

Case-Based Report on XCM BIOLOGIC® Tissue Matrix For Ventral Hernia Repair

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Introduction

Ventral hernia repair is a common surgical procedure, and there is no shortage of techniques or materials from which surgeons may select to reconstruct the abdominal wall. Mesh repairs are generally used for most defects, a practice trend based on observed failure rates that are relatively lower in repairs performed with mesh rather than sutures.¹⁻³ In addition, biologic grafts provide an extracellular matrix (ECM) scaffolding that is fundamental for tissue repair.^{3,4}

A durable and functional surgical outcome is the optimal clinical end point in ventral hernia repair. With mesh repairs, constructive tissue remodeling is necessary for quality outcomes. XCM BIOLOGIC Tissue Matrix, a sterile, non-crosslinked 3-dimensional ECM derived from porcine dermis, provides strength and has properties that facilitate soft tissue healing with good host acceptance.^{5,6} A proprietary manufacturing process removes cells and DNA, minimizing damage to native tissue architecture and facilitating eventual tissue remodeling.^{5,6} XCM BIOLOGIC Tissue Matrix also is supplied in a variety of sizes, from 4 × 7 cm to 20 × 30 cm; it is prehydrated and can be used directly from the package,⁵ which minimizes the risk for contamination during soaking and eliminates preparation time. Larger sizes of XCM BIOLOGIC Tissue Matrix, up to 25 × 45 cm, will be available soon.

Discussion and Clinical Considerations

Abdominal wall reconstruction is necessarily complex. Patients requiring this procedure may have experienced recurrent hernias and multiple surgeries, and they may have significant scarring, loss of domain, and substantial medical comorbidities. "By the time a hernia comes my way, either someone's surgery plan hasn't worked out for the patient or the patient has some other complicating factor," said Michael A. Baumholtz, MD, FACS, a San Antonio, Texas-based, double board-certified plastic and reconstructive surgeon.

Dr. Baumholtz generally selects a biologic mesh in complex abdominal wall reconstruction, typically placing the mesh in an underlay position. "We feel that's the most

physiologic repair you can get," he said of the underlay technique, which he usually performs in conjunction with components separation.

The approach has yielded positive results. "Hernias seem to be stable with XCM BIOLOGIC Tissue Matrix, at least within the past 4 years or so that we've been using it," said Dr. Baumholtz, who balances a patient's overall risk with the importance of minimizing potential for complications.

Not every hernia needs a mesh, Dr. Baumholtz noted, and not every mesh needs to be a biologic. "For ventral hernia repair, porcine dominates the market and XCM BIOLOGIC Tissue Matrix is as good a product as any other. It has what I'm looking for, and what a lot of surgeons are looking for. You want strength, you want pliability, you want a material that's supple, that you can work with, that's going to hold a stitch and tolerate the abdominal wall forces. It also comes in a variety of sizes and that's quite helpful."

Case Presentation^a

A 61-year-old man presented approximately 18 months after having been involved in a motor vehicle accident. Following the accident, he had been comatose for approximately 8 days and sustained injuries to the hip and lower extremities; a splenectomy was performed because of the injury. He subsequently was managed using an open abdominal approach (temporary closure with an absorbable mesh, then skin grafts once stable). This approach resulted in a large ventral hernia (Figure 1). The patient's past medical history included treatment for chronic hypertension, borderline kidney function (creatinine clearance 120 mL/min), respiratory complaints, and skin cancer that had been treated. He was otherwise healthy.

Three months after initial presentation, a ventral hernia repair was performed in a single operation as a combination of bilateral components separation (Figure 2) and XCM



Figure 1. Patient's large ventral hernia prior to surgery.

Image courtesy of Michael A. Baumholtz, MD, FACS.



Figure 2. Bilateral components separation to expose fascia.

Image courtesy of Michael A. Baumholtz, MD, FACS.

^aResults from case studies are not predictive of results in other cases. Results in other cases may vary.



Figure 3. XCM Biologic Tissue Matrix drawn into quadrants.

Image courtesy of Michael A. Baumholtz, MD, FACS

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Figure 4. Closing fascia over XCM Biologic Tissue Matrix following repair.

Image courtesy of Michael A. Baumholtz, MD, FACS

BIOLOGIC Tissue Matrix (20 × 25 cm) placement in an underlay position. Before placement, the mesh was drawn into quadrants using methylene blue; the midpoint was clearly delineated and a 3-cm circle was drawn all the way around the mesh, providing visual guidance (Figure 3) to prevent stitching no closer than 3 cm to the edge—a buffer zone to minimize risk for suture pullouts or failure at the attachment. A #1-polydioxanone absorbable suture material was used to secure the mesh in a horizontal mattress (U stitch). This anchoring method has the advantage of securing fixation through well-vascularized tissue.⁷ The mesh was inspected to ensure that each quadrant had a uniform number of stitches and was then parachuted into the abdomen, and all sutures were held up before tying in order to offload tension of the closure onto the mesh. Native tissue was reapproximated in the midline (Figure 4) and suturing was performed with #2-nylon material in interrupted figure-of-8 fashion. Subcutaneous drains were placed and an abdominal binder was applied.

Subcutaneous drains on operated site were removed on postoperative day 14. No seroma or hematoma were noted. After the patient’s small bowel function returned, he was

discharged from the hospital on postoperative day 5 with instruction to wear a binder for 30 to 60 days. He continued to recover at home and did very well wearing the binder for approximately 45 days and then resumed daily activities without it.

Conclusion

An excellent result was obtained with a single operation with no further procedures required. The patient fully recovered and his progress was noted at follow-up visits. XCM BIOLOGIC Tissue Matrix was selected for this patient and procedure based on an appraisal of factors including complexity of the abdominal wall defect, patient age and comorbidities, and evidence and Dr. Baumholtz’s clinical experience demonstrating the effectiveness of XCM BIOLOGIC Tissue Matrix in facilitating strong and durable ventral hernia repairs characterized by good postoperative tissue healing. XCM BIOLOGIC Tissue Matrix is easy to use directly from the package and is supplied in a variety of sizes that are helpful to surgeons in acute and elective abdominal wall surgical procedures; the range of available sizes of XCM BIOLOGIC Tissue Matrix also may be beneficial in minimizing waste.

Disclosure

Dr. Baumholtz received funding from Synthes, Inc. for his participation in this project.

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