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Limb lengthening: Contribution of dual energy X-ray absorptiometry

P. Braillon¹, F. Chotel², J. Bérard²

University Claude Bernard & Hospital Debrousse,
¹Department of Pediatric Imaging and ²Department of Orthopaedic Surgery, Lyon, France

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Limb lengthening by Ilizarov (or Orthofix) techniques are currently used when limb length discrepancy is more than 4 cm. Lengthening is 0.8 mm a day, usually in two sessions of 0.4 mm. The lengthening and the proper alignment of bone segments should be controlled frequently during the period of lengthening. Then, the amount of reconstructed bone in the callus should be accurately estimated in order to define the best time to remove the external fixator with no risk of bone fracture.

In our experience, DXA measurements have replaced approximately two-thirds of the conventional plain X-rays in

these procedures, diminishing thus the radiation dose to the patients very significantly. Also, the technique allows a precise measurement of the bone mineral content (BMC) in the callus, and we have shown that the fixator could be removed in most cases when the callus BMC reaches 80% of the expected final value. Nevertheless, DXA does not give a precise image of the corticals which are important components to consider in the callus stiffness, and complement of information is obtained with ultrasound imaging. However, the possible contribution of volumetric BMD and cortical thickness measurements with pQCT should be discussed.

The authors have no conflict of interest.

Corresponding author: P. Braillon, Ph.D., M.D., Dept of Pediatric Imaging, Hospital Debrousse, 29 Rue Soeur Bouvier, 69322 Lyon cedex 05, France
E-mail: pierre.brailon@chu-lyon.fr

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