



J. Kevin Croston, M.D.*

Surgical Director of Trauma,
President of Specialists
in General Surgery

North Memorial Medical Center
Robbinsdale, MN

REPAIR OF LARGE VENTRAL HERNIAS WITH XENMATRIX™ GRAFTS

Introduction: The incidence of ventral hernia after abdominal surgery occurs far too frequently, and in the presence of infection the risk of recurrence increases exponentially. We use standard synthetic mesh to repair small, uncomplicated abdominal ventral hernias but find that using the same technique for complicated repairs results in unacceptable rates of recurrence and difficult complications. We have used a biologic mesh, XENMATRIX™, for more than 55 patients with these more difficult repairs. We chose the XENMATRIX™ graft because of its structurally intact, non-cross-linked, acellular collagen matrix that provides a natural biologic scaffold to support tissue regeneration and minimal foreign body response and encapsulation.

Methods: Our technique starts with exposure and excision of the herniated peritoneum above the fascial level. We begin by lysing the adhesions in the peritoneal cavity and creating enough space in the anterior abdominal wall to allow easy attachment of the graft with 2–3 inches of overlap around the incision. Good fascial edges with enough exposure to allow for compartment mobilization and to allow large anchor stitches to pass through the abdominal wall and the peritoneal graft is desired. The goal of the mobilization is to allow fascial re-approximation and complete coverage of the graft anteriorly.



Underlay placement of the XENMATRIX™ graft after component separation.

We use the XENMATRIX™ graft as reinforcement if possible, rather than the primary mode of peritoneal closure. This provides a ‘spreading effect’ of the forces of separation while the wound heals. The XENMATRIX™ graft is cut to the appropriate size allowing at least an additional inch or two of graft beyond the entry point of the needle. Cutting the XENMATRIX™ graft requires Mayo scissors or large suture scissors and penetration with the needle requires a constant, steady force. We use a large (#1 or 0) Nurolon suture on a CTX non-cutting needle to pass through the fascial layers into the peritoneal cavity. Malleable retractors protect the peritoneal contents while passing the needle.

*Dr. Croston is a paid consultant for Davol, Inc.

Starting at the superior aspect of the incision, we begin to work in a clockwise fashion. We use a 'U' stitch technique to anchor the graft to the anterior abdominal fascia under minimal tension. Initially we do not tie the suture, but clamp it with a mosquito clamp to prevent the suture from pulling through. The sutures are spaced 1–2 inches from each other circumferentially. We place and tie the sutures for one-half of the defect first. Then we continue by first pulling the fascia together to determine where the sutures and graft need to be placed to complete the closure. Care is taken not to place too much tension on the graft, as it is not necessary or beneficial to stretch the material. We then carefully place sutures using the same technique, knowing we will re-approximate the fascia when the graft has been successfully placed. An assistant is used to pull the opposing fascia in approximation while we place the sutures and tie them to complete the closure. We then re-approximate the fascial edges with a running continuous looped 0-PDS. The repair minimizes the force on the healing fascial repair and the forces of separation are decreased by the graft, leaving the incision to heal without undue tension. Post-operative subcutaneous seromas have not been seen to date, and we do not routinely use a closed drainage system.

In patients with a 'fascial gap' despite all efforts at reapproximation (we use compartment release and subcutaneous mobilization whenever necessary), we mobilize the skin and subcutaneous tissues to allow coverage of the exposed graft. As in the above example, the graft is placed in the peritoneal cavity and overlaps the fascial edges by 2–3 inches circumferentially. An interrupted #1 Nurolon suture in the above described 'U' stitch is used to secure the graft. Again, care is taken not to place too much tension on the graft because it does not stretch. The patient is drained with a closed suction system and the drain is removed when the drainage has decreased below 30cc per 24 hour period. If primary skin closure is not achieved, we cover all exposed graft with Vaseline® gauze before placing a Wound Vac. Once granulation tissue has formed, we proceed with primary closure.

This paper contains the opinions of, and personal surgical techniques practiced by Dr. Kevin Croston. The opinions and techniques presented herein are for informational purposes only and the decision of which techniques to use in a particular surgical application should be made by the surgeon based on the individual facts and circumstances of the patient and previous surgical experience.

The logo for Bard, consisting of the word "BARD" in a stylized, green, outlined font.

DAVOL INC.

Bard, Davol and XenMatrix is a trademark and/or registered trademark of C. R. Bard, Inc. or an affiliate. All other trademarks are property of their respective owners.

Please consult product labels and inserts for any indications, contraindications, hazards, warnings, precautions, and instructions for use.

© Copyright 2009, C. R. Bard, Inc. All Rights Reserved.

MMCR6

Davol Inc. • Subsidiary of C. R. Bard, Inc.
100 Crossings Boulevard • Warwick, RI 02886
1.800.556.6275 • www.davol.com
Medical Services & Support 1.800.562.0027