Introduction: Gold standard for surgical treatment of infantile and juvenile scoliosis is now recognized to be extendable systems. The traditional dual growing rod (TDGR) require repeated lengthening surgeries with economic and personal costs. Since 2012 in Italy there are magnetic growing systems (MGR). Aim of the study is to compare results, complications and costs of Magnetic Growing Rod and Traditional one.

Traditional group: 11 children, 8 females and 1 male, mean age at first surgery of 9 (5-12). The etiology was heterogeneous. 10 cases a double rod construct and in one single rod. We performed 14 lengthening procedure and 3 revision surgeries not provided (18%).

Magnetic group: 7 patients affected by infantile scoliosis, mean follow-up of 6 months. 3 females and 4 males with an age (4-11). All double construct with proximal hooks and distal screws (6 proximal cross-link).

Results: Traditional group: main thoracic scoliosis went from 65° (53° -74°) to 37° (20° -55°) in the post-op, mean correction of 43%. Kyphosis decreased from 46° (20° -80°) to 34° (15° -70°) in the post-op. At final follow-up scoliosis maintained correction with a mean value of 34° (25°-50°) a, correction of 47%, and kyphosis at final FU was 32° (24°-70°). 5 complications occurred and needed revision surgery in 3 cases (33.3) of proximal fixation mobilization, while 3 rod fractures were treated during lengthening procedures. Magnetic group: 2 to 14 lengthening procedures were planned every 60 days. Main thoracic was corrected from 62.7° to 32.0° (mean correction 49%). Correction is maineined at final Follow Up. No major complication, one screw removal for a sciatica, 1 hooks mobilization. Lengthening procedures were performed in Day Surgery, awake patient, no pain, X-ray control, no complications. SRS-30 questionaires are used for clinical outcome. Mean cost for the Department for each patient
treated with MCGR is approximately 23500 euros for the first implant, while for Traditional implant is 8200 euros; but for each lengthening procedure for Traditional system is 4300 euros (material, operating room, hospitalization) while only 300 euros for the Magnetic one.

**Conclusion:** Magnetic Dual Growing Rod system seems to be safe and effective with similar results in terms of correction compared with traditional DGR. The growth was similar to the physiological one for each patient. Costs for MCGR are so high for the first implant compared to traditional systems, but they are lower considering all the treatment and the quality of life of young patients and their families is much improved. These systems have been shown to be a viable choice in infantile scoliosis.