OT and PT Role in Burn Survivor Rehabilitation

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Interdisciplinary Approach

- Physicians/Family nurse practitioners
- Nursing
- Respiratory
- Pharmacy
- Nutrition
- Psychology
- Pastoral
- Social services
- SLP
- PT
- OT
AN ACT of Kindness

Service Pillar

WE OFTEN SEE PEOPLE AT THEIR WORST AND HELP THEM GET BACK TO THEIR BEST.

The biggest reward in caring is seeing patients recover.

A few months ago, 22-year-old Philip Hall was airlifted from Albuquerque, New Mexico to UMC Timothy J. Harnar Burn Center after sustaining burn injuries. Recently, he was discharged to a rehab facility, but before he left he wanted to thank staff in the burn unit for all they had done for him.

Philip and his mom, Julie Alcon, threw a picnic for burn unit staff. They served fried chicken and the fixings. One nurse attending said it was the best meal she's had in a long time.

"I just wanted to thank the staff," Philip said. "They're all my friends now, and they have taken great care of me."

This kind act came after another completely selfless act on Philip's part. In late April, Philip rescued a two-year-old from a flame-engulfed tent. After smelling smoke and hearing some screams, he did what he thought was best without thinking twice.

UMC wants to acknowledge this bravery and kindness. We are proud to see Philip is recovering and appreciate the picnic he threw as a thank you.

“They’re all my friends now, and they have taken great care of me.”
Stages of Burn Recovery

- Acute stage – initial injury to wound closure. Shortest phase of burn recovery (5-10%).
- Rehabilitation stage – wound closure to scar maturation; 2 weeks to 2 years.
- Reconstructive stage – time during reconstructive surgery to correct contractures or scarring.
OT and PT Focus

- Preservation of limb function
- ROM, strength and activity tolerance
- Edema/scar management
- Splinting and anti-contracture positioning
- ADL/Functional mobility training
- Postural/body awareness training
- Education of burn survivor, significant others, and caregivers
- To restore/maximize highest level of function in acute care, IPR, HH and outpatient setting
Therapeutic Exercise

- Starts Early!
- Anticipate areas at risk for contracture.
- Slow progressive skin elongation/ low-load long duration stretch to optimize ROM
- ROM opposite the burn, across multiple joints to increase skin involvement
- No ROM for 3-5 days post-op after excision and grafting. Communicate with physician.
- Educate patient, significant others and staff regarding importance.
- Progress to strengthening. Strengthen muscles opposite of burned areas at risk for contracture.
- Considerations: Arterial lines, vent, fractures, DVTs
Did we say… **Start early**!

Combined effort among all team members is essential.

Consider medical status, wound location and precautions necessary, but know things will get messy!

Progressive mobility is the key.

- Utilize lift devices if bed restricts transfers.
- Progress from bed level chair positioning> EOB sitting> standing> side stepping> SPTs to chair, BSC, or/and wheelchair> ambulation> toilet transfers> shower transfers....

- Utilize gait devices, consider using a platform walker.
Self Care Tasking

- Build up utensils, writing tools, and toothbrushes with cylindrical tubing. Washcloth and tape work too!
- Pad walker handles with wash cloth and tape to enhance gross grip ability.
- Place X-large medical gloves over Coban or compression gloves to keep hand wounds/dressings clean.
- Train grasp and manipulation of urinal, toilet paper, toothpaste, toothbrush, writing/drawing tools, etc.
- Enhance grip/pinch with light resistance Thera putty placed in medical glove.
Functional Considerations

- Relative to patient/caregiver goals
- Speed of movement
  - Slow and guarded>”normalize” speed
- Quality of movement
  - Posture
  - Compensatory movements/substitutions
- Pain with task
  - Anxiety
  - Fear
  - Distraction/calming techniques
Positioning

- Occurs in all phases of healing
- Limit position of comfort
- Predict potential for contractures
- Purpose of positioning:
  - Decrease edema – utilize gravity
  - Preserve ROM / prevent contracture
  - Prevent skin breakdown
  - Maintain or improve joint alignment
## Upper Body Positioning

<table>
<thead>
<tr>
<th>Body Part</th>
<th>Contracture Risk</th>
<th>Optimal Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neck</td>
<td>Flexion</td>
<td>Midline, slight extension, No pillow.</td>
</tr>
<tr>
<td>Axilla</td>
<td>Shoulder add</td>
<td>Shoulder abd, ER, horiz add 15-20 degrees</td>
</tr>
<tr>
<td>Anterior Elbow</td>
<td>Flexion</td>
<td>Extension</td>
</tr>
<tr>
<td>Forearm</td>
<td>Pronation</td>
<td>Supination</td>
</tr>
<tr>
<td>Wrist</td>
<td>Flexion</td>
<td>Neutral/slight ext</td>
</tr>
<tr>
<td>Dorsal Hand</td>
<td>Th add, MP hyperext, IP flex</td>
<td>Intrinsic plus position</td>
</tr>
<tr>
<td>Palmar Hand</td>
<td>Finger flex, Th opposition</td>
<td>Finger ext, th radial abduction</td>
</tr>
<tr>
<td>Chest</td>
<td>Protraction</td>
<td>Retraction</td>
</tr>
</tbody>
</table>
## Lower Body Positioning

<table>
<thead>
<tr>
<th>Body Part</th>
<th>Contracture Risk</th>
<th>Optimal Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hip</td>
<td>Flexion, add, ER</td>
<td>Neutral ext, flex, rotation; slight abd</td>
</tr>
<tr>
<td>Knee</td>
<td>Flexion</td>
<td>Extension</td>
</tr>
<tr>
<td>Ankle</td>
<td>Plantar flex</td>
<td>Neutral/slight dorsiflex</td>
</tr>
<tr>
<td>Dorsal foot</td>
<td>Hyperextension</td>
<td>Flexion</td>
</tr>
<tr>
<td>Plantar foot</td>
<td>Plantar Flexion</td>
<td>Extension</td>
</tr>
</tbody>
</table>
Splinting

- Prevent and manage burn contractures.
- Improve ROM
- Restore function
- Prevent sheering and optimize graft adherence until takedown
- Consider static, serial casting, dynamic splinting, static progressive
Common Splints

- Airplane/Foam Wedge
- AFO/Walker Boot
- Intrinsic Plus Position Splint
- Anterior Elbow
- Knee Immobilizer
- Anterior Neck
- Face mask
Edema and Scar Interventions

- Coban
- Ace wrap
- Edema glove
- Tubigrip
- Interim gloves
- Custom garment

- Scar Massage
  - Non friction > friction
  - Warm paraffin treatment
  - Silicone sheets
  - Laser treatment
  - Surgical intervention
Hypertrophic Scars

- Red (hypervascular)
- Raised (over synthesis of collagen)
- Rigid (disorganization of collagen)
- Warning signs
  - Limited joint ROM
  - Blanching with elongation of scar tissue
  - Visible banding of scar tissue
- Modified Vancouver Scar Scale
  - Rates four qualities: vascularity, pigmentation, pliability, and height
  - Higher scores=more severe scarring
# Scar assessment

## Modified Vancouver Scale

<table>
<thead>
<tr>
<th>Vascularity</th>
<th>Pigmentation</th>
<th>Pliability</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Normal</td>
<td>Normal</td>
<td>Flat</td>
</tr>
<tr>
<td>1</td>
<td>Pink</td>
<td>Hypopigmented</td>
<td>&lt;2 mm</td>
</tr>
<tr>
<td>2</td>
<td>Red</td>
<td>Mixed pigmentation</td>
<td>&lt;5mm</td>
</tr>
<tr>
<td>3</td>
<td>Purple</td>
<td>Hyperpigmented</td>
<td>&gt;5mm</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>Banding</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>Contracture</td>
<td></td>
</tr>
</tbody>
</table>
Split Thickness Graft

Hypertrophic scarring

Banding/Contracture
Compression Garments

- Decrease edema
- Improve composition of scar
- Improve remodeling and realignment of collagen
- Flatten appearance
- Increase pliability
- Decrease itching and pain

- Essential if burn wound >3 weeks to heal
- Custom > compression
- Worn continually except during bathing/wound care
- Custom garments when wounds healed and edema stabilized
Itching

- Common complaint from burn survivors
  - Psychological or physical distress can increase itch

- Treatment includes:
  - Pharmacological agents: oral antihistamines and topical corticosteroids
  - Skin moisturizers
  - Massage beginning with non-friction
  - Compression garments
  - Keeping areas covered, nails clipped
  - Distraction techniques
  - Tapping!
Psychosocial Considerations

- First time seeing burned face, staff member present i.e. mirrors
- Staring – practice while in hospital
- Words – choosing what we say “you look good”
- Coaching patient and family about how to respond to inquiries of their burns
- Provide emotional support for burn survivors and their families/support systems.
- Educate on support groups available: Local, Phoenix Society, and burn survivor camps.
- Teach survivors to focus on things that they can do, rather on things they can’t. Incorporate mindfulness and calming techniques during treatment.
Burn Education Resources

- American Burn Association
- Phoenix Society
- Regional Burn Conferences
- BurnTherapist.com
- Med Bridge course - "Burn Rehab of the Upper Extremity"
- Site courses by Bio Medical Sciences
- Anna.Geesling@umchealthsystem.com
- Senja.Collins@umchealthsytem.com
Resources


- Panasci , Kathryn PT, DPT, CBIS, CWS (2013 and 2-018). Lecture on burns.

- Parry, I. MS, PT and Richard, R. MS, PT (2016). Burn rehabilitation essentials.


- Rocky Mountain Model System for Burn Injury Rehabilitation. Sponsored by the National Institute on Disability Rehabilitation and Research US Department of Education Grant #HI33A30015 in the Department of Rehabilitation Medicine at the University of Colorado Health Sciences Center; Denver, Colorado (1993-1997). An easy guide to outpatient burn rehabilitation.

- Segarra, Tammy OTR. (2004). Lecture on treatment of burns at UMC.
