Background

- Total knee arthroplasty (TKA) is one of the most frequently performed orthopedic procedures in the U.S.¹
- Osteoarthritis (OA) is the most common reason for a total knee arthroplasty.¹
- Cartilage and bone is removed from the distal end of the femur and proximal end of the tibia and is replaced with metal alloy components that recreate the joint surface.¹
- Some evidence suggests that staging bilateral TKA within three months of each other may increase the patient’s risk for mortality and complications.²

Purpose

- The purpose of this case report was to document acute care outcome measures in a patient who underwent bilateral TKA staged five weeks apart and to assess the possible implications that a short staging period might have on the patient’s ability to recover.

Case Description

- 58-year-old male
- Occupation: high school woodshop teacher, previously worked as a carpenter and a manual laborer in a factory
- Baseline mobility: independent with activities of daily living (ADL) and instrumental activities of daily living (IADL); however limited due to pain
- Activity limitations and participation restrictions: donning and doffing socks and shoes, walking up and down stairs, walking on hard surfaces, walking long distances, unable to lift heavy objects and unable to go biking
- Previous treatment: two cortisone shots within the past six months prior to surgery
- X-rays: revealed bilateral OA of the knees
- Patient received a right continuous femoral nerve block
- Post-surgical impairments: decreased right lower extremity strength, range of motion, and sensation, and increased pain

Plan of Care

- Physician orders: full weight bearing right lower extremity, right knee immobilizer for out of bed mobility, continuous passive motion machine twice a day for two hours each.
- Patient was seen two times a day for the length of his acute care stay.
- Patient was discharged on the morning of post-operative day two.

Interventions

- Supine Therapeutic Exercise
  - Ankle pumps
  - Quad sets
  - Gluteal squeezes
  - Hip ABD/ADD
  - Heel slides
  - SAQ
  - SLR

- Seated Therapeutic Exercises
  - Knee flexion
  - Long arc quads
  - Hip flexion
  - Arm pushups

Function Mobility Training

- Bed Mobility
- Sit-to-Stand
- Gait Training
- Car Transfers

Outcomes

<table>
<thead>
<tr>
<th>Right Lower Extremity</th>
<th>Knee Range of Motion</th>
<th>Knee Strength</th>
<th>Pain Levels</th>
<th>Sensation</th>
<th>Straight Leg Raise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Examination</td>
<td>4-71 degrees</td>
<td>1/5 flexion</td>
<td>4/5</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td></td>
<td>2/-5 extension</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discharge</td>
<td>2-71 degrees</td>
<td>2+/5 flexion</td>
<td>3/5</td>
<td>Positive</td>
<td>Negative</td>
</tr>
<tr>
<td></td>
<td>2/-5 extension</td>
<td></td>
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</tr>
</tbody>
</table>

Discussion

- Literature is limited regarding the ideal staging period between bilateral TKA and beneficial post-operative exercise protocols.
- Many studies have shown that earlier mobilization and an intense rehabilitation program greatly improves patient outcomes.⁴
- Early rehabilitation has been found to reduce pain and improve knee ROM and lower extremity muscle strength.⁴
- Interventions that focus on functional activities are more beneficial than exercises that focus on isometric contractions and increasing ROM after a TKA.³
- Further research is needed to determine the most appropriate therapeutic exercises and functional mobility training.
- Specifics regarding frequency, intensity and duration need to be tested and evaluated in order to develop the most beneficial rehabilitation program.

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References