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Ahmad Reza Shahraki *

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Case Report

Cause or Caused of a Pressure ulcer before and after Debridement: 2 Cases Report and Review of Literature

Ahmad Reza Shahraki [1]*, Elahe Shahraki [2], Elham Shahraki [3], Hamide Mirshekari [4], Mohammad Reza Shahraki [5]

[1] General surgeon, Assistant professor, Department of surgery, Zahedan medical faculty, Zahedan University of Medical Sciences and Health Services, Zahedan, Iran.

[2] Dentist, Periodontology resident, Dental Faculty, Tehran University of medical Sciences, Tehran, I.R. Iran.

[3] Associated professor of Nephrology, Department of Internal medicine, Nephrologist, Ali Ibne Abitaleb Hospital, Zahedan University of medical Sciences, Zahedan, I. R. Iran.

[4] Infectious disease specialist, Assistant professor, Department of Internal medicine, Ali Ibne Abitaleb Hospital, Zahedan University of medical Sciences, Zahedan, I.R. Iran.

[5]-Professor of physiology, Department of Physiology, Zahedan medical faculty, Zahedan University of Medical Sciences and Health Services, Zahedan, Iran.

***Corresponding Author:** Ahmad Reza Shahraki, General surgeon, Assistant professor, Department of surgery, Zahedan medical faculty, Zahedan University of Medical Sciences and Health Services, Zahedan, Iran.

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Abstract

This case report in line with the SCARE Criteria. Pressure ulcers (known as pressure injuries) occur when a bony prominence, such as the sacrum, is subjected to prolonged pressure and can result in soft tissue injury. Continuous and attentive repositioning is necessary to prevent and cure pressure-induced wounds.

The first case describes a pressure ulcer in buttock sites with multiple bacterial variation before and after debridement that make a question that is cause or caused goals. The second case wants to shows power of care. Wound management begins with the identification and aggressive management of the modifiable factors, such as positioning, incontinence, spasticity, diet, devices, and medical comorbidity, which contribute to pressure injury formation. Initial interventions include washing, cleaning, and maintaining the surfaces of the wound. In certain cases, it may be sufficient to debride the non-viable or contaminated tissue. In general, the characterization of bacterial presence as colonizing bystanders vs. invasive pathogens that impede wound healing in chronic pressure ulcers is not well defined. Depending on the bacterial species present in a wound, both beneficial and detrimental effects have been associated with wound colonization. However, operational care in more severe cases or to encourage patient satisfaction may be necessary.

Keywords: pressure ulcer; infection; case report; debridement; wound dressing; antibiotic selection; pseudomonas aeruginosa; bacteria; bacteriology; wound care

Introduction

Pressure ulcers (known as pressure injuries) occur when a bony prominence, such as the sacrum, is subject to prolonged pressure and can result in soft tissue injury. Continuous and attentive repositioning is necessary to prevent and cure pressure-induced wounds [1]. The term “fulminant pressure wound” is understood as the destruction of skin and deep tissues due to defective blood circulation caused by pressure, the skin around the wound showing signs of undermining and the wound visibly increasing in size in a short time, that, within days. Frequent symptoms negatively affecting the prognosis include coexisting infections accompanied by purulent exudate [2]. A pressure ulcer is defined as any lesion caused by unrelieved pressure, resulting in damage to underlying tissue, and is acknowledged to be a clinical challenge for both the clinician and the patient [3]. Comorbidities, reduced self-care abilities, and systemic infections contribute to high morbidity rates in this group of patients [4]. Suffering pain, bad odor, a co-existing risk of systemic infection, long-lasting therapy, and significant costs of dressings, pressure management mattresses, and rehabilitation, all

adversely affect the quality of life in health and sickness [5]. This case report has been reported in line with the SCARE Criteria [6]. Although these patients are typically ignored and their therapy is limited to bedside debridement, without experience in flap reconstruction operations that might significantly enhance patients' lives, we explain the local situation in Palestine here. We think that more knowledge of such methods is necessary. Individuals with spinal cord injury (SCI) are at increased risk for the development of pressure ulcers. These chronic wounds are debilitating and contribute to prolonged hospitalization and worse medical outcome. However, the species of bacteria and the role that specific species may play in delaying the healing of chronic pressure ulcers in the SCI population has not been well characterized [7]. Eleven studies detailing bacterial cultures of pressure ulcers in the SCI population met inclusion criteria and were selected for review. Among these studies, bacterial cultures were often polymicrobial with both aerobic and anaerobic bacteria identified with culture techniques that varied significantly. The most common organisms identified in pressure ulcers were Staphylococcus aureus, Proteus mirabilis, Pseudomonas aeruginosa, and Enterococcus faecalis. In general, wounds were poorly characterized with minimal to no physical description and/or location provided [7]. The cause of these localized wounds (e.g. pressure sores, pressure ulcers, decubitus ulcers, or bedsores) may be due to pressure over a bony prominence that results in shearing and/or ischemia of the overlying skin, leading to tissue breakdown [8]. However, it is now generally accepted that external pressure compromises skeletal muscle, as well as cutaneous microvascular blood flow, resulting in the development of pressure ulcers that actually arise from deeper tissue beds. As such, many wounds initially result from deep tissue ischemia and necrosis prior to the appearance of skin breakdown. Skin breakdown in patients with SCI will be referred to as pressure ulcers in this review because the defect typically occurs at a site of prolonged and unrelieved pressure [9]. Complications arising from pressure ulcers are associated with significant morbidity and mortality. Bacterial infection is the most common complication associated with pressure ulcers. Infection of a pressure ulcer may result in soft tissue and bone infections: cellulitis, abscess formation, bursitis, and osteomyelitis of bone underlying the wound bed [10]. However, in general, the relationship between bacterial colonization, infection, and wound healing is not well characterized [10].

Case presentation:

Case 1:

This case is an 80 years old male with complete bed rest situation and an ulcer on buttock site (figure1).

Figure 1: Pressure ulcer

The primary culture shows Pseudomonas aeruginosa, and antibiotic therapy starts for him and debridement is scheduled (figure2).

Figure 2: Debridement of pressure ulcer

After surgery, multiple dressing and cleaning, changing position starts for him and we reach the secondary phase with another variation of bacteria (figure3, 4). MDT is recognize as an effective, safe, and cost-effective treatment 9. In this therapy, Live and disinfected maggots of the fly Lucilia sericata (Diptera: Calliphoridae) are used for wound debridement and disinfection, ultimately accelerating wound healing. In addition, larval therapy has many benefits for patients, such as reducing the time of treatment and hospitalization. Numerous studies have demonstrated the efficacy o Maggot therapy in the treatment of chronic ulcers, including bedsores.

Figure 3: Enteric bacteria

After debridement the formation of healthy granulation tissue was completed; the wound surface area reduced considerably and the healing process was then completed.

Figure 4: Staphylococcus type infection

We change antibiotic and use multiple debridement to disinfect ulcer and at least we use bio auto pediculate flap to cover this challenging ulcer.

Case 2:

This case describe a 76 years old male with pressure ulcer due to inactivation for a long time (figure5).

Figure 5: Pressure ulcer

We debride strongly (Figure6) and start antibiotic therapy based on Cultures (Figure7).

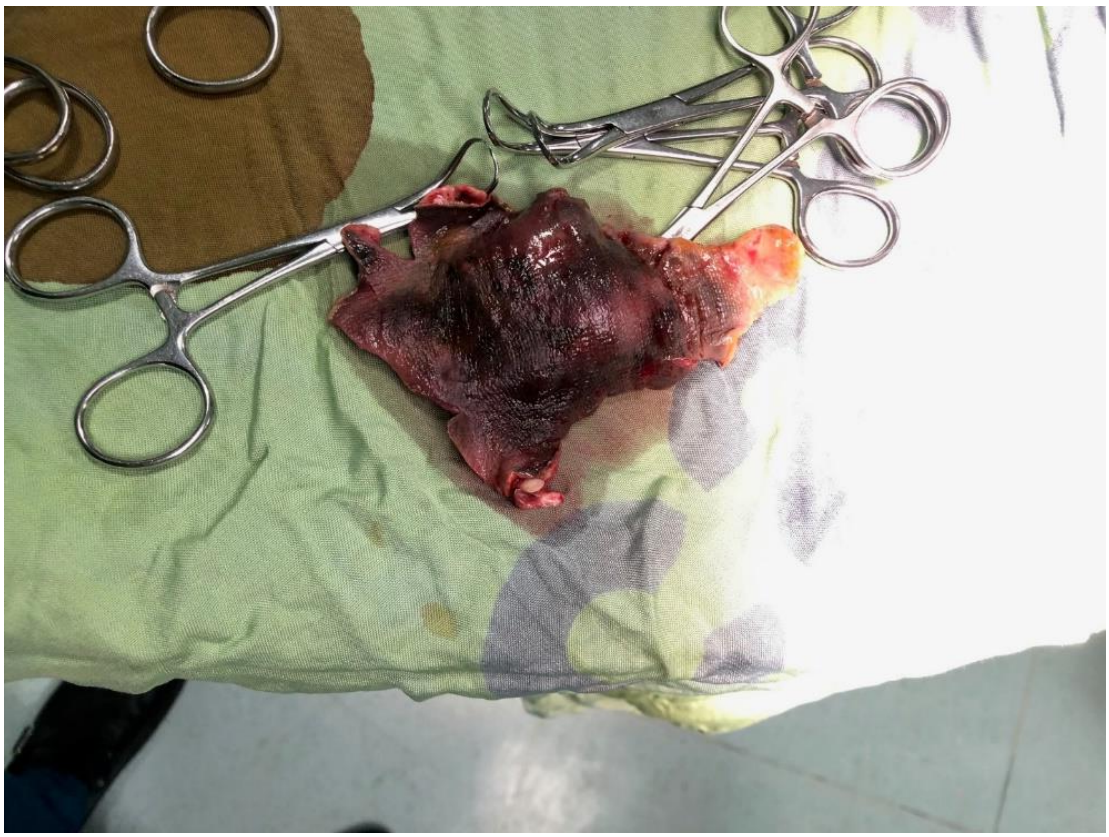


Figure 6: Strongly Debridement

And fortunately we use flaps to cover this cleaned base ulcer by dressing repeatedly.

The frequency of employing maggots in wounds varies in terms of the size, depth, location, and other conditions of the wounds. In this study, the use of larvae was repeated 12 times.

Figure 7: Clean base pressure ulcer

Discussion:

Normal healing is a linear multistep process that progresses from hemostasis through inflammation, granulation tissue formation, and re-epithelialization, to scar formation. Vacuum-assisted closure (VAC®; KCI USA Inc., San Antonio, TX) therapy creates a closed wound environment, reduces edema, promotes perfusion, and removes infectious materials and chronic inflammatory cells from the wound environment by applying topical negative pressure [11, 12]. It also stimulates blood flow to the wound bed [13], resulting in the delivery of fresh leukocytes and plasma that counteract the chronic wound environment. The uniform negative pressure creates tissue deformation and cell stretching, leading to metabolic activity, fibroblast migration, and cell proliferation [14]. Pressure ulcer treatment is known to be costly, although the exact costs have not been definitively demonstrated. What role can NPWT have in reducing those costs? A health economics audit of NPWT cited studies in diabetic foot ulcers, which demonstrated lower costs when compared with saline-moistened gauze. Baynham et al. found that three-stage intravenous sacral and ischial wounds, which were refractory to surgical therapy for the past 10 months, healed in about 2 months with VAC. The device operated at a negative pressure of 125 mmHg with 5 min on and 2 min off cycle [15]. The most commonly cited factor in complications and recurrence is wound dehiscence, generally associated with persistent dead space in the wound cavity, shear forces on the tissue planes, and accumulation of serous fluids. Elimination (closure) of the dead space is critical to effective healing, but this is not always easy or possible to obtain with previously described techniques or technologies [16].

Conclusion:

In general, the characterization of bacterial presence as colonizing bystanders vs. invasive pathogens that impede wound healing in chronic pressure ulcers is not well defined. Depending on the bacterial species present in a wound, both beneficial and detrimental effects have been associated with wound colonization [17]. In addition, the concept of bacterial pathogenicity is evolving from identification of a single species of bacteria that cause disease to defining microbial ecologies that influence health states, although the clinical value of this more global microbiological approach to pressure ulcer care has not been proven. Previously standard culture methods have been used to define the microbial environment of wounds, but typically only several species of bacteria are identified using this methodology due to inherent limitations of growing bacteria in cultures. Unfortunately, <1% of bacterial species can be identified by culture technique using routine laboratory conditions [18]. The bilobed flap is an ideal method for the reconstruction of sacral pressure ulcers. Its blood supply is abundant. The design is simple and easy to learn. Most importantly, it has a low complication profile. It should be considered as part of the local flap armamentarium for sacral pressure ulcers.

Clinical manifestations				
Stage I (case 3)	Stage II (case 1, 2)	Stage III	Stage IV	
Skin Atrophy				
Very thin skin with numerous wrinkles	+	+	+	+
Senile purpura				
Stage I (case 3)	Stage II (case 1, 2)	Stage III	Stage IV	
Repetitive, spontaneous dermal bleeding without coagulation disorder				
	+	+	+	+
Stellate pseudoscar				
Spontaneous dermal laceration displaying a stellar aspect				
	+	+	+	+
Skin laceration				

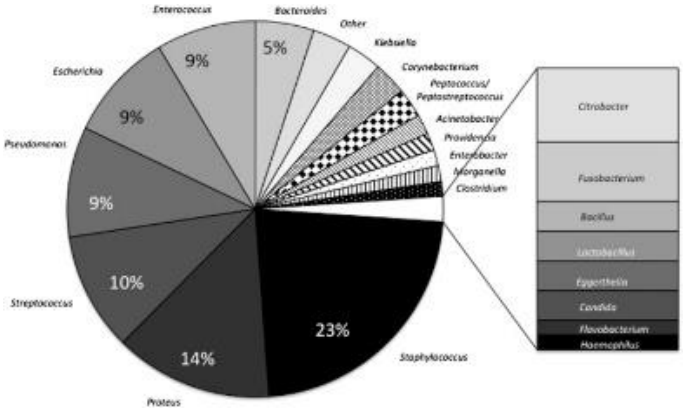
Expression of skin fragility resulting from minor traumas				
–	+ (<10)	++ (≥10)	++ (≥10)	
Dissecting hematoma of the skin				
Subcutaneous massive bleeding with surrounding ischemic necrosis and erythematous swelling of the superficial skin				
–	–	–	+	

Table 1: (19) Characteristics of respective clinical manifestations and proposed clinical staging of dermatoporosis

Aging skin, weakened by a combination of photo aging and chronological aging [20].

May present decreased tolerance for friction and shear forces. Accordingly, both photo aging and chronological aging have been mentioned as risk factors of pressure ulcer development [21, 22].

Germs of Pressure ulcer [19].



Atypical pressure ulcers are generally not located over a bony prominence; they can be found in unusual places. Atypical pressure ulcers may result either due to the use of medical devices, increased spasticity (contracture) or bone deformity, so surgeon and nursing staff needs to be vigilant for pressure ulcers occurring at such unusual sites especially in paraplegic patients for early and appropriate search of etiological factors and their correction [23]. Pressure ulcers are skin and underlying tissue lesions produced by sustained pressure on the skin. The prevention of pressure sores represents a marker of quality of care. Patients with high-grade ulceration, spinal injury (paraplegia or quadriplegia), high-grade solid organ injury, and those who require a tracheostomy might expect poor recovery. The success of operational debridement, even in patients with severe pressure ulcers (grade 4), is discussed in this case report, demonstrating that it may be performed safely and with low death rates [24]. Negative pressure wound treatment with instillation is an effective treatment protocol. It can reduce healing time, and promote long-term functional and cosmetic outcomes in debilitated patients with severe complex pressure ulcers complicated with necrotizing fasciitis [25]. ressure ulcer in an otherwise sick patient and individuals with traumatic paraplegia is a matter of concern for the care givers as well as the medical personnel. Complication caused by pressure ulcers, especially for debilitated elderly patients will be life threatening one [26].

In small parts Conservative management constitutes the most common method of treatment; however, little is known about the aesthetic, and functional morbidity related to either surgical or non-surgical treatments [27]. The majority of the ICUs around the globe are exercising the concept of Lung Protective Ventilation to minimize the chances of Ventilator-associated complications, which have a negative impact on the disease course and mortality [28]. ICU patients were older during the pandemic, had higher body mass index and comorbidities, and needed more invasive medical devices and pronation. The occurrence of PU/PI was also associated with prolonged hospitalization and mortality [29]. Timely intervention, which includes early wound exploration and debridement, anatomic fixation and repair of fractured bone fragments, early definitive management of soft tissue, and appropriate antimicrobial coverage including tetanus prophylaxis, is critical in achieving favorable outcomes with penetrating maxillofacial injury as a result of an industrial accident [30]. Dermal grafts have a niche in reconstructing pressure injury wounds in the sacral region, because of the relative ease of wound care and additional benefits even in cases where the graft fails [31]. The wound heals by natural process but if the wound gets infected it delays the healing, converts it into Dusta Vrana (chronic ulcer). Bed sore or pressure sore are commonly seen in Non ambulatory patients like Paraplegia (Pakshagatha), Quadriplegia. Most common sites are Sacrococcygeal, Shoulder, Occipital regions due to continuous Pressure, immobilization and Malnutrition. Wound healing will be delayed and turns in to Dustavrana (chronic wound); If decubitus ulcer is not treated it may lead to Sepsis and even Osteomylitis which may end in fatal complication. In such condition Vrana Shodana (Purification) and Vranaropana (Healing) Chikitsa is better choice of treatment [32]. Bedsores are caused by decreased tissue perfusion due to prolonged pressure on the skin and represent one of the problems of immobilized patients, including hospitalized ones. This study reports the successful treatment of a patient with bedsore wounds using the larvae of the fly Lucilia sericata [33]. One of the main causes of a bedsore is immobility [34]. The results of this study confirmed the effectiveness of MDT in a hard-to-heal pressure ulcer. Consequently, MDT can be recommended for such wounds that seem untreatable by other therapeutic measures [35]. Therefore,MDT can be recommended for all eligible cases that have sufficient inclusion criteria and can reduce the time and costs of wound healing [36].

Declarations:

Ethical Approval and Consent to participate:

The content of this manuscript is in accordance with the declaration of Helsinki for Ethics. No committee approval was required. Oral and written consent to participate was granted by the family.

Consent for publication:

“Written informed consent was obtained from the patient's legal guardian for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.”

Availability of supporting data

It is available.

Competing interests:

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Authors' contributions:

Ahmad Reza Shahraki is the surgeon of patient and writes this paper. Elahe Shahraki collects Data's,Hamide mirshekari and Mohammad Reza Shahraki edit paper and Elham Shahraki reviews paper.

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