FUNCTIONAL OUTCOME AND SAGITTAL BALANCE IN ADOLESCENT IDIOPATHIC SCOLIOSIS CORRECTIVE SURGERY UTILIZING UNiD ROD

Khoh PS[1], Foo KT[2], Zairul KB[3], Lim HS[3], Jaya TS[3], Logheswaren S[4]

[1]Hospital Sultanah Bahiyah, Kedah, Malaysia
[2]International Islamic University Malaysia, Pahang, Malaysia
[3]Hospital Pulau Pinang, Pulau Pinang Malaysia
[4]Hospital Raja Permaisuri Bainun, Perak, Malaysia

Background:
Adolescent Idiopathic Scoliosis (AIS) corrective surgery commonly utilize pedicle screws and rods to correct the deformity. Conventionally the rod contoured was performed intraoperatively prior to rod placement. UNiD rods allow preoperative rod bending with personalized preoperative plan and execute patient specific sagittal alignment.

Objective:
To determine patient's functional outcome and sagittal balance correction utilizing UNiD rod.

Materials and methods:
A retrospective cohort study, where AIS patients who underwent posterior corrective surgery from 2019 until 2020 in 2 state hospitals were recruited. They were divided into two groups based on the rods utilized: UNiD rod and conventional rod (CR). Radiographic evaluation of sagittal vertical axis (SVA), pelvic tilt (PT), and pelvic incidence-lumbar lordosis mismatch (PI-LL) parameters were recorded before and three months after operation. Surgeries were performed with the aim of achieving SVA < 40mm, PT < 20°, and PI-LL < 10°. Patients were interviewed using SRS-30 questionnaires after six months post-operation to compare the functional outcome.

Results:
33 patients were recruited, 18 were UNiD group and 15 were CR group. Pre and post-operative PI-LL change in the CR group is significant ($p < 0.05$). Comparison of mean difference showed only the PI-LL difference is significant between UNiD and CR ($p < 0.05$). UNiD group showed higher percentage of achieving planned correction in all three parameters, with 72.22% in PI-LL, 94.44% in PT, and 94.44% in SVA. In the CR group, only SVA has higher percentage of patients able to achieve planned sagittal parameters (93.33%). Both the groups produce comparable functional outcomes scores, with a total average of 4.36 for UNiD and 4.47 for CR, out of a maximum of 5.

Conclusion:
UNiD rod can achieve better planned sagittal parameters compared to CR. Both UNiD and CR groups has comparable functional outcome.