Review of: "Local infiltration analgesia with bupivacaine and adrenaline does not reduce perioperative blood loss in total hip arthroplasty"

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Commentary on “Local infiltration analgesia with bupivacaine and adrenaline does not reduce perioperative blood loss in total hip arthroplasty”

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Limiting the blood loss during and after surgery is a meaningful object of surgery and every treatment or manoeuvre that can contribute to the achievement of this goal is worthy of interest.

Considering that hip arthroplasty is one of the most common total joint arthroplasties and that approximately half of the patients receive more than 2U of blood transfusion after this surgery, decreasing perioperative blood loss assumes a paramount relevance in order to improve the patients’ outcome and to relieve a significant health burden [1, 2].

Although use of the tranexamic acid for reducing postoperative bleeding in patients undergoing total joint arthroplasty has been extensively investigated [3, 4], few studies evaluated the effects on the blood loss of the adrenaline addiction to local infiltration analgesia and its role remains controversial [5].

The study of Ceynowa M et al. [6] attempts to clarify this matter and provide an answer, if not conclusive at least significant, on the local effect of the adrenaline for the perioperative bleeding in total hip arthroplasty. Despite the authors asserted in the title and conclusions that adrenaline does not reduce perioperative blood loss when added to local infiltration analgesia with bupivacaine, the study presented some flaws in design and analysis that can cast doubts on the results.

A first and important limit of the study, as also stated by the authors, is its retrospective nature. As general rule, the appropriate way to evaluate the effects of a drug is to carry out a prospective interventional study. A prospective randomized controlled trial would have been the most powerful study design to evaluate the adrenaline efficacy while minimizing systematic bias [7]. On the contrary, retrospective studies can represent an important tool to investigate rare diseases, manifestations and outcomes. A cohort study may also be realized retrospectively, but this is primarily done to reduce costs and duration of the follow up or when a risk factor cannot be knowingly introduced into a part of the population, as is the

case to assess the smoking effects. In this investigation no one of the previously factors can be found to justify recourse to a retrospective analysis.Retrospective studies have a critical deficiency in evaluating the effects of treatments: the design is not experimental and the review of charts, not originally designed to collect data for research, leads inevitably to miss some information necessary to identify the reasons for differences in the outcome after treatment between patients.

Apart from these theoretical aspects, does this study actually present limitations owing to its retrospective design? A crucial pitfall of this study is represented by how was decided to use the adrenaline use in . Surprisingly, in the method section the authors reported that the adrenaline use was alternatively decided by two senior surgeons in charge. One surgeon recommended local analgesia infiltration including adrenaline, whereas the other surgeon was not in use to give any local infiltration for postoperative analgesia to his patients. This leads to consider the effects of at least 4 different variables on the blood loss: the infiltration manoeuvre, the volume of the infiltration solution, the effects of the anaesthetic drugs and the adrenaline. Being adrenaline infiltration administered to the patients according to the habits of the senior surgeon, it is presumable that also a different surgical technique could be used in addition to the choice of using or not local infiltration with the adrenaline. Avoiding adrenaline to limit bleeding could imply more attention to avoid bleeding and to ensure hemostasis. For all the above-mentioned reasons, the primary outcome of the study could be related not only to the adrenaline infiltration, but also to the surgeon who performed the procedure. The suspicion that differences in the surgical technique may have occurred is also supported by differences in the acetabular size, significantly larger in patients who not received local infiltration than in those who were infiltrated. Despite the authors attempted to correct the difference in the acetabulum size for the blood losses, this does not exclude the persistence of the previous bias.

In conclusion, although Ceynowa et al. asserted that their study does not support the use of local infiltration analgesia with adrenaline to reduce perioperative blood loss in total hip arthroplasty, the results are burdened by several biases that prevent this study to be conclusive on this topic. Further research is needed to have a definitive answer on the local effects of adrenaline infiltration for reducing the perioperative loss in total hip arthroplasty.

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