

Clinical Review

Veritas® Collagen Matrix



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Veritas is a collagen matrix used to repair complex abdominal defects.

- *Excellent strength and suture retention*
- *Remodels into tissue indistinguishable from host tissue*
- *Ready to be used out of package - no rehydration required*
- *Consistent and uniform*
- *Minimizes tissue attachment in case of direct contact with viscera*

Treatment of a Large Ventral Defect with Veritas® Collagen Matrix



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INTRODUCTION

A common complication following laparotomy for abdominal catastrophe or trauma is the occurrence of a ventral hernia. Our ability as a specialty to keep these patients alive surgically and supportively in the Intensive Care Unit has led to complex wounds. The repair of ventral hernias with mesh is often prohibited secondary to contamination or ongoing sepsis. Complications of using mesh in this setting include infection, extrusion, adhesions, and enterocutaneous fistula^{1,2}. In the past these wounds have been dealt with in a variety of ways. Three major categories include; autologous tissue, absorbable mesh, and biologics³. The most common method of closure using autologous tissue is the separation of components method⁴. This method is not ideal in defects that are extremely large or where ongoing inflammation and loss of domain is present⁵. Absorbable mesh can work as a stop gap measure to close the

abdominal wound, but it leaves a large hernia requiring delayed final closure. Biologics such as Veritas Collagen Matrix offer the ability to close the wound in the acute setting with a result that may be satisfactory as a final closure.

The ideal biologic material for complex abdominal defects would be strong, incorporate with the abdominal wall, and have a low complication rate⁶. The use of biomaterials can fit these criteria. Recent literature has shown the use of acellular dermal allograft to be a successful option for repair of complex abdominal defects⁷⁻¹¹. Another product that has been shown to have dynamic mechanical characteristics is acellular bovine pericardium¹²⁻¹³. The following is a case report using acellular bovine pericardium in the setting of a complex and infected abdominal wound.

CASE

A 22 year old female presented to the Emergency Department with epigastric and abdominal pain radiating to her back. Routine evaluation noted a low grade fever, a lipase of 4600, and a leukocytosis. The diagnosis of acute pancreatitis was made and the patient was admitted to the Intensive Care Unit for resuscitation. Over the next five days she progressively decompensated requiring intubation and vasopressor support. The patient was evaluated and found to have necrotizing pancreatitis associated with abdominal compartment syndrome based on Computed Tomography Scan and clinical exam.

She was taken to surgery due to a rising white blood cell count, increasing hypotension and abdominal distension. Intraoperatively, the pancreas, gallbladder, omentum and retroperitoneum were necrotic. Pancreatic necrectomy, cholecystectomy and debridement were preformed. Cultures were taken of this material, which later grew *Pseudomonas aeruginosa*. Upon completion of the debridement it

was apparent that given the distension of the abdominal contents primary fascial closure would not be possible. Veritas was placed to cover the defect. This was sutured to the fascia using running 0 Prolene. The subcutaneous tissue was then packed open. Initial coverage of the abdomen was lost on post operative day five, and in the subsequent days the patient required multiple abdominal explorations and debridements of necrotic tissue. On post operative day fourteen the wound was examined for closure.



Photo 1: Initial coverage of the abdomen was lost secondary to *Pseudomonas* on post operative day five.

Final evaluation of the open abdominal wound revealed a 20cm x 25cm defect with the rectus muscles and rectus fascia intact on the sides of this defect. Secondary to extensive inflammation in the abdominal wall, separation of components was unable to be completed. The fascial layers were unable to be mobilized toward the midline without causing undue tension, therefore two pieces of Veritas measuring 16cm x 10cm were used to cover the midline fascial defect. The Veritas was sutured to the rectus fascia using a #1 Prolene suture in a running fashion. The two pieces were approximated at the midline using a 2-0 Prolene suture. This was accomplished without causing undue tension to the Veritas inlay. Two subcutaneous skin flaps were raised on either side of the midline incision, and drains were placed underneath the elevated skin flaps and the skin flaps were approximated primarily at the midline, covering the Veritas mesh.



Photo 2: Two pieces of Veritas measuring 16cm x 10cm were used to cover the midline fascial defect.

Postoperatively the patient did well until post-op day three when she began to have signs and symptoms of abdominal compartment syndrome. She was evaluated and skin sutures were removed at the bedside to release the abdominal skin tension. Removal of these sutures eased the patient's symptoms, but the underlying Veritas matrix was exposed at the midline. This was packed with wet to dry gauze.

After 48 hours time a skin defect approximately 5cm x 10cm remained with exposed Veritas at the base of the wound. This area was clean with healthy tissue surrounding the Veritas. Therefore, a wound sponge was placed into the defect and negative pressure wound therapy was begun at 125mm of mercury. Wound VAC sponges were changed every three days and the wound was monitored closely. On each sponge change the Veritas was noted to be slowly incorporating and developing granulation tissue, which was pink with punctate bleeding. The wound bed also continued to shrink. The skin flaps remained 100% viable and the subcutaneous drains were removed. Wound VAC therapy was stopped after 25 days and the patient was allowed to completely granulate and close by secondary intent.

At 1 year follow up the patient has returned to work, resumed normal activities, and has a stable abdominal wall.

DISCUSSION

This complex abdominal wound is an example of a large abdominal defect in the setting of infection and inflammation. Multiple attempts to control these types of wounds are described. All have a role in reconstructing the abdominal defect from component separation and mesh, to free flaps and grafts. In this patient, the bovine acellular pericardium was successfully used in a difficult situation for a single stage closure of the abdomen. The fact that the skin sutures had to be removed and the Veritas was exposed illustrates the medium's ability to granulate and allow for closure of the abdomen even without overlying skin flaps. This is something which has been tried with mesh in the past and is occasionally successful, but often requires multiple debridements and removal of mesh. The initial closure of the abdomen after the first surgery performed on this patient placed the Veritas on a grossly infected and contaminated wound. This closure was extruded due to infection on post operative day number five. Once the wound improved after several explorations and debridements the biologic graft had 100% take. The Veritas was able to be completely incorporated into this patient's abdomen with the assistance of the negative pressure wound therapy in one month's time.

CONCLUSION

Management of complex abdominal defects is extremely difficult and multiple strategies are available to provide closure in this setting. The use of Veritas Collagen Matrix has been successful with an infected abdomen and resulting exposure of the Veritas graft. Placement of Veritas allows for a single stage repair and closure of the complex abdominal defect. Its role in the reconstructive ladder of abdominal defects may have further indications as more experience is obtained. After this single experience it is known to be stable, tolerate infection, endure exposure, and granulate under negative wound therapy while not promoting fistula formation.

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