

Q&A: Second Annual SRS Research Grant Outcome Symposium
March 5, 2022

1. Thank you very nice work, how growth of the spine is or will be integrated to this? Thank you

I too am interested in how growth may change the forces seen by the chest wall! Hopefully this tool will help us get these answers.

2. Great work, will you test the concave areas to see how the initial decreased pressure changes to increase pressure can be documented?

When we go longitudinally we will use more sensors than we think we need and hopefully we will be able to capture this pattern if it is there.

3. Thank you for the interesting study! Is there any sensitivity difference of the sensor regarding different degree of the scoliosis?

Theoretically and based on the Montreal work it should be related but we will certainly evaluate that.

4. Temperature sensor provides the quantity of brace wear while tension sensor provide the quality of brace wear. Did you investigated or are you going to check if tightening more the brace improve the correction?

Great question. Currently we are only looking at the forces inside the brace to develop the tool. I know other groups are looking at a wearable strap tension monitor. Labella and the Montreal group has looked at this a bit.

5. How growth is /or will be integrated to this kind of brace?

We will follow pts across growth. Perhaps results will help us understand if the brace design remains relevant as the pt grows.

6. Very nice presentation. It appears that your device is measuring normal forces. Have you looked into the possibility of measuring shear forces?

We considered it but stuck with normal forces for this iteration. If we want to do this in the future we may have to standardize undergarments.

- 7. Great talk Dr. Kelly - did any of these patients have complications and if they did was there a difference in their cell signature or in their systemic inflammatory response?**

There was one patient who had an absolutely TERRIBLE postop course and this patient had a distinctly different immune signature. Other than that we could not see anything with such a small cohort...yet!

- 8. Over many years I have found that adolescent patients (irrespective of diagnosis) almost all have a 'bad day' with slight fever on POD 2 or 3. I have always assumed this is related to an immune response. Could that be explained in this way?**

Absolutely. I agree.

- 9. Dr. Kelly, great study! Shall we expect to see single-cell analyses as a standard clinical exam to improve patients' selection/management?**

That is my hope, yes.

- 10. Mike - Great talk - Do you expect the immunosignatures to be transient? How much do you expect to be this reflection of individual immune systems vs response to the trauma?**

I think the two are intimately related. The individual immune systems will respond differently though there will be commonalities across all of the populations. I think this is the value of CyTOF and the VoPo algorithm which will help us define common clusters of cells at amazing depth. At the SRS John Dimar asked why measure this and why not just measure ESR and CRP for inflammation. I think those are microphones over Manhattan. CyTOF is a microscope over Manhattan.

- 11. That is fascinating. I would love to see how that changes with age. Logically I would expect that older patients have decreased immune response and younger patients more robust immune responses. But it would be cool to look at it over time and see if the immune response isn't normalizing if this can potentially predict early infection or if they don't have an ample response and that predicts nonunions etc...**

The RCT at SLCH was exciting to me for both the study drug AND the control group. I thought the control group would be essential to all of our subsequent work as it is a picture of a nice "clean" immune system, unlike the adults with diabetes, obesity, opioids, HTN, etc etc and all the other immunomodulating diseases. I think studying recovery in AIS will be a good outcome measure. NMS is going to be my next step here, as we need complications (unfortunately) to write a competitive proposal.

12. Hany hint on the acceptance rate for each type of grant?

It is really variable. The New Investigator and Standard grant categories are the most competitive, followed by the Cotrel and Biedermann categories.

13. Good morning sir, is any physical rehabilitation for post surgical intervention? Can you please brief it, thank you.

PT can be used post op for patients who have some initial balance issues, either coronal or sagittal, but we do not use it routinely.

14. If I have two different radiographs showing two different SSV, how do I know which is the correct SSV? Is there any tip?

Great question, I addressed this live, but essentially if you have 2 SSVs, look at the relationship between each SSV and SSV+1 and if it is neutral or lordotic it should be a safe level with regards to DJK. Obviously we prefer to use the more proximal of the 2 SSVs if it looks reasonable. also we can look at the relationship of the SSV to the apex of the lumbar coronal curve, because generally for Lenke B and C modifiers we don't like ending at the apex of the lumbar curve.

15. Are we going to fuse longer and longer, to avoid junctions problems, eg Th2-L2/3 more and more? Are we not overshooting, X ray based surgery?

This study is not recommending always fusing long, just recognizing what failing to incorporate the SSV means. Radiographic DJK does not usually lead to significant adverse clinical consequences, so it's important to keep that in mind when making these decisions about saving motion levels vs avoiding junctional problems. This is especially highlighted by our finding that pain was not worse in patients with DJK in this group.

16. Do you think that EOS System could improve a lot in positional errors X-Ray? thank you

In a word, no. All the examples shown today were done in an EOS.

17. Thank you for the presentation. If there SSV is unreliable, do you obtain a long cassette xray intraoperatively to see what the SSV in prone position before starting surgery?

I do not do this, I think prone it can be very difficult to interpret, and drawing a "vertical" line is more prone to error.

18. Will you consider EOS images rather than the X rays?

The examples shown in the talk were in fact EOS x-rays, so this does not seem to help.

19. For Dr Roye. Did you look at SV and LTV rotation? Was your LIV always the neutral vertebra on standing ap xray?

We did not evaluate rotation for this study, and while I don't think this was specifically evaluated, I am pretty sure that the LIV was not always neutral.