Peer Review File

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Reviewer A

This is an interesting study looking at the postoperative drainage following the use of intraoperative TXA.

Comment 1: As mentioned by the authors, the amount of postoperative bleeding is more or less determined by the extent of the cancellous surface exposed during the surgical procedure, it may be better if the results were rearranged by the extent of the bone job carried out, e.g. single level unilateral or bilateral, + single level unilateral or bilateral etc. This may further clarify their conclusions why single level discectomy with minimal bone job shows greatest advantage from TXA use.

Reply 1: Thank you for the comment. We have performed a subanalysis based on your comment and created Table 5 in the Tables Revised document. We found that single level unilateral biportal surgery had significantly less drain output than bilateral cases and 2 level bilateral cases had the highest median drain output of all the compared groups. No statistical differences were seen between the 2-level unilateral and bilateral surgeries but this is due to the low unilateral case numbers (4).

Changes in the text: Additional text was added in the results section describing Table 5 on page 5, line 205, as well as in the discussion section on page 9, line 251

Comment 2: Postoperative drainage is also often related to the size of the patient and the amount of water pumped into the wound during the procedure. It would have been more accurate if you have measured the EBL more accurately.

Reply 2: Thank you for the comment. Text were added in the discussion section to address body habitus and water volume pumped into the wound. The cases that were performed with TXA were earlier in the learning curve and subsequently had increased case duration and irrigation volume. Despite this, there was still significantly less postoperative drainage with the use of TXA (Table 3). In addition, there were no differences in BMI between the TXA and no-TXA cohorts, making patient habitus less of a contributing factor to the drain output. Unfortunately, we did not conduct this study for accurate EBL determination. The purpose of the study was to determine the effect of intraoperative TXA on drain output to identify the cases that may not require drain placement with the use of TXA at the end of the case. This was addressed in the discussion section. Further study is planned for accurate EBL determination with intraoperative TXA.

Changes in text: We added text on page 12, line 345 of the manuscript.

Comment 3: Line 274: The authors mentioned epidural hematoma on postop MRI. They may look like hematoma but more likely they are pocket of residual irrigation fluid that has seeped into the muscles under pressure escaping into a dead space.

Reply 3: Thank you for the comment. We agree that residual irrigation fluid may appear like epidural hematoma. However, the fluid collection was determined by the radiologist as a small epidural hematoma that was compressive in both cases. The radiographic characteristics were determined to be more consistent with an epidural hematoma by the radiologist.

Changes in text: Additional text was added in the results section on page 7, line 216.

Comment 4: This paper definitely shows a possibility of simplifying the spine surgery, but it should also carry a caveat that postoperative hematoma and hemorragic complications are prevented more by a careful and meticulous hemostasis than just TXA.
Reply 4: Thank you for the comment. Your point is very important and is addressed in the discussion section. Floseal and bone wax were used in all cases to reduce the risk of postoperative bleeding. TXA was the variable that was investigated in this study.
Changes in text: Additional text was added to the discussion section on page 10, line 286.

Reviewer B

Thanks for submit interesting manuscript about using IV TXA in biportal endoscopic surgery. Using IV TXA before the closing surgery makes less postoperative bleeding and also better clinical outcome results will be helpful to other endoscopic spine surgeons who choice better surgical strategy.

Comment 1: But, as one of endoscopic spine surgeon, I also use IV TXA in whole my spine surgery before the operation is started. One of most important things about using of TXA is reducing blood loss during operation also make good surgical vision. You already mentioned the difficulty for measuring intraoperative bleeding count, but I think it will be greater article if you can also check about those things.
Reply 1: Thank you for the comment. We believe that much of the intraoperative blood loss from cancellous bleeding can be controlled by the irrigation hydrostatic pressure as discussed in the discussion section (page 14). There is typically minimal intraoperative blood loss unless there is epidural bleeding, which is controlled by radiofrequency coagulation. The goal of this study was to study the effect of TXA on postoperative drainage to ascertain in which cases a drain may not be necessary after surgery. As discussed in the discussion section, intraoperative blood loss was not intended to be part of this study but future study is planned to address this comment.
Changes in text: None.

Comment 2: Also, I'm not still understand about the results of 2 level decompression. In my cases, there is not much different about postoperative drainage between 1 and 2 level decompression using biportal endoscopic technique. If there is statistically no difference between using IV TXA before the closing in surgery, it will be re-considered to use IV TXA timing in surgical procedure.
Reply 2: Thank you for the comment. In our clinical experience, as well as what is shown by our results, 2 level cases have greater drain output than 1 level cases and ULBD cases have greater drain output than discectomy cases (Table 3). These are our main findings and we hoped to show that certain cases such as 1 level discectomy cases do not absolutely require a drain with the use of TXA. Of course, it is at the surgeon's discretion to place a drain based on the level of intraoperative bleeding that occurs on a case by case basis.
Changes in text: Additional text added to the discussion section on page 9, line 253.