Team InteGrated Enhanced Recovery (TIGER):
A recovery pathway for Posterior Spinal Fusion (PSF) and Vertical Body Tethering (VBT) in Adolescent Idiopathic Scoliosis (AIS)

Enhanced Recovery (ER)
- Designed to reduce the patient's stress response to surgery, support their physiological function, and accelerate the return to normal daily function
- Currently used in surgical patient populations
- Patients experience:
  - Faster recovery
  - Shortened hospital stay
  - Significantly fewer complications
- Successfully integrate ER into practice, a structured, collaborative, multidisciplinary approach accompanied by education and awareness

Enhanced recovery for PSF
- Programs using approach for their PSF:
  - Children’s Hospital of Philadelphia
    - “Rapid Recovery Pathway”
  - Children’s Hospital Los Angeles
    - “Accelerated Discharge pathway”
  - University of Michigan-Mott Children’s Hospital
    - “Fast track” approach
- Average length of stay following PSF for AIS is 5-6 days!
Rapid Recovery Pathway (RRP)

- Retrospective comparative cohort
- Goal: incorporate early mobilization strategies to facilitate earlier functional recovery while maintaining effective analgesia.
- LOS and pain scores were used to determine "functional recovery".
- QI project over 3 years time, 3 stages
  - Conventional management n=80
  - RRP n=58
- Challenges: inconsistent application of PT and pain service goals on weekends when staffing was limited.

RRP results

- RRP had improved mean daily pain scores on POD1 and POD2
- RRP patients were discharged home 31% earlier, discontinued from PCA 34% earlier and removal of Foley occurred 26% earlier
- Fewer opioid related side effects
- No difference in 30 day rates of re-admission
- Study limitation: Patient satisfaction was not studied.

Results Accelerated Discharge

- AD LOS=3.7 vs traditional LOS=5.0
- 3/90 patients went home POD 2
- Occurrence of complications post op correlated with longer length of stays
- Slightly higher pain scores in the AD on POD 2 and 3 (than 1 point)
- Hospital charges for postoperative care were significantly less in the accelerated discharge group than in the traditional group ($18,360 vs. $23,640). This corresponded to a 22% or an average of $5,000 per patient.
Team InteGrated Enhanced Recovery (TIGER)

- **Goal**: reduce length of hospital stay and improve surgical outcomes for patients while reducing costs for the hospital.
- **Empower the patient to engage in their own care**
- **Set list of expectations POD # 1, 2, 3**
- **Care coordination and collaboration across all disciplines**
  - Surgery
  - Nursing
  - Anesthesia
  - Therapy services

TIGER PROTOCOL SPECIFICS

- **Education** (during pre-operative appointment, <30 days prior to surgery)
  - Education, review pain control plan after surgery, review LOS (3 days) and discharge instructions.
  - Empower the patient to engage in their care.
- **Application** (Clonidine patch placed by anesthesia pre-op (takes about 6 hours to take affect)
- **Morphine PCA - no basal - 3mg - Q6 min lockout 10 mg, Toradol, Valium PRN
- **D/C PCA & Foley POD2**
- **A sign with daily goals placed at the foot of the bed**
- **Mobilization by PT/OT or nursing staff**
  - POD1 - OO to chair x2
  - POD2 - ambulate in hallway x2
  - POD3 - ambulate, stairs

Discharge goal: day 3

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**Daily goals following your Spinal Tethering Surgery:**

**Day 0**
- Pain control:
  - Patch
  - Pain button (morphine)
  - Toradol (every 8 hours)
  - Valium as needed
- IV antibiotics every 8 hours
- IV fluids
- Clear liquid diet -- ADAT
- Foley catheter in place
- SCDs on legs
- IS X10 while awake
- Chest tube in place
- NO BLT

**Day 1**
- Pain control:
  - Patch
  - Oxycodone: if eating
  - Toradol
- Blood draw in AM
- IV fluids removed if drinking well
- Advance diet
- IS X10 while awake
- PT/OT/nurse helps get out of bed to chair at least twice
- NO BLT
- Discuss bowel regimen

**Day 2**
- Pain control:
  - Patch
  - Remove pain button
  - Oxycodone
  - Toradol
- Blood draw in AM
- Regular Diet
- PT/OT/nurse walking patient at least twice
- Remove Foley catheter
- NO BLT
- Chest tube evaluated for removal

**Day 3**
- Pain control:
  - Patch
  - Oxycodone
  - Toradol
- Out of bed walking at least 3 times today, climb stairs with PT
- NO BLT
- Chest tube removal - dependent on amount of drainage - per surgery team
- Dressing changed
- Standing x-rays taken
- Discharge when meeting criteria

**Discharge Criteria**

- Passed by PT/OT
- Pain controlled and mobilization
- No nausea/vomiting
- Scripts: Colace, oxycodone, valium
- Wear flex foam brace for 6 weeks post-op
- Follow up with Dr. Hoernschemeyer in 6 weeks

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Future goals

- Faster mobilization — up to edge of bed with PT or nursing POD 0
- Increasing diet and removing PCA POD 1
- Decreasing antibiotic use—2 doses versus until the drain is removed
- Discharge patient POD 2
- Pre-op hospital tour 😊

References


