Chordoma Foundation 2021 Virtual Chordoma Community Conference (CCC) Series-Improving balance, strength, and mobility after treatment

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Disclosures

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How do Chordomas impact balance, strength and mobility?

- Chordomas occur in the bones of the skull base and spine
  - Clivus (skull base)
  - Cervical spine (neck)
  - Thoracic spine (chest)
  - Lumbar spine (low back/abdomen)
  - Sacral spine (pelvis/low back)
How do neurologic impairments impact mobility?

- **Vision impairments**
  - Loss of vision, double vision, balance impairments, nausea
  - Impacts: bed mobility, transfers, walking, ability to utilize adaptive equipment, ability to operate a wheelchair

- **Weakness**
  - Impaired upper and lower extremity movement
  - Impacts: bed mobility, transfers, walking, ability to utilize adaptive equipment, ability to operate a wheelchair

- **Sensory**
  - Loss of awareness of environment, positioning of joints, balance
  - Impacts: pain, bed mobility, transfers, walking, ability to utilize adaptive equipment, seating in wheelchair
How does bone involvement impact mobility?

- **Musculoskeletal abnormalities**
  - Scoliosis, kyphosis, pelvic obliquity, surgical resections
  - Abnormal postures, movement, weightbearing status
  - Impacts: pain, bed mobility, transfers, walking, ability to utilize adaptive equipment, seating in wheelchair, ability to operate a wheelchair
Evaluating mobility impairments requires a multidisciplinary team

- Patient
- Neuro-oncologists
- Medical and radiation oncologists
- Spine surgeons
- Physiatrists
- Pain and palliative care specialists
- Ophthalmologist (neuro)
- Physical therapists
- Occupational therapists
- Certified Prosthetist Orthotist (CPO)
- Assistive Technology Professional (ATP)/Certified Rehabilitation Technology Supplier (CRTS)
Evaluating functional impairments and mobility

• Present Illness
• Past Medical History
• Medications
• Social history
• Prior/current functional status
• Support system

• Examination
  – Key & non-key muscles in upper/lower extremities
  – Sensation to light touch/pin prick/proprioception
  – Cognition
  – Blood pressure/fluid status
  – Skin integrity
  – Evaluation for skeletal anatomic abnormalities
  – Evaluate gait biomechanics/kinematics if able
Goal of clinical evaluation is to understand impairments, their impact on function, and to establish a management plan

- NLI/Patterns of injury
- Pain
- Musculoskeletal contributions
- Precautions-medical/bone/spine
- Anticipated treatment/clinical course
- Patient goals
Establishing a Rehabilitation Plan for Mobility

- Physiatrist
- Physical Therapist
- Occupational Therapist
- Ophthalmologist
- ATP/CRTS
- CPO

Patient
Rehabilitation Plan-Medical Management

• Pain
  – Medication management (oral/topical/intrathecal)
  – Interventional procedures

https://wongbakerfaces.org/
Rehabilitation Plan-Therapy

• Physical Therapy
  – Strength training, endurance training, standing and balance training, sensory reintegration, transfers, gait training, wheelchair mobility (if needed), pain management, stretching, range of motion, exercise program, equipment assessment

• Occupational Therapy
  – Strength training, balance training, fine motor skills, range of motion, positioning, ADLS, pain management, exercise program, equipment assessment

Rehabilitation Plan-Therapy

• Vision therapy (neuro optometric rehab)
  – Comprehensive vision evaluation
  – Glasses/prisms/eye patch
  – Exercises to improve visual perception/processing
  – May accompany vestibular rehabilitation
Rehabilitation Interventions-Adaptive Equipment

• Bracing
• Assistive devices
• Wheelchairs
• Other durable medical equipment
Rehabilitation Plan-Collaborating with CPO on Bracing

• Spine bracing
  – Indications-pain, instability, abnormal spine alignment

• Extremity bracing
  – Indications-weakness, joint contractures, management of musculoskeletal abnormalities
Spinal braces are named based on regions of the spine they encompass:

- **Thoraco-Lumbar Orthosis (TLO)**
- **Thoraco-Lumbo-Sacral Orthosis (TLSO)**
- **Cervical Orthosis (CO)**
- **Lumbo-Sacral Orthosis (LSO)**
Extremity braces are named based on joints they encompass

**Ankle Foot Orthosis (AFO)**

[Image of AFO]


**Knee Ankle Foot Orthosis (KAFO)**

[Image of KAFO]


**Hip Knee Ankle Foot Orthosis (HKAFO)**

[Image of HKAFO]


Assistive devices are recommended based on individual need and upper extremity function

• Assistive devices may include
  – Cane (single point, quad)
  – Walker (standard, rolling)
  – Crutches (axillary, forearm)
Wheelchairs

• Collaboration with ATP/CRTS
• In-depth evaluation is key
  – Wheelchair should be customized to patient
  – Proper wheelchair dimensions
  – Determine appropriate chair type (power vs manual)
  – Assess for certain modifications
    • ie: cushion type, anti-tippers, truncal support, head and neck support, drive controls

Additional durable medical equipment to meet mobility needs – lifts, standers, transfer benches

https://www.assistedliving.org/best-hoyer-lifts/


https://www.walmart.com/ip/BeasyTrans-Easy-Transfer-System-BeasyGlyder
Improving balance, strength, and mobility

Patient

Physiatrist

Physical Therapist

Occupational Therapist

Ophthalmologist

CPO

ATP/CRTS
Resources

- Paralyzed Veterans of America Consumer Guides:  
  https://pva.org/research-resources/publications/consumer-guides/


- Spinal cord injury communities  
  https://facingdisability.com/  
  https://axisproject.org/programs

- Finding a physical therapist  