Effectiveness of the Ultrasonic Bone scalpel Ponte Osteotomy (UBSPO) in posterior correction of Lenke Type 1 Adolescent Idiopathic Scoliosis (AIS)

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• Partial facetectomies with pedicle screw instrumentation is widespread and a well described technique for achieving posterior correction of scoliosis.

• Use of ultrasonic bone scalpel for posterior column release was described by Newton et al in 2014

• Aim of this study was to assess the effectiveness of USBPO in achieving posterior correction in Type 1 AIS as compared to partial facetectomies.

Methods

• A retrospective review of 40 patients with type 1 AIS who had undergone a posterior correction of scoliosis between 2010 and 2016 was performed.

• Group A (n=20) : consecutive patients that had partial facetectomies

• Group B (n=20) consisted of consecutive patients having UBSPO.

• Pre and post-operative radiographic parameters and operative data in both groups were compared.

• The Mann-Whitney U test was used for statistical analysis.

• Both groups were matched for demographic parameters. All patients had a minimum of 2 years of follow up.
Results

• No significant difference between the two groups in terms of age, sex, magnitude of curves, apical rotation and flexibility on the preop imaging.

• There was a significant difference between the mean postop Cobb angle (21.9° vs 9.8°, p<0.0005), correction (63.04% vs 84.3%, p<0.0005) and postop apical rotation (p = 0.008) in favour of the UBSPO group.

• At 2-year follow-up there was a statistically significant increase in the cobb angle in the facetectomy group (21.89° (immediate post op) Vs 24.64° P=0.033) and no such difference in the UBSPO group.

• There was no significant difference between surgical time (p = 0.536) and blood loss (p = 0.380).
The use of the UBSPO for posterior release provides more effective correction in the coronal and axial planes than traditional partial facetectomies in type 1 AIS.

Case example

12 Y/F with left sided type 1A AIS, underwent T3-L2 posterior correction with USBPO. Good correction achieved. Maintained sagittal and coronal balance on 1 year and 4 year follow up.

Conclusion