ARTICLE IN REVIEW:
Explant histology following ViviGen Formable® implantation

PUBLICATION: Journal of Orthopaedic Surgery and Research, January 2020

TITLE: Clinical outcome and explant histology after using a cellular bone allograft in two-stage total hip arthroplasty

AUTHORS: Shahrdar C, McLean J, Gianulis E, Softic D, Qin X, Moore MA, Chen J.

STUDY DESIGN: Case report

RESULTS: Two patients underwent two-stage total hip arthroplasty (THA). ViviGen Formable was implanted at stage 1 to fill bone voids. A small portion of ViviGen was explanted at stage 2 to make room for the hip implant. Patient #1 was a healthy 48-year-old male with advanced osteoarthritis and a history of a femur fracture. Seven weeks after ViviGen implantation, he underwent the second stage of THA. Patient #2 was a 64-year-old female with type 1 diabetes, a history of pelvis fracture, and severe osteoporosis. Second stage of THA was performed 12 weeks after implantation. Neither patient experienced complications. Both demonstrated improved Harris Hip Scores post-operatively. Histological evaluation revealed extensive new bone formation in each explant. New bone formation in patient #2 was less mature than in patient #1, but still effective to support the new implant. These cases position ViviGen Formable as an alternative to autograft even in patients with multiple comorbidities.

New bone formation at 7 weeks:
Explants collected at 7 weeks from patient #1 displayed signs of new bone formation around the ViviGen® bone chips and between the demineralized bone fibers.

Early and rapid bone formation:
Over 100 µm of new bone was observed at week 7, which suggests direct participation in bone formation soon after implantation.

Achieved healing despite comorbidities:
Patient #2 had serious comorbidities which can slow new bone formation. While less extensive than patient #1 at week 7, indications of new bone were observed at week 12.

New bone formation in femoral explant at 7 weeks

H&E (A and C) or Masson’s trichrome staining (B and D). Newly formed, collagen matrix (and green arrows) was observed surrounding the implanted ViviGen Formable bone chips (*), as well as between the demineralized bone fibers (black arrows). New mineralization formed within the newly formed bone (red arrows, panel D). Yellow arrows indicate cells surrounded by matrix. Panels A&B: 10x; Panels C&D 20x.

68-20-289.01
LifeNet Health, the LifeNet Health logo, ViviGen, and ViviGen Formable are registered trademarks of LifeNet Health.
©2020 LifeNet Health, Virginia Beach, VA. All rights reserved.