

Scalp block

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Scalp [block](#) is quite indispensable for an [awake craniotomy](#). The branches of [cranial nerves](#) blocked are supratrochlear, supraorbital, auriculotemporal, greater and lesser occipital, great auricular, zygomatic and infraorbital nerves. Local anesthetic (40-60 mL) with epinephrine assures long duration of block. Large volume of local anesthetic and well-vascularized areas predispose to anesthetic toxicity hence individual nerve blocks are preferred over wide areas of infiltration to decrease probability of LA toxicity. The use of adrenaline (5 µg/mL, 1:200 000 dilution) both minimizes acute rise in plasma concentration and maximizes the duration of the block. Clinical hyper vigilance is particularly indicated within the first 15 min after scalp block.

Bupivacaine is still the most commonly used local anesthetic but ropivacaine and levobupivacaine appear to be safer than bupivacaine.

In awake-awake-awake technique 28 ml ropivacaine 0.75% with epinephrine 1:200000 and 9 ml of a 1:1 mixture of ropivacaine 0.75% and prilocaine 1.0% at pin sites was used to avoid delay to full effect of the scalp block.

Better hemodynamics and less antihypertensive medication: Comparison of scalp block and local infiltration anesthesia for skull-pin placement in awake deep brain stimulation surgery ¹⁾.

Evidence

There is high-[quality evidence](#) that [Nonsteroidal antiinflammatory drugs](#) reduces pain up to 24 hours postoperatively. The evidence for reductions in pain with [dexmedetomidine](#), [pregabalin](#) or [gabapentin](#), [scalp blocks](#), and [scalp infiltration](#) is less certain and of very low to moderate quality. There is low-quality evidence that scalp blocks and dexmedetomidine may reduce additional analgesics requirements. There is low-quality evidence that [gabapentin](#) or [pregabalin](#) may decrease nausea and vomiting, with the caveat that the total number of events for this comparison was low ²⁾.

Prospective randomized controlled trials

In a [prospective randomized controlled trial](#) Lemos et al. from the [Netaji Subhash Chandra Bose Medical College](#), Jabalpur published in [Cureus](#), to assess whether the addition of [clonidine](#) (2 mcg/kg) to 0.25% [bupivacaine](#) in [scalp blocks](#) improves [perioperative analgesia](#) and hemodynamic control during [supratentorial craniotomy](#). Clonidine significantly prolonged [analgesia](#) duration and improved perioperative [hemodynamic stability](#), with lower [postoperative pain](#) scores, reduced need for rescue [analgesia](#), and decreased intraoperative and postoperative analgesic consumption ³⁾

Critical Review

While the study is [prospective](#) and randomized, the [sample size](#) of 60 patients (30 per group) is underpowered for [robust generalization](#). The [statistical significance](#) of the analgesic duration and [pain scores](#) ($p < 0.001$) is compelling, but it is unclear whether the effect size translates into meaningful clinical benefit beyond delayed rescue analgesia. Hemodynamic data is selectively highlighted, and potential bradycardia and hypotension risks with clonidine are underexplored. Additionally, the lack of blinding of the assessors and a placebo control weakens internal validity. The study does not account for potential long-term side effects or the impact on overall surgical outcomes.

Furthermore, all authors are from the same institution, which may introduce confirmation bias, and the journal (Cureus) is known for a rapid and relatively unfiltered peer-review process, diminishing the perceived rigor. There is also an apparent overreliance on short-term numeric rating scales without integrating patient-centered outcomes such as functional recovery or satisfaction.

Final Verdict

A modestly conducted RCT with clear findings favoring clonidine as an adjuvant in scalp blocks for supratentorial craniotomy. However, limited sample size, absence of assessor blinding, and potential [publication bias](#) lower its [clinical impact](#).

Takeaway for Neurosurgeons: While clonidine appears to improve analgesic duration and hemodynamic stability in scalp blocks, these findings should be interpreted with caution and confirmed in larger, blinded, and multicenter trials before changing practice.

Bottom Line: Promising but preliminary evidence supporting clonidine as an adjunct in scalp blocks. Not yet practice-changing.

Rating: 5.5 / 10

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²⁾

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³⁾

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