

Innovative Practice for Preterm Neonate Wound Care: Complete Healing and Extended Ostomy Wear with Transforming Powder Dressing

Hyekyung Kay Park, BSN, RN, CWCN, GERO-BC
WOC Department, AdventHealth System; Orlando, FL

INTRODUCTION

Pediatric wound care clinicians face unique challenges due to the specific physiological characteristics of incredibly fragile skin in premature neonates.¹ Surgery, invasive procedures or trauma to the skin creates portals of entry for bacteria in an already immune-compromised host.² Approaches to skin care in premature babies varies considerably upon location and clinical experiences.³ Current standard of care typically requires frequent and painful dressing changes.

OBJECTIVE

An infant born at 36 weeks and four days gestation was admitted to NICU for congenital anomalies, intrauterine growth restriction, and Trisomy 21. Five days post-birth, the neonate underwent a colostomy, which was complicated by complete surgical skin dehiscence (with intact fascia) on postoperative day 10. Concerned about the challenges of using traditional wound care products (e.g., hydrofibers or packing strips) near the ostomy pouching surface, an alternative wound care approach was explored. This approach aimed to 1) offer enhanced protection and reduce infection risk in case of ostomy output leakage, and 2) reduce dressing change frequency to minimize pain and extend pouch wear time.

METHODOLOGY AND MATERIALS

On postoperative day 12, a transforming powder dressing (TPD*) was applied to the abdominal wound (1x2.3x0.5cm), followed by a pediatric ostomy pouch. The wound reduced by 91.7% within 10 days and achieved complete healing 14 days post TPD application.

TPD is an extended-wear, oxygen-permeable dressing made from polymers similar to those used in contact lenses. When moistened with saline, the powder transforms into a moist barrier that can remain in place for up to 30 days, providing wound coverage and protection.

*Altrazeal® Transforming Powder Dressing

REFERENCES: (1) Steen EH, Wang X, Boochoon KS, et al. Wound healing and wound care in neonates: current therapies and novel options. *Adv Skin Wound Care*. 2020;33(6):294-300. doi:10.1097/01.ASW.0000661804.09496.8c (2) Association for Professionals in Infection Control and Epidemiology, Inc. *Infection Prevention & You: Break the Chain of Infection*. Accessed October 29, 2024. (3) Wilborn D, Amin R, Kottner J, Blume-Peytavi U. Skin care in neonates and infants: a scoping review. *Skin Pharmacol Physiol*. 2023;36(2). Karger; May 2023. | **ACKNOWLEDGEMENTS:** This poster was presented in collaboration with Altrazeal Life Sciences Inc. All protocols and clinical assessments were conducted independently by AdventHealth without any compensation. For application instructions and risks of this device please refer to Altrazeal Instructions for Use. | EDU-1112

RESULTS

Application of TPD resulted in:

- Increased ostomy pouch wear time (from ~3 hours to 48 hours)
- Reduced frequency of wound care dressings (from ~8x daily to 3x weekly)
- Maximized patient comfort during wound and ostomy care. No pain medications were required during TPD application
- Complete wound healing without any complications

Utilization of novel practice innovations can benefit both patients and clinicians.

PRE-TPD APPLICATION



POST-TPD APPLICATION



CONCLUSION

Utilization of TPD provided benefit for both pediatric patient and clinicians by reducing dressing change frequency and enabling wound healing without complication.