

# Utilization of Transforming Powder Dressing for Managing Peristomal Wounds and Mucus Fistula in a Neonate after Omphalocele Repair

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## INTRODUCTION

Omphalocele is a congenital condition where a portion of the intestine protrudes through the abdominal wall near the navel, affecting approximately one in 4,200 births in the United States.<sup>1</sup> The current standard of care (SOC) involves surgical intervention, including the application of a silo pouch to contain the omphalocele, followed by repair and ostomy creation. However, complications such as wound infection, delayed healing, fascial separation, patient discomfort, and loss of abdominal domain can occur. Novel approaches to optimize wound healing, minimize dressing changes, and alleviate associated pain are needed.

In this case study, we present the use of an extended wear (up to 30 days) transforming powder dressing (TPD\*), composed of polymers similar to those used in contact lenses, to expedite wound healing and improve patient care.

## METHODS

Following omphalocele repair, a 2-month-old boy experienced surgical wound dehiscence and developed moisture-associated skin damage (MASD). Various standard of care dressings were utilized in combination with jejunostomy pouching to isolate the stoma from the umbilical stump wound, and a mucous fistula was created to minimize further wound and skin complications. However, the pouching and dressings proved inadequate as effluent repeatedly undermined the barrier ring several times a day. The neonate experienced restlessness, worsening tachycardia, and increased pain due to MASD and frequent wound care. Consequently, the clinical team determined the need for an alternative treatment modality. After careful consideration, the entire area was managed as a fistula, employing a larger pouching system, while the wounds were protected with TPD to shield them from moisture and effluent.

## RESULTS

TPD was applied and topped off twice over 16 days. The MASD resolved, tachycardia improved, and all wounds achieved epithelialization. The neonate no longer required pain medication before treatment, and successful pouching was achieved.



**Pre-TPD:** Observed dehisced area near stump and deterioration of tissue proximal to incision. Daily changes with antimicrobial impregnated foam for 2 weeks.

**Day 1 Before TPD Treatment:** TPD was applied and used to isolate stoma and fistula and protect umbilical stump and excoriated skin. TPD was covered with wound manager pouch to collect effluents. The pouch was changed as needed and TPD was topped off twice before epithelialization.

**Day 4:** Visible granulation was observed and no TPD top-off or primary dressing change was made.

**Day 6:** TPD topped off without primary dressing change.

**Day 14:** Wound continued to epithelialize and TPD was topped off for the last time without requiring a primary dressing change.

**Day 16:** Wound epithelialized.

## DISCUSSION

Upon hydration with saline, TPD polymers congeal to form an oxygen permeable, moist matrix that covers and protects the wound. The TPD matrix provides a non-occlusive barrier that allows fluid exchange through vapor transpiration, while protecting the wound from contamination. TPD may be left on the wound for up to 30 days and topped off as required in the interim, thereby reducing the trauma and infection risk associated with primary dressing changes. In this case study, utilizing TPD facilitated wound healing by offering a protective barrier against effluents and isolating the stoma and fistula. This approach resulted in reduced frequency of dressing changes, pain and pain medications while increasing patient comfort and nursing efficiency. Introducing TPD enabled the implementation of a suitable pouching option for a complex abdominal wound with MASD in a neonate following omphalocele repair.

**References:** (1) National Center on Birth Defects and Developmental Disabilities. Centers for Disease Control and Prevention. Birth Defects Homepage. Specific Birth Defects. Facts about Omphalocele. Accessed 18Sep23. | (2) Zahouani T, Mendez MD. StatPearls [Internet]. Last updated 23May2023. **Acknowledgements:** This poster was developed and presented in collaboration with Altrazeal Life Sciences Inc. (ALSI). All clinical assessments were conducted independently by AdventHealth without any financial compensation from the manufacturer. Tammy Lichtman and Rosalyn Barnabee serve as clinical consultants for ALSI. For application instructions and risks of this device please refer to Altrazeal Instructions for Use.