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LETTER TO THE EDITOR

WILEY MICROSURGERY

Eight-year follow-up after vascularized fibular epiphyseal transfer for hip reconstruction

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Confidentiality
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To the editor

The purpose of this letter is to provide a clinical and radiological update, eight years after the original surgery, on the already-reported case of a 4-year-old child who underwent a modified vascularized fibular epiphyseal transfer (VFET) for hip reconstruction post tumor resection (Soldado et al., 2012).

A second proximal femoral osteotomy was performed to address the coxa vara deformity five years after the initial operation. Osteotomy union was achieved four months later, which illustrates the capacity of the extension of the VFET with a vascularized periosteal flap to facilitate structural bone allograft revascularization and integration.

At last follow-up visit, when the child was 12 years old, the child exhibited a subtle Trendelenburg gait and 11 mm of limb length discrepancy. However, he walked pain-free with full weight bearing and was able to run (Supporting Information Video 1). The VFET grew 38 mm in length while the metaphysis and epiphysis enlarged 250% and 200%, respectively, relative to the contralateral proximal fibula, representing 70% and 93% of the metaphysis and epiphysis of the contralateral femur respectively. Magnetic resonance imaging (MRI) revealed enlarging and three-dimensional remodeling of the neoepiphysis (Figure 1). Passive hip range of motion was 40° for flexion, 0° for extension, 0° for abduction, 10° for adduction, and 0° and 20° for internal and external rotation, respectively.

Only five additional cases have been reported in which a VFET was used for proximal femoral reconstruction, with six years the longest follow-up. Hence, there is limited information about the durability of this procedure. Our patient experienced very similar outcomes as previously-reported cases of VFET, including exceptional epiphyseal and metaphyseal remodeling, but just limited hip range of motion (Debarge, Chotel, Gazarian, Viola, & Berard, 2009; Innocenti, Delcroix,

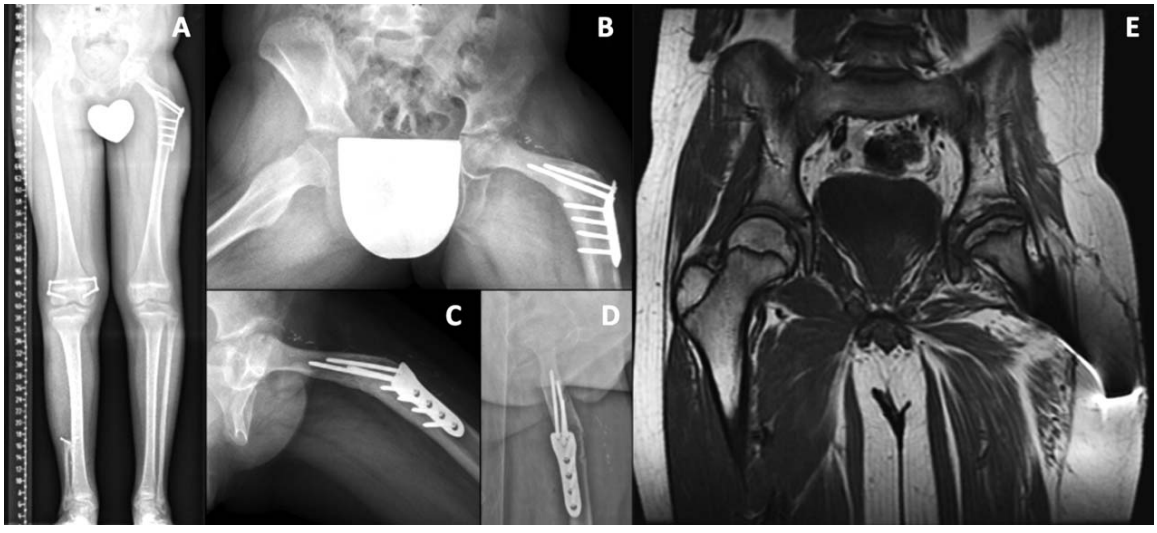

FIGURE 1 Radiological status eight years after the epiphyseal transplant. A, Postoperative A-P lower extremity telemetry revealed minimum limb-length discrepancy. B, Postoperative A-P axial (C) and lateral (D) radiographs after a second valgus procedure demonstrating osteotomy union with a cervicodiaphyseal angle of 125°. E, MRI coronal image of the hip joint showed outstanding three-dimensional enlargement of the graft that occurred with remodeling of the fibular head and longitudinal growth of the diaphysis. The femoral allograft was completely integrated and remodeled

& Romano, 2005; Manfrini, Innocenti, Ceruso, & Mercuri, 2003; Sales de Gauzy, Accadbled, Gomez Brouchet, & Abid, 2009).

The postoperative process after this reconstructive procedure is long and tedious, because the flap must be protected from fractures and secondary deformities that may require secondary corrective procedures (Sales de Gauzy et al., 2009). In addition, donor site complications can occur (Debarge et al., 2009). Nevertheless, this technique seems to be adequate for reconstruction of the hip joint after extensive proximal femoral resection in very skeletally immature patients. The combination of a VFET with a structural bone allograft prevents severe limb length discrepancy, and results in both enlarging and remodeling of the neoepiphysis, which in turn allows for a full weight-bearing gait, while providing a bone stock for other potential hip procedures.

CONFLICT OF INTEREST

The authors, their immediate family, and any research foundation with which they are affiliated have not received any financial payments or other benefits from any commercial entity related to the subject of this article.

To whom it may concern, we the authors of this article hereby state that no prior or duplicate submission or publication elsewhere of any part of the work has been made. We also state that the content of this article has been reviewed and approved by all authors with full belief that it has been made honestly and without plagiarism.

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SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article.