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Role of application of SWCR guidelines in management of left trochanter pressure injury (PI)

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ABSTRACT

A pressure injury is localized tissue necrosis following pressure injury to the skin and/or underlying tissue for prolonged period. The process of ulceration is aggravated by simultaneous shear or direct injury to skin continuity. The terms “decubitus ulcer,” “bedsore,” and “pressure sore” are often used interchangeably, but they do not describe the condition as accurately as pressure injury. The word ‘decubitus’ – derived from the Latin ‘decumbo’ or ‘decumbere’, meaning ‘to lie down’ or ‘recline’ – as the ulcer occur commonly over areas of bony prominences in recumbent position, e.g., the sacrum, trochanter, heel, and occiput. The term ‘pressure ulcer’ describes these ulcers better with pressure as an important etiologic factor. Aim of this case report is to assess the role of applying SWCR guidelines in management of pressure injuries.

1. Introduction

A pressure injury is localized tissue necrosis following pressure injury to the skin and/or underlying tissue for prolonged period. The process of ulceration is aggravated by simultaneous shear or direct injury to skin continuity. The terms “decubitus ulcer,” “bedsore,” and “pressure sore” are often used interchangeably, but they do not describe the condition as accurately as pressure injury. The word ‘decubitus’ – derived from the Latin ‘decumbo’ or ‘decumbere’, meaning ‘to lie down’ or ‘recline’ – as the ulcer occur commonly over areas of bony prominences in recumbent position, e.g., the sacrum, trochanter, heel, and occiput. The term ‘pressure ulcer’ describes these ulcers better with pressure as an important etiologic factor.

The precise determinations of incidence and prevalence of this preventable disease is important, but difficult as this varies according to healthcare settings, patient population and nature of primary disease/condition. However, literature reveals incidence in acute care setting 0.4% to 38%, in long term care (LTC) setting 2.2% to 23.9%, and in home care setting 0% to 17%1. In acute care setup, the pressure injury prevalence in pediatric population has been reported to be 1.4% and the prevalence of hospital acquired pressure injury (HAPI) 1.1%.2

The site of pressure injury depends upon posture. Common sites of pressure ulcer in supine position are occiput, scapula, olecranon, sacrum, and heel;.in lateral position are ear, acromion process, greater trochanter, lateral condyle of femur, and lateral malleolus; in prone position are zygoma, acromion process, female breasts, pubis, patella, metatarsal over distal foot dorsum, and toes; in sitting position are shoulder blades, lower back, sacrum, ischial tuberosity and heel. Though common sites of pressure ulcer is over bony prominences, occasionally it

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develops after prolonged pressure over well padded areas like buttocks and breasts too. Ulcers mainly due to pressure while walking on insensate foot over weight bearing heel and metatarsal heads are commonly known as trophic ulcers.

Normally intra capillary pressure at the arterial end is 30–40 mmHg.3

Any pressure above this cuts off oxygen and nutrient supply leading to the tissue necrosis and ulceration due to cessation of capillary circulation for prolonged period. Following ischemia of relatively shorter duration, inflammation, vasodilatation, enlarged capillary pore and fluid leak occurs.4, increased stretching of skin (superficial side) as well as pressure on fascial vessels (deeper side) initiating process of sluggish circulation and finally ending to necrosis. Subcutaneous pressure measurement in a traumatic paraplegia case within 12 h after the appearance of necrosis patch showed increased pressure the area of necrosis and blisters indicating role of subcutaneous compartment syndrome in causation and progression of pressure ulcer in deeper planes producing undermined edges.5 Jiang et al6 in a rat model have studied effect of ischemia using 70 mm Hg pressure on skin for 2 hours and ischemia reperfusion (I/R) injury after 4 hours, and have concluded that hypoxic-ischemic tissue injury occurs early following a period of ischemia and that I/R due to oxidative damage may be an important mechanism in PU development (Figure 1). Their findings suggest that a minimum of 4 hours pressure relief may be helpful for PU prevention.

Excessive pressure (overweight, inadequate padding over bony prominences in malnutrition), ulceration due to shear and friction, skin micro-environment e.g. excessive moisture, altered skin perfusion (smoking, elderly, hypotension, and children) and neurological injury are risk factors which contribute to pressure ulcer development. The Society for Wound Care and Research (SWCR) is a Society of unique blend of academic, clinical, research and social Service. It was founded in the year 2006 with an aim to promote practice of better wound care and research, render community health care related to trauma/wound by bringing out publications in the form of journals, newspaper articles, books/handbills, maintain a web site, establish scholarships, foundations and lectureship and to provide grants and other benefactions either in India or elsewhere which are designed to enhance the learning in, and practice of, wound care and research or to contribute to the establishment of the same.1 7 Society released its first guideline, “SWCR Guidelines for Wound Management” in 2nd International & 7th National Annual Conference of SWCR (Wound Care Con 2012- 13) held at JIPMER Pondicherry and was published in the Journal of SWCR in 2014.8 ‘SWCR Guidelines for Diabetic Foot Ulcer (DFU)’ was release in Wound Care Con-2015 in KGMC Lucknow and published in Journal of SWCR 2016 issue.9 In the executive meeting during 10th National Annual Conference of SWCR (Wound Care Con 2016) at Amritsar, it was decided to prepare ‘SWCR Guidelines For Pressure Ulcers’ and to release during 11th National Annual Conference (Wound Care Con 2017) to be held in New Delhi, India and publish in next issue of Journal of SWCR-2017.

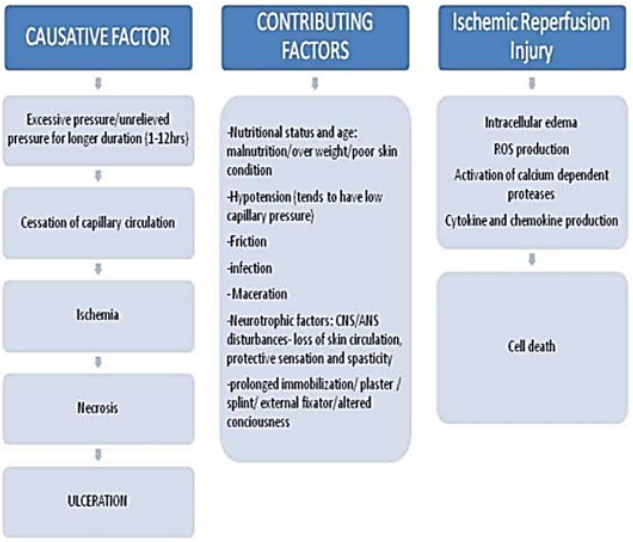

Figure 1: Etiopathology of pressure ulcer

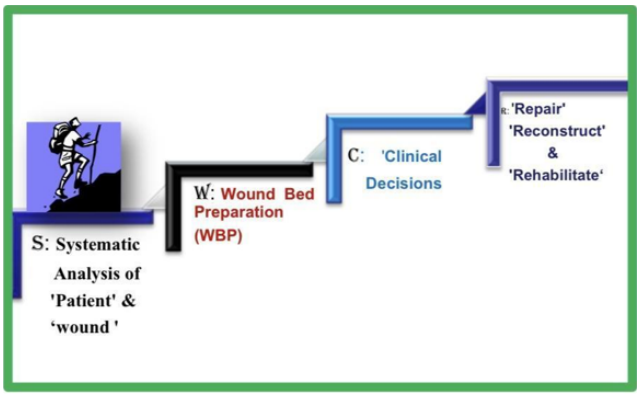

Figure 2: Acronym for SWCR guidelines

2. Materials and Methods

This study was carried out in the department of Plastic Surgery in a tertiary care centre in South India after getting written informed consent from the patient and approval from the department. The subject is a 60-year-old male, who is a known case of type 2 diabetes mellitus, systemic hypertension, coronary artery disease s/p PCI, with anaplastic oligodendroglioma s/p resection and adjuvant chemoradiotherapy, cerebrovascular disease, lupus

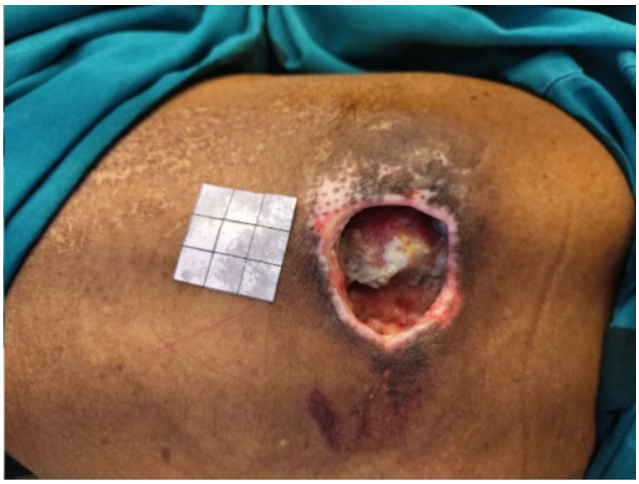

Figure 3: Showing pressure ulcer over left trochanter.

Figure 4: APRP regenerative therapy on pressure injury over right trochanter.

Figure 5: Application of cRONPWT on pressure injury over right trochanter

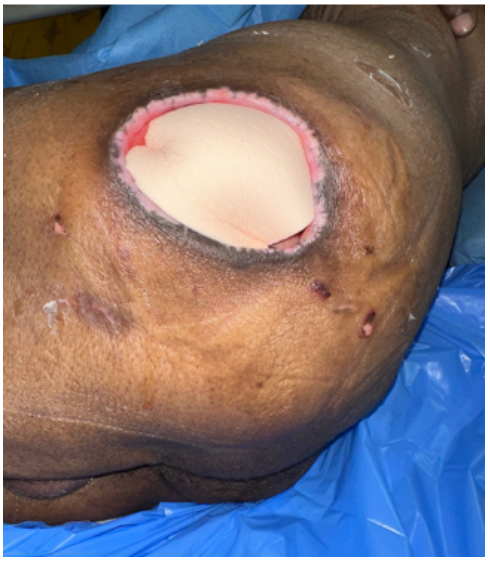

Figure 6: Application of 5 layer foam

Figure 7: Application of silver stream

Figure 8: Application of vitamin D granules

Figure 9: Pressure injury showing improvement after management as per SWCR guidelines

nephritis, and Parkinson's disease with grade 4 pressure injury to left trochanteric pressure injury. APRP (Figure 4), cyclical NPWT (Figure 5), foam therapy (Figure 6).

3. Result

SWCR guideline helped in the effective wound bed preparation of the left trochanteric pressure injury. (Figure 7)

4. Discussion

By applying SWCR guidelines: [1–3]

Acronym SWCR Guidelines for systemic approach to Pressure Ulcers

S-Systematic Analysis of 'Patient' & 'Ulcer' W-'Wound Bed' and 'Patient' Preparation C-'Clinical Decisions'

R-'Repair', 'Reconstruct', 'Rehabilitate' & 'Research' (Figure 2)

4.1. Systemic Analysis of 'Patient and 'Wound'

1. History: noted to be presence of non-healing ulcers over the right trochanter for 1.5 months, insidious in onset, gradually progressive.

2. General physical Examination: the patient's vitals were stable. No presence of pallor, icterus, edema, lymphadenopathy.

4.2. Systemic examination

Cardiovascular system: S1S2 heard

Respiratory system: Bilateral air entry present, chest clear

Per abdominal: soft, non tender

Psychological health: could not be assessed due to reduced communication

4.3. Local examinations

Inspection:

Pressure injury 4*3cm, was noted over the right trochanteric region,(Figure 3), base, unhealthy with necrotic slough present.

Features of osteomyelitis present.

Palpation:

Inspection findings confirmed

No local rise of temperature, no edema

4. Scoring: BJWATS-54

5. Staging: NPUAP Stage IV

6. Etiology/ risk factors: long standing bedridden condition, Parkinson's disease

B. Wound bed preparation

1. Risk factors identified- immobility
2. Care of skin:

- Assess the patient's skin daily.

- friction and scrubbing especially during changing position and transfer to trolley avoided.

- Minimized exposure to moisture (e.g., incontinence, wound leakage).by frequent of change of dressings or special occlusive dressings and NPWT (VAC/LAD)

-Used skin barrier product to protect vulnerable skin.

- Used emollients to maintain skin hydration.

- Pressure points, temperature and the skin beneath medical devices / nasogastric tube were assessed regularly.

- Skin was promptly cleaned after episodes of incontinence, skin cleansers that are pH balanced for the skin were used, and soap and water was avoided for cleaning

-Lying on the

Pressure Relieving Measures:

Hourly switching of positions, with cushioning was given

5. Nutritional Supplements

Protein rich diet, intermittent blood transfusions, and other nutrients were supplemented as required.

8)Monitoring, Training and Leadership Support Attendants & relatives were trained in use of mattresses, positioning and avoiding shear forces. They were taught to be able to identify deterioration in wound condition. They were trained daily to inspect and identify early signs of appearance of pressure injuries and report at the earliest. • Multidisciplinary team including dietician, physiotherapist, nurses, physician and other medical specialists like dermatologist, cardiologist, pulmonologist, endocrinologist, neurologist, radiologist, nephrologist were involved in non- surgical management time to time as and when need arises.

All members of the interdisciplinary team were made aware of the plan of care and all care were documented in the patient's record.

3)Preventive measures in Urinary & Fecal Incontinence: diapers were used to prevent contamination along with sealing of dressing site.

4) Control of Spasticity: daily physical therapy was done

5) Pressure Relieving Measures: intermittent switching of position and cushioning given.

Wound Bed Preparation (WBP):[4,5]

5.1. Tissue management

Debridement or removal of devitalized or nonfunctional tissue. Debridement with chemical, surgical, and mechanical methods were done intermittently as and when needed.

5.2. Methods used for wound bed preparation

Wound debridement, dermabrasion with Manekeshaw dermabrader,

Regenerative therapy using Amniotic membrane, pineapple extract, feracrylum, collagen ointment, dry collagen dressings, wet collagen dressings, phenytoin application, vitamin D granule application, insulin therapy, hemoglobin spray, APRP injection, were done; gentamicin-collagen ointment application done.

5.3. Infection & inflammation management

Locally, gentamicin- collagen ointment was used,

Silver stream for its anti microbial action was also used.

5.4. Moisture management

CRONPWT were applied regularly to maintain the right amount of moisture at the dressing sites.

5.5. Edge[6,7]

LLLT(Low level laser therapy), phenytoin application, insulin therapy, APRP were used to promote epithelisation.

Five layered foam application, LLLT, ETEWC, CRONPWT were used intermittently.

Frequent wound inspection, documentation and clinical decisions were made regarding plan of treatment and type of local application of dressings based on progression of pressure injury.

'Repair', Reconstruct', 'Rehabilitate' and Research'

The most extensive published experiences with pressure sore treatment are those of Conway and Griffith (1000 cases) and Dansereau and Conway's update of the Bronx Veterans Administration Hospital data (2000 cases). But with new technologies of wound care more research is required to standardized the prevention and management of pressure ulcer. 79 There is need to reduce cost of the care for long term compliance.[8]

For research purpose more improvements in staging with inclusion of infection, progression of ulcer and major risk factors in existing staging (four stages) of depth only has been suggested by Kumar80. This will have bearing on prognosis of the disease and management protocol and hence, better outcome of research work. The classification has been updated by inclusion of suspected deep tissue injury. The updated classification by Kumar is as below: A. Depth Stages (DS).

Staging for the pressure injury over the right trochanter:[9–12]

Suspected deep tissue injury

Subcutaneous- exposed fat/granulation

forms the floor

Ligament/bone exposed with granulation tissue

Infection Stage (IS)[13]

Systemic signs positive for Sepsis (Blood culture +)

Progression Staging (PS)[14]

Regressing/ healing (on two consecutive inspection after 3 days interval

Risk Category (RC) [15]

Bed ridden (b)

3. Incontinence present with or without protective sensation/altered consciousness

4. Spasticity and multiple pressure ulcers causing abnormal prominence of pressure points and or changing the position of the patient is difficult due to some or other reason present.

Salient points for management of pressure ulcer in older patients are [16]

1. Ensure pressure ulcers are correctly differentiated from other skin injuries, particularly incontinence-associated dermatitis or skin tears.
2. Goals of care were established in a legal way particularly as end-of-life approaches. Proper education should be given to all concerned in this regards.
3. Extra care was given to protect from trauma, shearing forces, moisture (barrier products) and during dressing change.
4. An individualized continence management plan was developed and implemented
5. Regular help was used in repositioning the older adult patient who was unable to reposition independently.
6. Medical devices were checked regularly for pressure effect.

6. Conclusion

SWCR guideline is effective tool in the wound bed preparation of pressure injury.

Despite plethora of information available clear guidelines focusing the principles of effective wound care are required to ensure that recurrence of pressure ulcer is prevented. 'SWCR guidelines for pressure ulcers' provides systematic approach to a case pressure ulcer for treatment, prevention, are easy to remember because of acronym, and is applicable to all kinds of pressure ulcers irrespective of site, duration, with or without complications.

7. Source of Funding

None.

8. Conflict of Interest

None

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