	Less fatigue, emotional distress, and postoperative fentanyl use; no difference in pain, nausea, or discomfort

Note: PACU = post-anesthesia care unit; PONV = postoperative nausea and vomiting; RCT = randomized controlled trial; VRH = virtual reality hypnosis.

Source: Compiled by the authors from the cited studies.

1. Neurophysiological Mechanisms of Hypnosis in Anesthesia

Modulation of Pain-Processing Networks

The mechanisms through which hypnosis modulates pain involve changes in the sensory, affective, and cognitive processing of nociceptive stimuli. A meta-analysis of neuroimaging studies identified involvement of the anterior cingulate cortex, insula, frontal regions, and thalamus, a pattern consistent with top-down modulation of the pain experience (Del Casale et al., 2016). Hypnosis does not act through a single hypnosis center. In hypnotic analgesia, the anterior cingulate cortex and insula have repeatedly been implicated in alterations of both the affective and the sensory dimensions of pain (Bicego et al., 2022; Del Casale et al., 2016). A more accurate neurophysiological interpretation is therefore that hypnotic suggestion modulates pain-processing networks. The magnitude and pattern of these changes are further influenced by the type of suggestion and by individual hypnotizability (Bicego et al., 2022).

Top-Down Somatosensory Inhibition

Neurophysiological experiments also support top-down modulation of somatosensory processing. Zeev-Wolf et al. (2016), for example, found reduced neural responses to tactile stimulation during hypnotic anesthesia in individuals with moderate-to-high hypnotizability. This finding supports a mechanism of somatosensory inhibition, but it does not demonstrate that hypnosis consistently activates one specific descending analgesic pathway in all patients.

Effects on Anxiety, the Stress Response, and the Autonomic Nervous System

Beyond pain modulation, hypnosis can influence perioperative distress and anxiety. Meta-analytic evidence shows reduced anxiety across a range of procedural contexts, whereas effects on physiological parameters such as blood pressure and heart rate are less consistent than effects on subjective outcomes (Holler et al., 2021; Lahoud et al., 2026). Changes in the activity of brain networks associated with attention and emotion regulation provide a plausible biological basis for the anxiolytic effect of hypnosis; however, the link between experimental neuroimaging findings and the magnitude of clinical effects in surgical patients should be interpreted with caution (Bicego et al., 2022; Del Casale et al., 2016).

Claims that hypnosis consistently lowers perioperative cortisol by a specific percentage are not adequately supported by the sources reviewed. A large surgical meta-analysis indicates that the benefits of hypnosis are more consistent for distress, pain, and medication consumption than for physiological parameters; effects on stress biomarkers should therefore be regarded as a subject for further research (Holler et al., 2021). Similarly, although some studies report changes in autonomic parameters during hypnosis, the overall results are heterogeneous. Clinically, the stronger current evidence concerns reductions in anxiety and pain (Lahoud et al., 2026).

2. Hypnosis as an Adjunct to General Anesthesia

Hypnosis can be delivered before or during anesthesia as an adjunctive intervention. A meta-analysis of adult surgical patients found average positive effects on distress, pain, medication consumption, recovery, and procedure duration, although heterogeneity limits

generalization (Holler et al., 2021). A more recent review in anesthesia likewise concluded that the most consistent benefits are observed for pain, anxiety, and PONV, whereas the evidence for many other outcomes remains uncertain (Lahoud et al., 2026).

Reduction of Inhalational and Intravenous Anesthetic Requirements

Reduced anesthetic or analgesic requirements have been reported in several trials. In an RCT of 200 patients undergoing breast surgery, a 15-minute preoperative hypnosis session reduced propofol and lidocaine use and improved several postoperative symptoms compared with an attention control (Montgomery et al., 2007). This effect, however, does not apply equally to all drugs or procedures.

In the HYPNOSEIN trial, intraoperative use of opioids and hypnotic agents was lower in the hypnosis group, but the primary pain endpoint did not show the expected benefit; pain scores immediately before discharge from the post-anesthesia care unit (PACU) were, in fact, higher in the hypnosis group, and subsequent differences in pain were not significant (Amraoui et al., 2018). These findings underline the need to report positive and negative results in a balanced manner.

Reduction of Intraoperative and Postoperative Opioid Requirements

The evidence supports an opioid-sparing effect in some contexts, but not a universal reduction by a fixed percentage. Holler et al. (2021) found a moderate positive effect on overall medication consumption. In contrast, a recent anesthesia review judged the impact of hypnosis on the use of hypnotics and opioids to be inconsistent across studies (Lahoud et al., 2026). Hypnosis is therefore more appropriately positioned as a potential opioid-sparing strategy within a multimodal bundle. Opioid dosing should continue to be guided by pain intensity, patient characteristics, anesthetic technique, and clinical response.

Postoperative Nausea and Vomiting

Evidence regarding PONV is more direct. An RCT in breast surgery showed that preoperative hypnosis was associated with less nausea at discharge (Montgomery et al., 2007), and an earlier breast surgery study reported less postoperative vomiting in the hypnosis group than in controls (Enqvist et al., 1997). A recent anesthesia meta-analysis found a reduced risk of PONV when hypnosis was delivered during the intervention, although the quality and heterogeneity of the evidence must still be considered (Lahoud et al., 2026).

The effect on PONV is unlikely to be independent of changes in pain, anxiety, analgesic requirements, and the perioperative context. Hypnosis, therefore, does not replace risk-based antiemetic prophylaxis, but it may be considered as an additional component in suitable patients and procedures.

3. Hypnosis in Conscious Sedation, Regional Anesthesia, and Monitored Anesthesia Care Use in Plastic Surgery, Thyroid Surgery, and Interventional Radiology

The clearest clinical evidence for the use of hypnosis in conscious patients derives from the concept of hypnosedation, which combines hypnosis with local anesthesia and light sedation administered as required. In an RCT of plastic surgery under conscious sedation, hypnosis reduced perioperative pain and anxiety, midazolam and alfentanil requirements, and PONV, and increased patient satisfaction compared with stress-reducing strategies (Faymonville et al., 1997).

In endocrine surgery, early clinical experience described thyroidectomy and cervical exploration performed under hypnosedation combining hypnosis with light conscious sedation (Meurisse et al., 1996). In invasive radiological and interventional procedures, a large RCT showed that self-hypnotic relaxation attenuated the increase in pain during the procedure, reduced anxiety and drug use, and shortened procedure time compared with standard care (Lang et al., 2000).

Combining Hypnosis with Local Anesthesia to Improve Patient Comfort

The combination of hypnosis with local anesthesia has also been investigated in outpatient procedures. In an RCT of large-core breast biopsy, self-hypnotic relaxation used as a procedural adjunct improved the patient experience compared with standard care (Lang et al., 2006). Together, these data support the use of hypnosis as an adjunct in conscious patients, although patient selection and team readiness remain essential.

Terminologically, clinical hypnosis must be distinguished from "hypnosis" as a pharmacological term related to the depth of anesthesia. Studies of anesthetic depth, sedative-hypnotic drugs, entropy, or nociception monitoring cannot be used as evidence of the effectiveness of clinical hypnotherapy.

Reductions in Anxiety, Pain, and Sedation Requirements Compared with Standard Care

Overall, the evidence base for hypnosedation is strongest for reductions in anxiety, intraprocedural pain, and, in part, sedation and analgesic requirements. Fixed reduction figures, such as 30%, 40%, or 50%, however, cannot be generalized across procedures. Interpretation should rely on the effect sizes and context of individual studies (Holler et al., 2021; Lahoud et al., 2026).

4. Hypnosis in Postoperative Pain Management and Recovery

Postoperative Analgesia and Opioid Consumption

In the postoperative period, the most consistent benefits relate to reductions in pain, distress, and analgesic consumption in a proportion of studies. A meta-analysis of 50 studies including 4,269 patients found positive effects on pain, medication consumption, and recovery; however, the prediction intervals included a null effect for most outcomes, so individual response and heterogeneity remain important considerations (Holler et al., 2021).

A recent systematic review similarly supported perioperative benefits for anxiety, opioid and hypnotic agent consumption, and PONV across several RCTs in non-cardiovascular surgery, while emphasizing that methodological quality and consistency of results remain variable (El-Allam et al., 2026).

Recovery Beyond Pain: Limited Evidence

Evidence for outcomes such as wound healing remains preliminary. A small randomized trial of 18 women after reduction mammaplasty reported better objective wound healing in the hypnosis group, but with only six patients per group, the findings are insufficient to support broad clinical claims (Ginandes et al., 2003). This review found no adequate basis for asserting that hypnosis consistently improves gastrointestinal motility, prevents ileus, or improves postoperative sleep quality.

Synthesis of the Evidence on Postoperative Recovery

Meta-analyses indicate that hypnosis can benefit several recovery domains, but the effects are generally small to moderate and heterogeneous (Holler et al., 2021; Tefikow et al., 2013). Specific outcomes, namely pain, anxiety, medication consumption, PONV, and functional recovery, should therefore be reported separately.

5. Comparison of Hypnosis with Other Anesthetic and Supportive Modalities

The Position of Hypnosis in Opioid-Sparing Strategies

Hypnosis is not a substitute for OFA or for pharmacological anesthetic modalities. The available evidence better supports its role as an adjunctive strategy that may reduce analgesic or sedative requirements in some patients. Its use should remain within the framework of multimodal analgesia and anesthetic safety. RCTs and meta-analyses demonstrate reduced drug consumption in certain settings, including breast surgery and procedures performed in conscious patients, but they do not show that hypnosis can routinely achieve OFA (Holler et al., 2021; Montgomery et al., 2007).

Hypnosis Compared with Other Psychological Interventions

Head-to-head evidence remains limited. A recent RCT of 203 patients undergoing breast cancer surgery compared a single preoperative hypnosis session with mindfulness. Hypnosis resulted in lower postoperative fatigue and emotional distress and less postoperative fentanyl use, but there were no significant differences in pain, nausea, or discomfort (Reme et al., 2026).

These findings indicate that the advantage of hypnosis is not global across all outcomes. The choice among hypnosis, mindfulness, relaxation, and other psychological interventions should take into account clinical goals, patient preferences, available resources, and team expertise.

Hypnosis and Virtual Reality Hypnosis

Virtual reality hypnosis (VRH) combines immersive content with hypnotic suggestion. The clinical evidence is growing but is not yet consistent. In a pilot RCT of port implantation under local anesthesia, virtual reality hypnosedation did not significantly reduce pain or anxiety compared with control. However, there was a trend toward reduced use of some drugs (Steinkraus et al., 2024).

Conversely, in an RCT of total knee arthroplasty under spinal anesthesia, VRH reduced intraoperative midazolam requirements but did not improve quality of recovery, pain, or anxiety compared with control (Carella et al., 2025). VRH is thus a promising vehicle for delivering hypnosis, but it cannot yet be considered more effective than conventional hypnosis or standard care across all outcomes.

Relative Strengths and Limitations of Each Approach

The potential advantages of conventional hypnosis are its low technological cost and the flexibility of its suggestions, whereas VRH offers standardization and an immersive experience. Both require clear protocols, careful patient selection, and outcome-specific evaluation.

On the basis of current evidence, comparisons between modalities must be made cautiously. Hypnosis has a broader evidence base than VRH, but study heterogeneity remains high; consequently, claims of universal superiority over OFA, acupuncture, mindfulness, or virtual reality cannot be sustained.

6. Challenges in Implementing Hypnosis in Clinical Practice

Variability in Patient Response

Responses to hypnosis vary between individuals. Hypnotizability is a characteristic that can be measured with standardized instruments and may influence responsiveness to suggestion, but clinical benefit is not restricted to individuals with very high scores (Moss & Willmarth, 2019). It is more defensible to state that hypnotizability is distributed along a continuum and contributes to variation in response. In clinical research, measuring hypnotizability can help to characterize samples and explore moderators of response.

Instruments such as the Stanford Hypnotic Susceptibility Scales and the Harvard Group Scale are used in research to assess hypnotizability. Recent methodological recommendations emphasize the need for instruments with sound psychometric properties and for transparent reporting of how hypnotizability is measured (Kekecs et al., 2024).

Lack of Training and Certification for Medical Personnel

Barriers to implementation concern not only efficacy but also the availability of trained personnel and clinicians' understanding. A survey of anesthesia providers found that knowledge of hypnosis was often rated as low and that the need for specific training was considered a major barrier (Stone et al., 2016). Because hypnosis is a skill- and communication-based intervention, training quality, clinical competence, patient selection, and integration with anesthesia standards must be clearly defined. Implementation should follow professional training standards and evidence-based practice.

Professional clinical hypnosis organizations provide education and certification in a number of countries. In the perioperative context, however, local standards must align with clinical privileges, regulations, patient safety requirements, and prevailing competencies in anesthesiology.

Skepticism Among Clinicians and Patients

Skepticism is partly related to misconceptions about hypnosis and to its perception as an "alternative" method. Surveys of anesthesia providers indicate that greater exposure and knowledge are associated with more positive acceptance, although concerns about time, indications, and training requirements persist (Stone et al., 2016; Zaccarini et al., 2023). Patient education is best addressed through informed consent. Patients should be told that hypnosis is a collaborative intervention, that it does not remove personal control, and that it is used in addition to, not instead of, appropriate anesthetic care.

Regulatory and Health Policy Constraints

The sources reviewed provide no basis for asserting the existence of a single global anesthesia guideline that specifically governs perioperative hypnosis. Clinical implementation should therefore follow institutional policy, local professional standards, informed consent procedures, and established principles of anesthetic safety.

Clinical implementation has been reported in several European centers, particularly in Belgium, France, and Switzerland, but adoption varies between institutions. The available evidence more strongly supports the existence of centers and teams that use hypnosedation than the claim that hypnosis has become a "national standard" in any particular country (Meurisse et al., 1996; Zaccarini et al., 2023). In Belgium, hypnosedation has been developed and applied in a range of procedures, including plastic and endocrine surgery, with documented clinical experience (Faymonville et al., 1997; Meurisse et al., 1996). In Switzerland, a multicenter survey revealed strong interest in hypnosis among anesthesia providers. Still, it showed that only a small proportion of respondents had been trained, illustrating the gap between acceptance and routine implementation (Zaccarini et al., 2023). Overall, implementation remains institution-based and dependent on training and resources, and claims regarding insurance coverage or national legal status require verification against country-specific regulations.

7. Future Directions for Hypnosis in Anesthesiology

Digitalization and Personalization of the Intervention

Digital development is most evident in the use of virtual reality as a medium for delivering hypnotic suggestion. Evidence that artificial intelligence (AI) or natural language processing can automatically personalize perioperative hypnosis scripts is not yet strong enough to support clinical claims. Digital technology may help to standardize the audio, visual, and scheduling components of hypnotic interventions, but AI-based personalization remains a developmental direction. Future studies should evaluate its safety, effectiveness, algorithmic transparency, and the supervisory role of clinicians. VRH is currently the digital format with direct clinical evidence. Recent RCTs indicate that its effects differ by procedure and outcome: some studies have found reduced sedation requirements, whereas others have found no significant difference in pain or anxiety (Carella et al., 2025; Steinkraus et al., 2024). VRH should therefore be regarded as a promising approach that still requires broader validation.

Integration into Multimodal Anesthesia and Enhanced Recovery Protocols

Hypnosis can be incorporated into a multimodal approach provided that it does not compromise standards of analgesia, anesthesia, monitoring, and safety. Current evidence supports potential benefits for several outcomes but does not support the routine replacement of conventional anesthetic protocols (Lahoud et al., 2026). The combination of hypnosis with local or regional anesthesia or conscious sedation has been used in research and in selected

practice, and both classic hypnosedation studies and recent VRH data obtained during spinal anesthesia indicate that sedation requirements can be reduced in some contexts (Carella et al., 2025; Faymonville et al., 1997).

Conceptually, hypnosis is compatible with the goals of Enhanced Recovery After Surgery (ERAS) programs, particularly the reduction of distress and opioid sparing. However, the audited evidence is insufficient to state that hypnosis is a standard ERAS component or that its integration consistently shortens length of stay. This question is more appropriately framed as a topic for implementation research.

Research Priorities and the Need for Large-Scale Trials

Although the number of studies continues to grow, the quality of the evidence remains heterogeneous. A recent review encompassing thousands of patients concluded that hypnosis can help with pain, anxiety, and PONV, but that its effect on many perioperative outcomes remains uncertain (Lahoud et al., 2026). Future research should employ multicenter RCTs with replicable intervention protocols, appropriate active comparators, prespecified outcomes, and standardized reporting of analgesic and anesthetic use. A 2026 review of RCTs likewise emphasized that the number of high-quality studies in specific anesthetic domains remains limited (Waehner et al., 2026).

Neuroimaging, electroencephalography, and psychophysiological measurements can help to elucidate mechanisms and moderators of response, but they must be linked to clinically meaningful outcomes. Current neuroimaging evidence supports the modulation of pain networks, while methodological recommendations call for more rigorous reporting of interventions and hypnotizability (Del Casale et al., 2016; Kekecs et al., 2024).

The principal finding (**novelty**) of this review is that the evidence supports neither of the two extremes implied by its title. Hypnosis is not a forgotten art capable of replacing modern anesthesia, nor is it an unproven curiosity; it is a non-pharmacological adjunct with an expanding but heterogeneous evidence base. By auditing each claim against its source, this review distinguishes benefits that are reasonably established, namely reductions in anxiety, pain, selected medication consumption, and PONV, particularly with hypnosedation during procedures in conscious patients, from claims that remain unsupported, including fixed percentage reductions in drug use, consistent effects on cortisol and autonomic parameters, accelerated wound or gastrointestinal recovery, the routine achievement of OFA, a defined place in ERAS, and AI-based personalization. It further shows that newer delivery formats and direct comparisons, such as VRH and hypnosis versus mindfulness, yield outcome-specific. This calibrated positioning provides anesthesiologists with a realistic framework for adopting hypnosis as an optional, individualized component of multimodal perioperative care.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

This review concludes that hypnosis in surgery is best understood neither as a forgotten art nor as a replacement for modern anesthesia, but as a non-pharmacological clinical intervention with a growing evidence base as an adjunct. Mechanistically, hypnosis modulates networks involved in attention, salience, affective regulation, and somatosensory processing, with the anterior cingulate cortex, insula, frontal regions, and thalamus most consistently implicated in hypnotic analgesia; its effects on anxiety are better established than its effects on stress hormones or autonomic parameters.

Clinically, hypnosis can serve as an adjunct before general anesthesia and during procedures performed under local or regional anesthesia or conscious sedation. The most defensible benefits are reductions in anxiety, pain, selected medication consumption, and PONV, and hypnosedation can reduce pain, anxiety, and sedation requirements in particular settings, provided that trained personnel and appropriate patient selection are available.

Evidence for improved wound healing is limited to small studies, and claims concerning gastrointestinal function and postoperative sleep are not supported by the sources reviewed. Direct comparisons remain scarce: hypnosis outperformed mindfulness for fatigue, emotional distress, and fentanyl use after breast surgery, but not for all symptoms, and VRH has produced promising but inconsistent results.

Implementation is constrained by heterogeneous patient responses, training requirements, limited knowledge among anesthesia providers, and the absence of uniform protocols, although clinician acceptance improves with greater exposure and understanding. Hypnosis is therefore most rationally offered as an optional addition for willing patients, in procedures that permit communication, and by competent teams. Its expected benefits should be discussed realistically and must never lower standards of monitoring, analgesia, anesthesia, or complication prophylaxis. Hypnosis may contribute to opioid-sparing strategies but does not guarantee OFA or justify withholding necessary analgesia, and the evidence is not yet sufficient to establish it as a standard ERAS component. Responsible implementation requires trained personnel, informed consent, patient selection, and full integration with anesthetic safety standards, and the most promising way forward lies in high-quality research, standardized interventions, and rigorous evaluation of digital technologies such as VRH without overstating the available evidence.

Limitations

This review has several limitations. First, it used a narrative; the selection of sources was therefore purposive and may not capture all relevant studies, and no formal risk-of-bias assessment or new quantitative pooling was performed. Second, the primary studies differ considerably in procedures, populations, comparators, intervention protocols, and outcome measures, which limits the precision of general conclusions. Third, several sources are very recent, and some of the evidence, particularly on VRH, wound healing, and regulatory status, rests on a few or small studies. The conclusions should therefore be interpreted within the scope of this review.

Recommendations

For clinical practice, institutions that wish to adopt hypnosis should develop training that emphasizes competence, informed consent, safety, the limits of its indications, and integration with evidence-based anesthetic practice. Local protocols should define who may deliver hypnosis, how patients are selected, when the intervention should be discontinued, and how drug requirements and monitoring continue to be met. For research, priorities include multicenter RCTs with standardized, replicable interventions and appropriate active comparators; measurement of hypnotizability; patient-centered outcomes and quantified reductions in drug consumption; cost-effectiveness analyses; identification of the patients and procedures most likely to benefit; integration of clinical outcomes with neuroimaging and psychophysiological measures; and rigorous evaluation of VRH and AI-based personalization before either is recommended for routine clinical use.

Author Contributions

All authors made substantial contributions to this review, including conceptualization, identification and appraisal of the literature, verification of sources, interpretation of the evidence, preparation of the manuscript, and critical revision of its content. All authors have read and approved the final version of the manuscript.

AI Disclosure Statement

During the preparation of this manuscript, the authors used Claude (Anthropic) for translation from Indonesian into English and for language editing. The authors have thoroughly reviewed and revised the content and take full responsibility for the entire publication.

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