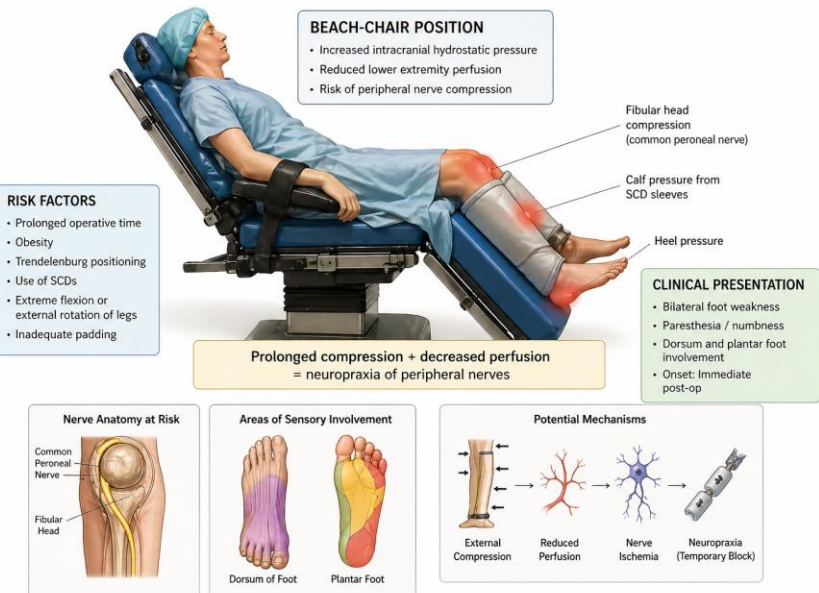


# Not Just a Shoulder Problem: A Case Series of Bilateral Lower Extremity Neuropathy Following Shoulder Arthroplasty in Beach Chair Position

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## INTRODUCTION

- Lower extremity neuropathy following shoulder arthroplasty in beach chair position typically presents as lateral femoral cutaneous nerve (LFCN) palsy affecting the anterolateral thigh, with a reported incidence of 1-4%.
- Bilateral foot paresthesia with motor and sensory deficits after beach chair surgery represents an atypical and concerning complication that has not been well-characterized in the literature.
- Here we present two patients who developed bilateral lower extremity neuropathy with weakness and paresthesia of the feet following shoulder arthroplasty performed in beach chair position.
- Case Report: We reviewed the clinical data of two patients who recently underwent shoulder surgery in the beach chair position at our institution and developed postoperative bilateral lower extremity neuropathy affecting the feet.



## CASE SERIES

### Patient 1

- Patient was a 59-year-old male (ASA class 2) BMI of 30.78 kg/m<sup>2</sup> with history of hip and knee arthroplasty who underwent shoulder arthroscopy with massive rotator cuff repair using human dermal allograft under general anesthesia with interscalene nerve block. The surgery lasted for 4 hours. He developed bilateral weaknesses and paresthesia of the feet postoperatively.

### Patient 2

- Patient was a 27-year-old BMI 30, otherwise healthy male with recurrent left shoulder instability following multiple dislocations and failed prior arthroscopic repair who underwent diagnostic arthroscopy, anterior bone block glenoid reconstruction with distal tibial allograft and revision remplissage which was 5 hour long. He developed bilateral lower extremity weakness and paresthesia in PACU. On exam, he had decreased sensation on

plantar and dorsal areas of feet bilaterally.

- Both patients were admitted for observation and neurological monitoring. Multidisciplinary evaluations by neurology, anesthesiology, and the surgical team were performed.
- Imaging confirmed intact hardware and no acute osseous pathology in both cases. The etiology was suspected to be associated with prolonged intraoperative positioning in the beach chair position, potentially combined with SCD use; no evidence of central neuraxial or anesthetic complications was noted.
- Management included physical! and occupational therapy. Both patients demonstrated significant improvement in lower extremity strength and sensation by the end of postoperative day 1, with full motor recovery and only mild residual numbness over the toes bilaterally, allowing them to be discharged the day after surgery.

## DISCUSSION

- Bilateral lower extremity neuropathy after shoulder arthroplasty in beach chair position is rare and underrecognized.
- These cases suggest transient position related neuropraxia from a combination of prolonged positioning, compression at vulnerable sites, SCD related pressure and reduced limb perfusion.
- Rapid recovery and negative imaging support a reversible peripheral mechanism.
- Bilateral postoperative deficits should prompt urgent neurologic assessment while considering positioning injury. Attention to padding, leg alignment and limb checks may reduce risk.

## CONCLUSIONS

- Bilateral lower extremity neuropathy with foot involvement is a rare complication following shoulder arthroplasty in beach chair position
- The bilateral symmetric distribution suggests compression from SCDs or positioning-related vascular compromise rather than typical LFCN palsy
- Appropriate recognition, multidisciplinary evaluation, and supportive care led to favorable outcomes
- Clinicians should ensure proper SCD application and positioning to minimize this complication

## REFERENCES

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### 1. BEACH CHAIR POSITION: SETUP & PRESSURE POINTS

Prolonged position + compression = risk of neuropathy

**Potential Pressure / Compression Sites**

- Head & Neck Support
- Shoulder / Back Contact Points
- Arm Positioner / Strap Pressure
- Lateral Thigh (LFCN Risk)
- Fibular Head (Common Peroneal Nerve)
- Calf / SCD Sleeve Pressure

### 2. LOWER EXTREMITY NERVE DISTRIBUTION (Areas of Sensory Innervation)

**Dorsal Foot:** Deep Peroneal Nerve (First web space), Superficial Peroneal Nerve (Dorsum of foot), Sural Nerve (Lateral foot)

**Plantar Foot:** Medial Plantar Nerve (Medial sole), Lateral Plantar Nerve (Lateral sole), Tibial Nerve (Heel)

Bilateral symptoms may indicate compression at multiple sites or systemic positional factors.

### 3. CASE SUMMARY TABLE

Variable	Case 1	Case 2
Age / Sex	59-year-old Female	27-year-old Male
BMI	30.8 kg/m <sup>2</sup>	30 kg/m <sup>2</sup>
Procedure	Massive rotator cuff repair with graft	Anterior bone block glenoid reconstruction
Duration	4 hours	>4 hours (extended)
Position	Beach chair	Beach chair
Intraoperative Factors	SCDs, Trendelenburg, Prolonged duration	SCDs, Prolonged duration
Postoperative Findings	Bilateral foot weakness, paresthesia (dorsum & plantar aspects)	Bilateral decreased sensation (plantar & dorsal foot)
Imaging / Workup	MRI brain, Spine: Negative	MRI spine: Negative
Management	Observation, PT, Neurology consult	Observation, PT, Neurology consult
Outcome	Strength & sensation improving by POD1	Mild residual numbness in toes bilaterally
Disposition	Home POD1	Home same day

### 4. PROPOSED MECHANISM OF INJURY

**Potential Mechanisms**

- Compression of the common peroneal nerve at the fibular head
- SCD sleeve or calf compression causing distal neuropathy
- Reduced perfusion / positional vascular compromise
- Combination of patient factors + prolonged operative time

### 5. RECOVERY TIMELINE

**Key Takeaway:** Both patients showed significant improvement within 24-72 hours, supporting a transient compressive neuropraxia.

### 6. ANATOMY FOCUS: COMMON PERONEAL NERVE (COMPRESSION RISK)

**Compression Can Cause:**

- Foot drop
- Dorsal foot numbness
- Weakness in ankle dorsiflexion
- Eversion weakness

**Minimize Risk By:**

- ✓ Padding fibular head
- ✓ Avoid tight SCD sleeves
- ✓ Frequent position checks
- ✓ Proper leg alignment

### 7. PREVENTION CHECKLIST

- ✓ Pad all pressure points (fibular head, calves, heels)
- ✓ Ensure SCDs are not overly tight
- ✓ Check and document lower extremity perfusion hourly
- ✓ Avoid prolonged extreme flexion or external rotation of legs
- ✓ Limit operative time when possible
- ✓ Use appropriate padding and positioning devices

### 8. KEY LEARNING POINTS

- 1 Lower extremity deficits after shoulder surgery are not benign.
- 2 Bilateral symptoms should trigger urgent neurologic evaluation.
- 3 Compression neuropathy from positioning may be reversible if recognized early.
- 4 Routine leg checks during prolonged beach chair cases may prevent injury.

### 9. IMAGING EXAMPLES (FOR WORKUP)

MRI Brain (No acute findings), MRI Cervical Spine (No significant stenosis), MRI Lumbar Spine (No acute findings)

### 10. TAKE-HOME MESSAGE

“ This case broadens the spectrum of beach-chair related neuropathies beyond isolated LFCN injury. ”

Early recognition • Prompt evaluation • Preventable with proper positioning