To Sit or Not to Sit – Should your Clients Take it Lying Down?

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The ROHO Group, Inc.

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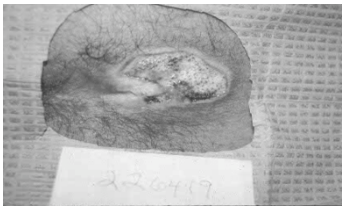
Objectives

- Describe three specific side affects of keeping an individual in bed for a prolonged period of time
- Discuss two areas of evidence, which need to be considered in the plan of care when a decision is made to sit someone with a healing pressure ulcer.
- Name three specific signs or symptoms when sitting someone with a healing pressure ulcer may be contraindicated
- Discuss two alternative positions or pieces of equipment, which would allow an individual to maintain their mobility while out of bed with a pressure ulcer

Of these individuals, who would YOU consider sitting?

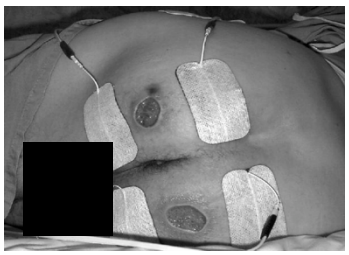
Mike

Edgar



Johnny

Mark



NPUAP defines pressure ulcers as:

. . . A localized injury to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with shear and/or friction. *A number of contributing or confounding factors are also associated with pressure ulcers; the significance of these factors is yet to be elucidated.*

What is the REAL cause of a pressure ulcer?

Etiology – Reviewing the Evidence

- Localized ischemia due to extrinsic forces
  (Kosiak, 1961, Dinsdale, 1974,Daniel, 1981)
- Reperfusion injury
  (Bader 1990,1988, Houwing, 2000)
- Impaired interstitial fluid flow & lymphatic drainage
  (Reddy, 1981, Miller, 1981, Krouskop, 1983)
- Sustained cell deformation w/ increased loads
  (Ryan, 1990, Bouten, 2003, Stekelenburg, 2007)

Localized ischemia

(Kosiak, 1961, Dinsdale, 1974,Daniel, 1981)

Prolonged occlusion or deformation of capillaries

↓

Limited blood flow – Decrease O_2 and nutrients

↓

Ischemia to cells

↓

Tissue necrosis

Blood flow, Blood flow, Blood flow...

Critical Inquiry

If ischemia is the cause of cell death which is a result of tissue death which leads to pressure ulcers. . .if we are able to maintain blood flow while out of bed, could we (should we) consider alternative positions rather than bed rest as an appropriate method to treat pressure ulcers?

Extrinsic Risk Factors

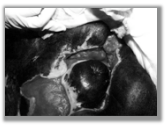
- Pressure
- Shearing
- Friction
- Trauma
- Microclimate

Intrinsic Risk Factors

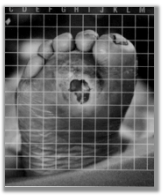
- Age
- Psychosocial
- Smoking
- Infection
- Immunocompromised states
- Obesity
- Nutrition
- Co-morbidities
- Medication

Physiology of Tissue Repair

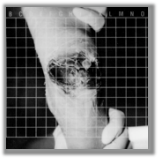
A Wound



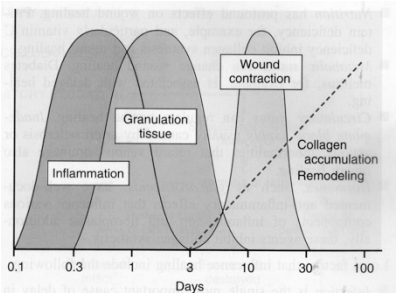
Is a Wound



Is a Wound



Phases of Tissue Repair



Beginning of the Proliferation Phase

- When wound is essentially clear of foreign substances
- Free from infection
- When wound has an infiltrate of macrophages and fibroblasts forming in the matrix
- Lymphatics have formed in matrix

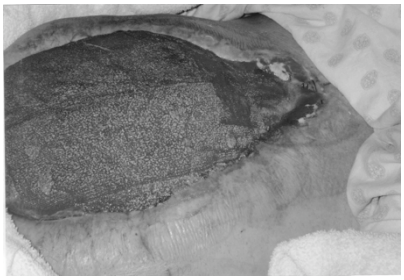
Fibroplasia During Proliferation Phase

- Laying down of the collagen matrix known as granulation tissue (type III then type I)
- Undifferentiated tissue
- Enhanced cell activity fills in the wound bed
- Angiogenesis – building of a vascular network – oxygen and nutrients
- Begin to see decrease in size

Cellular Activity of Proliferative Phase

- Fibroblasts, myofibroblasts, endothelial cells and epidermal cells are high
- Cross-linkage of collagen is formed
- New collagen matrix looks like red granules piled on top of each other – called granulation tissue

Granulation Tissue



Remodeling/Epithelialization Phase

- Signals begin during inflammation phase
- Macrophages, neutrophils, and current of injury stimulate response of the epithelial cells
- Epithelial cells migrate from wound edge and dermal appendages – “leap frog” or “train”

Remodeling/Epithelialization Phase

- Once area has been resurfaced by granulation tissue – collagen matrix progresses
- Type I collagen fiber bundles become thicker
- Balance between collagen lysis and collagen synthesis will give mature scar

Remodeling/Epithelialization Phase

- Too much oxygen to wound can cause collagen synthesis > lysis causing hypergranulation
- Entire process of remodeling of wound can take from 3 weeks postinjury to 2 years
- Studies have shown by adding tension during the healing process increases wound tensile strength of all soft tissue structures, as well as bone – and immobilization and stress deprivation have shown to produce a loss in tensile strength

Food for thought?

- Why do orthopedic surgeons allow partial weight bearing on non displaced fractures which are in a walking cast?
- Why do therapists do scar tissue massage s/p surgery?

Mechanical Loads on Bone

- Yamagishi and Yoshimura in 1955 showed that intermittent compression forces applied to healing fractures in rabbits caused proliferation of cartilaginous callus
- 1981 Wolf et al reported that when long bone fractures were treated with loading, bone strength increased more rapidly than when fractures were treated by constant compression

Historical Treatment of Pressure Ulcers

- Treat the "hole in the patient versus the whole patient"
- Rolling / repositioning
- Utilizing support surfaces
- Utilizing appropriate dressings
- Nutritional intervention
- Treat local and systemic infections
- Assess and treat other disease processes
- Manage moisture
- Off loading – decreasing pressure by. . . . .

BEDREST

The Evidence. . .

"To date, however, no randomized controlled trial has conclusively shown that bed rest effectively manages pressure ulcers."
– Norton and Sibbald 2004

AHCPR (AHRQ) / WOCN

"A patient who has a pressure ulcer on a sitting surface should avoid sitting. If pressure on the ulcer can be relieved, limited sitting may be allowed."

Strength of evidence = C

Registered Nurses Association of Ontario

"Refer patients at RISK to appropriate interdisciplinary team members (Occupational Therapist, Physiotherapist, Enterostomal Therapist, etc.). Utilize those with expertise in seating, postural alignment, distribution of weight, balance, stability and pressure management when determining positioning for sitting individuals. Ensure support surfaces are used appropriately and are properly maintained."

– Nursing Best Practice Guidelines, revised March 2007

Registered Nurses Association of Ontario

"A client with a pressure ulcer on the buttocks and/or trochanter should optimize mobilization. If pressure on the ulcer can be managed, encourage sitting as tolerated" – Nursing Best Practice Guidelines, revised March 2007

Best Practice Guidelines

"However, while the need to prevent further pressure on existing ulcers on seating surfaces is recognized, the panel supports maximizing mobility in order to prevent further complications associated with prolonged bed rest, such as psychosocial isolation, muscle atrophy, decreased cardiac reserve, and respiratory compromise"

– Nursing Best Practice Guidelines, revised March 2007

The Evidence Against Bed Rest

". . .of the 15 trials investigating bed rest as a treatment for medical conditions, including pressure ulcers, it was found that outcomes did not significantly improve, nine significantly worsened, and no evidence that bed rest as a treatment has any significant beneficial effect was presented."

– Allen et al 1999

Food for Thought

- What is the reason that most cardiothoracic surgeons demand their patients be out of bed 24-48 hours after a heart bypass surgery?

The Evidence Against Bed Rest

- Multiple studies have demonstrated the decline of individuals occur very rapid
- Six to ten days can be enough time to complicate the clinical status of an individual
- It has been demonstrated within a 24 hour period bed rest may be related to specific physiological changes in individuals

Complications of Bed Rest

- Depression and anxiety
- Other cognitive and psychosocial complications
- Weakness associated with muscle atrophy
- Decreased endurance
- Development of joint contractures
- Intellectual changes
- Increased rate of UTIs

Complications of Bed Rest

- Decreased bone density
- Increased risk of DVTs
- Compromised circulatory system
- Decreased appetite – poor nutrition
- Decreased GI motility
- Decreased lung capacity
- Increased risk of pneumonia

Alternative Management Strategies

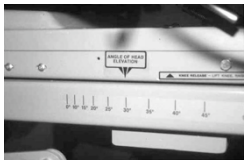
"When evidence of the serious complications of bed rest is combined with its lack of efficacy, finding alternatives to managing pressure ulcers becomes paramount. One alternative is to manage interface pressure throughout the patient's Activities of Daily Living."

Norton and Sibbald, 2004

Managing Pressure Throughout ADLs

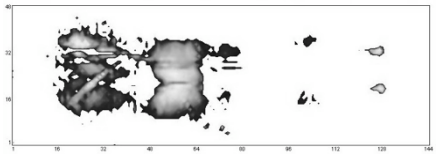
(Norton and Sibbald 2004)

General for All Surfaces	•Immediate use of pressure distribution equipment – check with pressure imaging •Check areas of persistent redness or breakdown •Minimize bed rest time & diminish extrinsic forces – optimize mobility •Assess pressure points and adapt surfaces •Look at other causes of skin breakdown
Bed	•Implement a positioning schedule •Use good pressure redistributing products •Avoid elevation of head of bed •Use good techniques of movement



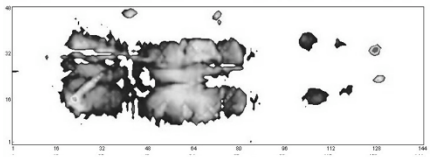
Client and Caregiver Education

Fully Supine on Low Air Loss Mattress



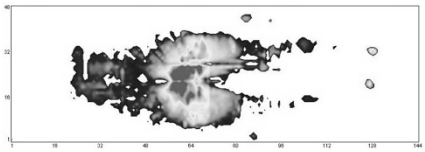
Client and Caregiver Education

Head at 30º Elevation on Low Air Loss Mattress



Client and Caregiver Education

Head Fully Elevated on Low Air Loss Mattress



Managing Pressure Throughout ADLs

(Norton and Sibbald 2004)

Wheelchairs	•Assess postural alignment and pressure distribution •Find best system to manage extrinsic risks – use pressure imaging •Check the cushion daily for bottoming out
Transfers	•Diminish shearing forces – lifts, transfer boards etc.
Commode	•Attend to details of bathing and toilet rituals •Pressure redistribution of seats and equipment

Additional suggestions

- Consider the continuum of care of where individuals may sit
- Assess and manage the system of the individual – nutrition etc.
- Consider microclimate
- Utilization of adequate equipment
- Utilization of alternative modalities

Alternative Modalities

Equipment Considerations

- Cushion selection
- Bed selection
- Alternative positions other than sitting
  - Prone carts
  - Standing frames – standing wheelchairs
- Education of pressure relief
  - Consider tilt AND recline vs. just tilt

Prone Carts

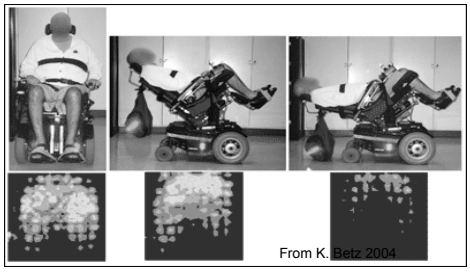
Standing Wheelchairs

Tilt / Recline

Tilt / Recline

- Reduction of IT pressure is better accomplished with a combination of tilt and recline
  - Pellow, 1999 and Aissaui, 2001
- Decrease in tangential shear forces with recline where tilt preceded the recline position
  - Hobson, 1992

Recline with Tilt



From K. Betz 2004

Horizontal and Lateral Tilt

Floor Transfer Systems

Check For Bottoming Out

So How do You Consider Other Options Versus Bed Rest?

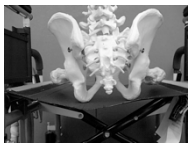
It is Not a Day in the Park

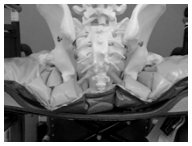
Importance of Good Clinical Decision Making

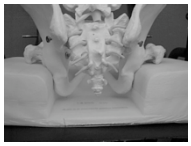
Clinical Decision Making

- What does the patient want to do?
- Where is the location of the wound?
- What is the phase of healing of the wound?
- Can stress be applied in a controlled fashion?
- What is the size of the wound?
- What is the amount of necrotic tissue?
- Is the wound free from infection?
- Is the individual and or care givers compliant?

What about sacral pressure ulcers?







Clinical Decision Making

- What equipment is currently being utilized to manage the extrinsic risks?
- How many intrinsic risks does the individual present with?
- What is the overall medical condition of the individual
- What is the psychological status of the individual
- Has the wound progressed or gotten worse?

Clinical Decision Making

- What is the overall plan of care for the individual? Surgery? Conservative care?
- Where is the current individual residing?
  - rehab vs. acute vs. LTC
- What is the nutritional status of the individual?
- How long can the individual tolerate sitting?
- What is the staffing issue at the facility?

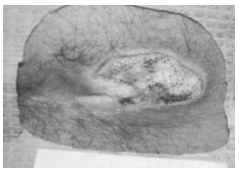
Of these individuals, who would YOU consider sitting?

Mike

- 36 yo IV drug user dx with T12 SCI & bilat. Transfemoral amputation
- Presented to acute care hospital from home
- Significant infection
- + osteo
- Non compliant with care
- Stage IV bilateral IT
- Stage IV sacral
- Stage IV bilateral GT
- Continues to sit without a cushion to go smoke

Edgar

- 17 yo male dx with acute T 4 SCI currently in rehab
- Great patient
- Rolling independent; using a power prone cart
- Good nutritional baseline
- Stage II sacral wound
- Utilizing e-stim for advanced wound care

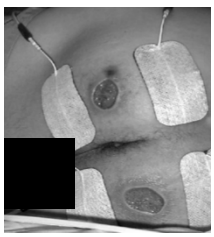


Johnny

- 44 yo male
- Living in a LTC facility for past 10 years
- T6 Complete SCI
- Independent in transfers and all care
- Fair nutritional baseline
- Indep. bowel and bladder management
- Healing stage II left IT

Mark

- 49 yo with dx of T2 SCI x 2 years
- Readmitted to rehab with medical complications
- Bilateral healing stage III @ bilateral ITs
- Motivated individual
- Great family support
- Still requires assistance with functional activities



"If the efficacy of bed rest cannot be proven, alternatives to its use must be explored to prevent the complications of this treatment modality and improve client outcomes."

Norton 2004

So would you now consider an alternative plan of care other than just bed rest?

Thank You For Attending!

Questions?
Topics for discussion?

the ROHO group
shape fitting technology®

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