Introduction: Growth-guidance sliding devices such as Shilla (Medtronic, USA) or LSZ-4D (Conmet, Russia) used for early-onset scoliosis have unlocked fixtures allowing rods to slide during growth of the spine and this avoids periodical extensions. This study aimed to reveal the presence of increased level of metal ions in the blood and tissues of patients with implanted LSZ-4D devices.

Methods: In the study group LSZ-4D sliding device made from titanium alloy Ti6Al4V consisting of two rectangular section rods and 40±8 fixture elements (20±4 hooks and 20±4 clips) was implanted in 25 patients on 10±2 spine levels for 6±2 years (3 males, 22 females, average age 11.4±1.2). Average age in 10 patients in control group who did not have any implanted devices was 11±1.2 years (1 male, 3 females). Content of Ti, Al and V ions in the whole blood and para-spinal tissues around the device was measured by ICP-MC on quadrupolar Nexion 300D (Perkin Elmer, USA).

Results: 5 patients in the study group had metallosis related complications: 3 patients developed seromas over the implanted device in the lumbar part of the spine, and 2 had fistulas. Patients with implanted LSZ-4D device had increased content of metal ions in the whole blood (2.8 and 4 fold for Ti and V ions respectively) and tissues surrounding the device (1,500 folds, 30 and 100 folds for Ti, Al and V respectively) compared with control group. No statistically significant difference in metal ion content was found in patients who developed seromas or fistulas compared with those with the LSZ-4D device where these did not occur.
**Conclusion:** 20% of patients had seromas or fistulas and all demonstrated elevated Ti and V ion levels in their blood and tissues indicating the importance of exchanging sliding instrumentation once the child is fully grown and the necessity of improving of such instrumentation performance by application of wear resistant coatings.