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TITLE: Limb lengthening an alternative or co- treatment for growth hormone use in short stature

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TITLE: Limb lengthening an alternative or co- treatment for growth hormone use in short stature

Background: Patients with idiopathic short stature (ISS) may have impacts related to psychosocial function, which has led to the use of growth hormone (GH) to augment final adult height. The results of treatment are variable depending on dosing, initial age of treatment, parental height, but overall have been modest with 4-6 cm average adult height gain. As patients reach skeletal maturity, growth hormone no longer becomes an option for height gain and adolescent and adult patients who feel limited by their height seek out other alternatives. Orthopedic surgeons who specialize in limb lengthening have been sought out to perform cosmetic limb lengthening to augment height. With current advances in technology and surgical technique, cosmetic limb lengthening may offer an alternative or co-treatment for short stature.

Objective: Consideration of cosmetic limb lengthening as an alternative or co-treatment to short stature in patients with impaired psychosocial function.

Design/Methods: Review of the literature using computerized searches of MEDLINE, EMBASE and The Cochrane Library were performed in reference to GH and idiopathic short stature and cosmetic limb lengthening.

Results: Variable results were found for GH treatment for ISS with height increase of approximately 4 to 6 cm (range, 2.3 to 8.7 cm) over a mean of 5.3 years. Another more inclusive meta-analysis showed only a modest gain in height of 4 cm.

Cosmetic limb lengthening has fewer published reports. Older studies using external devices for tibial lengthening showed 7 cm mean height gain. They reported all the patients were satisfied with the improvement in self-esteem, distress or shyness and quality of life. They all stated that they would recommend the treatment to others of similar stature.

Newer internal devices are more attractive for cosmetic procedures as they allow a more aesthetic outcome and less overall complications (Figure A). The goals of achieving length were excellent with these devices. Documented preoperative lengthening goals were 6.2 cm (range, 2.5 to 8.0 cm). Radiographically measured lengthening achieved was 5.6 cm (range, 1.7 to 8.0 cm) with a mean time of 67 days.

Conclusion(s): GH treatment for stature augmentation in patients with ISS has been controversial for decades and only to add to that controversy is the advent of cosmetic limb lengthening. However, cosmetic limb lengthening for stature augmentation may offer an alternative treatment for patients and a co-treatment to patients who remain relatively short despite GH treatment.

Content Type Expertise: Health Services/Clinical Outcomes Research, Technology/Electronic Medical Record/Telemedicine, Translational Research

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Figure A : Example of a patient with cosmetic limb lengthening to bilateral femurs and tibia/fibulas with a 12 cm gain in height.

IMAGE CAPTION: Figure A : Example of a patient with cosmetic limb lengthening to bilateral femurs and tibia/fibulas with a 12 cm gain in height.