Advanced Dressings for Pilonidal Disease: A Randomized Trial of Two Dressings

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Pilonidal disease is a disease of the skin in the natal cleft resulting in chronic draining cysts and acutely inflamed abscesses. First described in by Mayo in 1833, it was named pilonidal disease by Hodges in 1880 due to the finding of hair within the cysts.[1,2] This disease has long affected the US Armed Forces. In 1943, according to Buie, Lane reported that pilonidal disease resulted in a greater number of sick days for the US Navy than hernias.[3] During the same period, Buie labeled the disease "Jeep Disease" due to a reported association with prolonged mechanized operations.[3] The problems of prolonged healing and a lack of consensus on the best surgical treatment outlined by Buie in 1944 are similar to the challenges we face today.

Originally thought to be congenital, pilonidal disease is now recognized as an acquired disease process. It is thought to result from either an infection of hair follicles with subsequent rupture into the subdermal tissue or the introduction of shed hair into follicles of the natal cleft, resulting in an inflammatory process.[1]

The reported incidence is 26 cases per 100,000 in the general population with a 2.2:1 ratio of men to women.[4] Older reports show an incidence of 1.1% in college-aged (18–22 years) males compared with a 0.11 % incidence in college-aged females.[5] The reported age at initial presentation ranges from 19–32 years, with a noted male preponderance.[4,6,7]

In 2006, the National Health Service of Great Britain reported 11,534 admissions with a 4.3-day mean length of stay resulting in 17,084 hospital bed days for patients with pilonidal disease.[7] These data show the effect on the inpatient healthcare system without accounting for outpatient care, emergency department utilization, and loss of occupational productivity.

No single treatment modality or procedure has proven to be the gold standard treatment. Pilonidal disease often presents as an acute infection with abscess formation that requires incision and debridement. These acute abscesses may progress to chronic pilonidal disease in 50% of patients who present acutely.[8] The subsequent treatment of the chronic sinus presents the practitioner with a multitude of treatment options.

Although non-operative management is occasionally used, chronic pilonidal disease is predominantly a surgical disease for which a variety of surgical procedures are accepted treatments.[7,1] The limited excisional techniques with a resulting wound left to heal by secondary intention are effective with good patient satisfaction compared to alternative therapies.[9] The excisional wound requires follow-up and continued care as an outpatient by the surgeon and wound care team.

The challenges to wound healing in the natal cleft from these surgical procedures may take 3 to 12 weeks to heal; many reported cases take 12 to 54 weeks for complete resolution.[6,7,10–12] The current therapies address these challenges but come with significant limitations. Standard gauze dressings can be self-applied but are subject to frequent changes and do not optimize the wound bed healing environment as well as the newer negative pressure wound therapy (NPWT) dressings do.[13] The NPWT dressings promote wound healing but are cumbersome, complicated, and expensive.

NPWT dressings are commonly used to treat open soft-tissue wounds and are documented in the literature for the treatment of pilonidal disease excision wounds.[14–19] NPWT dressings exert their beneficial effects on wound healing by increasing perfusion of the wound bed, reducing

edema, and modulation of the wound biomarkers.[20] They also produce mechanical stress on the wound and surrounding tissue and decrease the bioburden of the wound.[20] Due to the complex nature of these dressings, dressing malfunctions, and loss of seal these dressings can require specialized nursing attention. The cost per dressing is significant, but less than standard gauze dressings due to the longer time between dressing changes.

Drawtex® is a new wound dressing technology that is designed to manage exudative wounds and provide an appropriate wound moisture balance. This dressing is increasingly used for the treatment of open wounds with a reported effectiveness similar to that of a variety of dressings including alginate, hydrogel, hydrocellular foam, or hydrophobic foam.[21] Drawtex is engineered to disperse exudative fluid while maintaining the temperature and moisture balance at the wound surface.[22]

Control of exudative drainage is important for biologic wound healing and for patient compliance. Excess moisture in the wound bed will result in macerated tissues at the wound edges, which can lead to slower wound healing,[23] whereas a desiccated wound leads to slower wound healing and promotes eschar formation with resultant impediment to full epithelialization.

The Drawtex® dressing is reported to achieve this important wound moisture balance while being able to handle the occasionally high volume of exudates produced by pilonidal cystectomy wounds. Additionally, this dressing does not require the cumbersome external vacuum pump and canister that are integral to the NPWT dressing.

Balanced wound biomarkers and low bioburden in the wound bed are important for healing pilonidal excision wounds by secondary intention. The initial inflammatory phase serves to promote proteolytic and fibrinolytic factors, which provide for autolytic debridement of the wound bed. This phase progresses into the regenerative and proliferative phase with the expression of growth factors and concomitant increase in fibroblasts, keratinocytes, and endothelial cells.[23]

Studies of NPWT dressings have shown a decrease in the inflammatory mediators, up-regulated growth factor expression,[24,25] and a reduction of the bioburden within infected wounds.[20] This effect may be due to the fluid handling mechanism of the dressing. The effect of Drawtex® on the balance of biomarkers and bioburden within open wounds healing by secondary intention has not yet been reported. We believe that the fluid-handling capabilities and debridement action of the Drawtex® dressing will exert a similar effect to that of NPWT dressings on the biomarkers of the healing wound bed and result in a similar reduction in bioburden, both of which will increase healing rates and potentially prevent conversion from an acute wound to a chronic wound.

If the Drawtex® dressing demonstrates the same wound healing properties as the NPWT dressing, it may provide improved patient satisfaction and lower overall cost to the health care system. Our current pilot study is a prospective, randomized open label trial comparing the use of Drawtex® Hydroconductive Wound Dressing to the NPWT dressing in the setting of a pilonidal cystectomy excision wound healing by secondary intention. As a primary endpoint, we are comparing the time to healing using the Drawtex® dressing versus the time to healing achieved with the use of the current standard of care NPWT dressings. Using digital planimetry, we will track the change in the size of the wound leading up to 100% epithelialization. We will evaluate the effects of both dressings on wound healing biomarkers and bacterial burden within the wound as secondary endpoints. ■

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