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Reviewer A

Can you explain how you cite your incision? Is it by a standard measurement from the spinous process or is it guided by the image intensifier? If it is a standard measurement, please state how it is measured.

Response: For a laminectomy the incision is usually made 1 fingerbreadth lateral to the midline/spinous process. For TLIF the incisions are guided by AP x-rays during pedicle K-wires placement (usually 4-5 cm lateral to the midline).

This information was added to the revised manuscript as suggested (63-68)

Was a burr used in your MIS surgery?

Response: To perform the MIS laminectomies a Midax-rex drill with a matchstick burr and a curved long attachment was utilized.

This information was added to the revised manuscript (63-68)

The double and triple barrel technique is very interesting. I would like to know-how you can achieve that. Do you use a few sets of the tubes or do you choose different sizes of tubes?

Response: Technical details for the “double and triple barrel technique” were described by the senior Author in the original technical note: Reference 4. Roberti F, Arsenault KL. The Use of a "Double-Triple Barrel" Technique during Minimally Invasive Multilevel Tubular Laminectomy. A Technical Note. J Neurol Surg A Cent Eur Neurosurg. 2017;78 (2): 202-205

Only one set of METRx tubes can be utilized when performing a laminectomy following a “double/triple barrel” technique”. The use of tubular dilators of slightly different length at contiguous levels usually does not create any issue with placement and visualization. We usually place an appropriate size tube at the caudal level to be decompressed, as the “next size down” dilator usually fits the contiguous level to be operated above. If tubular retractors of similar length are to be utilized, than a second set of tubes can be kept available.

We added this information to the revised manuscript (127-132)

In cases or durotomy, how is it repaired? Repairing the dura through the tube is be very

challenging. It will be good to share how you repair the dura through the MIS technique.

Response: In our experience with the use of tubular laminectomies, direct suturing of iatrogenic durotomies has not been necessary, as leaks are successfully repaired with the use of autologous fat graft and fibrin glue.

Among the benefits offered by minimally invasive tubular approaches is that iatrogenic CSF leaks are usually contained by the spontaneous closure of the paraspinal muscles (which are not removed/detached during the approach) when the tubular retractor is removed.

We added this information to the revised manuscript (257-262)

Is there a patient selection criteria for performing biportal technique vs over the top decompression?

Response: In cases where a bilateral joint removal is planned/needed (e.g. pars defect with SPL, in need of reduction), a biportal approach is utilized. Otherwise, an effective bilateral decompression can be achieved with an “over the top” laminectomy by tilting the tube toward the contralateral side while using a 45 degree Kerrison to perform a contralateral foraminotomy.

We added this information to the revised manuscript (270-274)

Reviewer B

I found this paper very illustrative of these techniques. I consider myself a MISS spine surgeon, but I learnt interesting details in this manuscript. I consider MRI images from: Fig 2, case 1 and from Fig 4 case 2 should be replace for the digital ones (they looks like screen shots and also in the first one is an arrow in the axial view).

Thats the only detail that should be corrected. Otherwise, I congratulate the authors for this beautiful review

Response: Figure 2, Case 1 illustrates a relatively old case (a few years back), therefore digital images cannot be retrieved. Such image was selected as the presence of the MRI localizer on the sagittal images can be a useful tool for the reader to evaluate the degree of decompression achieved with a tubular “over the top” decompression.

Figure 4, Case 2 was reformatted to improve the quality of the preoperative sagittal MRI image from again a relatively old case.

Reviewer C

Thank you for your submission regarding a technique guide for MIS laminectomies. The authors should be commended on their descriptive illustrations and effort to explain a complex and at times technically challenging procedure.

The authors use a case based presentation to describe the surgical technique. Please provide a descriptive table or section/case outlining details of the case. As it stands right now the reader needs to go to the figure legend to learn about the case. Some sort of easy reference would be helpful for the reader to sort through details of each case.

Response: A table (Table 1) outlining details of the presented illustrative cases was added to the revised manuscript.

Some of the figures have a sawbones model which has the sacrum at the top of the photo while other photos have the sacrum at the bottom of the figure. Please make this consistent.

Response: All picture of the sawbone models have sacrum on the left or on the bottom depending on layout.

Figure 5 appears to have a cropped photo of the "triple barrel" setup. The skin incision appears to be stretched. Either make the entire figure larger or modify the cropping.

Response: in Figure 5 the picture showing the skin incision was enlarged to fit the figure formatting. A ruler next to the incision shows the accurate measurement. We fear that reducing the size of the image to the original size would lead to a difficult reading of the measurements on the ruler (which we consider important to document the actual length of the incision).

There are run-on sentences which make reading the discussion difficult. For example lines 228-231 are hard to follow. Same thing for lines 240-243. Please look through your submission to make the language concise.

Response: Paragraphs were edited/revised (247-256)