# Preventing Dehiscence in Compromised Surgical Incisions Due to Genetic Disorders: Ehlers-Danlos Syndrome and Pectus Excavatum

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## ABSTRACT

Background: Patients with certain genetic disorders require corrective surgery, even though their condition may put them at high risk for dehiscence. Ehlers-Danlos Syndrome (EDS) is a genetic disorder that disrupts the production, quality, and strength of collagen, leading to significant problems with the joints and other tissues and organs, including a propensity to suffer from open wounds, delayed healing, and weak scars. Pectus excavatum is often caused by collagen disorders such as EDS and Marfan Syndrome.

Three young women are described here. One required cervical fusion due to severe neck damage from EDS. A second developed blistering of her pectus excavatum repair incision. A third, also with EDS, had open abdominal surgery to correct multiple issues, resulting in a long incision. For these patients, it was especially important for their clinical team to promote brisk durable incision closure and to prevent post-operative complications such as surgical site infection and dehiscence.

Methods: Polymeric membrane dressings (PMDs)\* help prevent wound healing complications by controlling and focusing inflammation, which promotes healing, decreases edema, increases circulation, and leads to a stronger, smoother scar. They also continuously cleanse the incision site. And, they prevent crusts, which can harbor microbes and separate wound edges, from forming. The gentle suction PMDs apply can gently deflate blisters without bursting them. Each patient also received prayers. The first patient, knowing the high risk of failure in closing incisions with EDS, chose a specialist surgeon and had PMDs brought to the hospital prior to the surgery. The second patient used PMDs to gently and atraumatically resolve the incisional blistering and pull the wound edges together. The third patient, who was extremely immune compromised, used PMDs to prevent a surgical site infection and to promote brisk incisional wound closure. The author provided e-consulting.

Results: The first patient's surgeon was astonished at how quickly her incision closed with a smooth, strong scar, which was in dramatic contrast to his experiences with other patients who had Ehlers-Danlos Syndrome. The second patient was amazed at how quickly her incisional pain dissipated when she put the PMD on her blistered incision site. Her surgeon canceled plans to revise her incision because PMDs had reversed the impending dehiscence. The third patient's incision also closed without incident.

Conclusion: Using inflammation-controlling, continuously-cleansing, moisturebalancing PMDs on their incisional wounds benefited these three young patients, all of whom had genetic health issues that increased their risk of poor outcomes.

1. Benskin Research Group (Improving health in remote and conflict areas of tropical developing countries)

# THE FIRST PATIENT: EDS-RELATED NECK DAMAGE REQUIRED HIGH-RISK CERVICAL FUSION

The surgeon, an expert in surgery for EDS complications, had no experience with PMDs, but based upon the clinical evidence about PMDs that he was provided, he was eager try them to help prevent dehiscence and infection. He readily agreed to apply PMDs in the operating room after inserting the drain and closing the incision with surgical glue. The surgeon was stunned at the maturity of the incision site healing at the one week follow-up appointment. The patient also appreciated the padding the PMD provided. As a result of this success, the surgeon's patients now often bring PMDs with them so they can be applied at the conclusion of their surgeries.







Post-Op Day 1

Post-Op Day 2

Notes: The pad that was initially placed over the PMD was superfluous. PMDs have a built-in moisture balancing system and a protective backing to prevent contamination. The incision site was temporarily "wall papered" with closure strips were immediately removed when the patient reminded the tech that PMDs need to make intimate contact with the skin in order to control bruising and inflammation and help prevent crust formation. Crusts can harbor infectioncausing bacteria. Note the absence of diffuse redness and the limited crusting & bruising in the areas that were covered by PMDs during the critical first 10 days of use.

# THE SECOND PATIENT: PECTUS EXCAVATUM REPAIR INCISION BLISTERED (BEGAN DEHISCING)

When the glue over the surgical incision for a young woman's pectus excavatum repair came off at about post-op day 18, an apparent infection was revealed. A 7 day course of antibiotics resolved any infection, but the incision site was dehiscing ominously, with only a 1cm wide, 5 cm long, 1 cm high blister to hold the edges together n the area directly over the sternum. The patient was scheduled to see the surgeon for an expected incision, but before that appointment could take place, she obtained heart-shaped (sacral) PMDs and, with her surgeon's assent, used them on the wound. The incisional pain was immediately "tremendously" reduced, the blister was gradually deflated, and the wound edges were pulled together securely over a period of 21 days of PMD use. The expected surgical incision revision was canceled.



THE THIRD PATIENT: OPEN ABDOMINAL SURGERY TO CORRECT EDS- & MCAS-RELATED PROBLEMS This severely debilitated young woman required open abdominal surgery to excise and dissect the celiac plexus nerve bundle, cut the ligament kinking her aortic artery, shave her diaphragm, and remove her stone-filled gallbladder. Her EDS, Mast Cell Activation Syndrome (MCAS), and blood thinner, apixaban, all increase the likelihood or poor wound healing. The surgeon applied PMDs in the operating room. To minimize cooling, removal of nutrient-filled wound fluid, and trauma to the wound bed, PMDs should be changed, without scrubbing or rinsing, when the exudate (or blood stain) visible on the dressing backing extends beyond the open area the dressing is covering.





\*PolyMem<sup>®</sup> Surgical MAX<sup>®</sup> Film Island Dressings & Sacral Shapes<sup>®</sup> by PolyMem are made by Ferris Mfg. Corp. in Fort Worth, Texas, USA. Ferris Mfg. Corp. sponsored this poster presentation.



Post-Op Day 8







Post-Op Day 10

Post-Op Day 31

Post-Op Day 45











Late pm on Day 0 Day 2: first PMD change Day 3: no edema or bruising! Day 3: new PMDs Day 7: PMDs are cleaning Day 8: no PMD change One month post-op 2<sup>1</sup>/<sub>2</sub> years post-op Dressings were not changed when indicated on day 1, but despite that, PMDs controlled pain and inflammation and continuously cleansed, leading to a strong, flat scar. 2. Ferris Mfg. Corp.



7 Years Post-Op

### **ADDITIONAL INFORMATION**

PMDs are proven to control and focus inflammation, even over intact skin, and they contain a continuous wound cleansing and debridement system. To maximize benefits such as the formation of strong, smooth scar and surgical site infection prevention, PMDs should be used until there are no signs of inflammation, such as redness or edema. This is usually about 30 days. PMDs should be changed when they are saturated across any wound border, or they are damaged by patient activity. When the incision is completely closed, PMDs can be replaced at routine assessments.

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