Quality Improvement Project: Management of Complex Painful Postoperative Wounds

Jeffrey Chiu, MD; Ron Sotomayor, RN, BA, CWOCN; Reagan Taylor, PA-C; Tammy Jensen Lichtman, RN, BSN, CWON;
Rosalyn Barnabee, BSN, RN, WOC; Tracy Decker, DNP, RN; Daniel Farinas Lugo, MD; Marcus Darrabie, MD, FACS; AdventHealth System, Orlando, FL

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INTRODUCTION

Management of painful postoperative wounds is difficult and expensive[1]:

- Medicare estimated costs for treatment of acute and chronic wounds range from $28 to $97 billion annually with surgical wounds contributing the largest amount[2]
- Over 82% of surgical patients report severe wound related pain
  - Pain affects length of stay (LOS) and patient satisfaction scores[3,4]
  - Pain can persist for weeks after discharge from the hospital, lowering a patient's quality of life[5] (QOL)
- Opioids, often prescribed for pain management, are associated with negative side effects and caused over 100,000 deaths in 2021[6,7]
- Standard of care wound therapies, including NPWT and conventional dressings, require frequent dressing changes that can be painful and increase the need for opioids and risk of dependency

There is a critical need for a multidisciplinary collaboration and quality initiatives to identify alternate modalities for management of painful acute and chronic postoperative wounds.[8]

QIP OVERVIEW & METHODOLOGY

A quality improvement project (QIP) was initiated to test the potential of a novel wound treatment technology, a transforming powder dressing (TPD*), to improve the current standard of care (SOC) practices for the management of painful postoperative wounds. TPD is comprised primarily of biocompatible polymers. Upon hydration with saline, TPD granules aggregate to form a moist, oxygen-permeable matrix that protects the wound from contamination while helping manage excess exudate through vapor transpiration. Once applied, TPD may be left on for up to 30 days. More powder may be added as needed without requiring primary dressing changes. Simple secondary dressings may be used in areas of high exudation or friction. TPD dries and flakes off as the wound heals.

Hypothesis: Utilization of TPD, an extended-wear dressing, will reduce dressing change frequency, pain scores, narcotic use, and nursing time.

Method: Prospective evaluation. Pain was measured using Visual Analog Scale (VAS) both 15 minutes before and after TPD application. Prescribed medication records were reviewed at each assessment.

Sample: 12 adults with surgical wounds and pain scores > 5 (VAS 0-10)

REFERENCES & ACKNOWLEDGEMENTS

(1) Chetter IC, Oswald AV, et al. Patients with surgical wounds healing by secondary intention: A prospective, cohort study. International journal of nursing studies. 2019. 89, 62–71. (2) Sen CK. Human Wounds and Its Burden: An Updated Compendium of Estimates. Advances in wound care. 2019. 8(2), 39–48. (3) Diane Glowacki, Effective Pain Management and Improvements in Patient's Outcomes and Satisfaction. CriticalCareNurse Vol 35, No.3, June 2015. (4) Quianyu Hu et al. Effects of Surgical Wound Types, Pain Levels and Length of Stay on the CAHPS Hospital Survey. (5) Shahriari M, Golshan A, et al. Effects of pain management program on the length of stay of patients with decreased level of consciousness: A clinical trial. Iranian journal of nursing and midwifery research. 2015. 20(4), 502–507. (6) Garimella V, Cellini C. Postoperative pain control. Clinics in colon and rectal surgery. 2013. 26(3), 191–196. (7) Lopez G. New York Times; Good morning. Overdoses are increasing at a troubling rate. 2022FEB13. (8) Becker's Hospital Review. "Wound care by the numbers: Medicare cost and utilization of patients with chronic wounds" Healogics. White paper - 090717.

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Altrazeal® Transforming Powder Dressing (USA)

RESULTS

Sample Population (n=12):

- **Gender:** Male: n=6; Female: n=6
- **Age:** 21 - 95 years (mean: 49.1)
- **Wound Etiologies:** Diverse debrided or excised wounds - necrotizing fasciitis, hidradenitis suppurativa, burn, pilonidal cyst, peri-stomal, pressure injury, abscess, hematoma
- **Wound Size:** 7.5 - 1,350 cm^2 (mean=272 cm^2)
- **Pain Scores:** Average patient reported pain scores prior to TPD application: 8/10 (range: 6–10)
- **SOC Dressings:** NPWT or conventional moist dressings
- **Frequency of SOC dressing changes:** 3 or more times per week

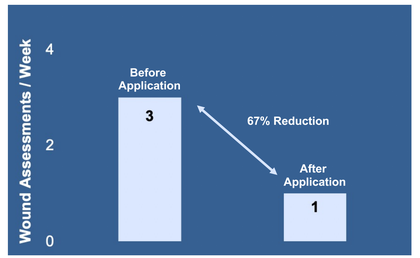
QIP SAMPLE POPULATION

Subject	Wound Type / Surgical Procedure	Sex	Age	Complication and Comorbidities	Starting Wound Area (cm^2)	Starting Pain Score	Pain Score Post Initial Application	% Pain Reduction
1	Pilonidal cyst (recurrent) excision (3rd)	M	21	Obese, non-healing wound, poor hygiene and compliance	15	8	4	50%
2	Hidradenitis suppurativa excision (axilla)	F	25	Hidradenitis suppurativa, history of non-healing wounds	72	10	3	70%
3	Necrotizing infection excision (arm)	F	43	Infection, necrotizing fasciitis	16	7	0	100%
4	Necrotizing fasciitis I&D/debridement	M	51	HIV, progressive necrotizing fasciitis	72	10	0	100%
5	Excision/debridement RLE through muscle	M	40	DVT, lymphedema, failed treatment with STSG and NPWT	1350	9	3	67%
6	Burn debridement (thigh)	M	72	CABG x 3, MI, cancer, DM	765	9	2	78%
7	Atypical wound (unknown etiology)	F	52	History of slow/non-healing wounds, stroke/paralysis	7.5	6	0	100%
8	Stage 3 pressure injury debridement	F	95	DM, dementia, kidney dx, history of slow/non-healing wounds, waldenstrom macroglobulinemia	21	8	2	75%
9	Necrotizing fasciitis excision (right thigh)	M	44	Infection, HTN, obesity, significant pain with NPWT taking morphine	900	7	3	57%
10	Peristomal irritation post ileostomy	F	30	Hirschsprung, ileostomy, renal failure	12	8	0	100%
11	Abscess excision (right buttock)	M	45	DM, obesity, HTN, multiple abscesses	9	8	0	100%
12	Hematoma post debridement (LLE)	F	71	Impaired mobility, HTN, AF, bipolar, CKD, long COVID, OSA, Hepatic stenosis	25	8	0	100%
	AVERAGE OR TOTAL COUNT	6 M 6 F	49.1		272.0	8	1	83%

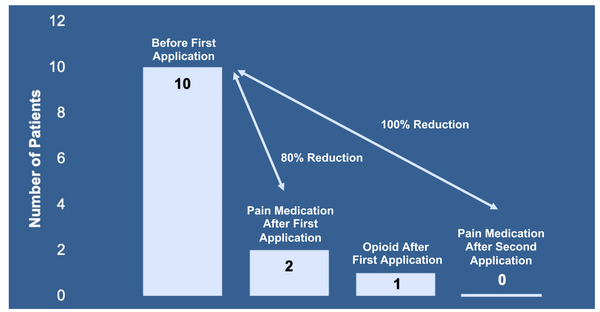
POST TREATMENT WITH TPD:

- **Reduction of Average VAS Pain Score: 83% (range 50% - 100%)**
  - All patients reported pain reduction within few minutes of first application
  - 6/12 patients reported 100% pain reduction after TPD treatment
- **Reduction of Pain Medication: 80%** after first TPD application
  - All pain medications were discontinued by the second TPD dressing application
- **Frequency of Wound Care Assessments or Dressing Changes:** Reduced from 3 or more / week to 1 / week
- **Complications:** All wounds healed without any complications. No adverse events were reported

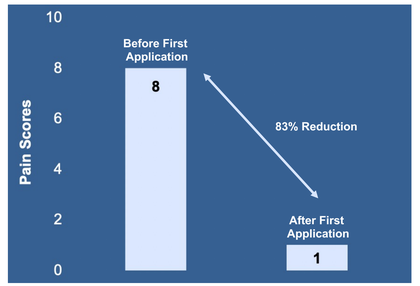
WOUND ASSESSMENTS



PAIN MEDICATION



PAIN SCORES



CONCLUSION

Pain can adversely impact healthcare costs, clinical outcomes, LOS, patient satisfaction/HCAHPS scores and QOL[1,3,4,5]. The QIP data suggests that TPD presents a safe and effective solution for management of painful postoperative wounds.

The following observations were recorded for all patients:

- Reduction in patient-reported pain scores and prescribed pain medications
- Decrease in wound assessments and nursing time for dressing changes
- Achievement of full wound closure with no wound related complications