Restoring Function: Sequential Bilateral Temporary Peripheral Nerve Stimulation for Chronic Shoulder Pain in Spinal Cord Injury

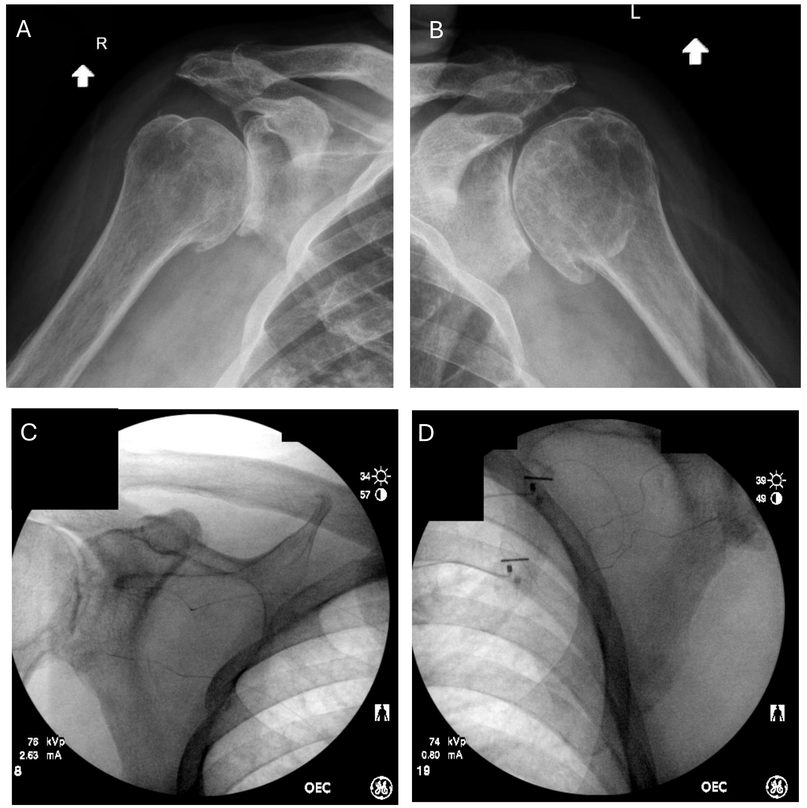
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Background

- Shoulder pain affects 30 – 73% of patients with spinal cord injury (SCI)[1]
  - Most common site of musculoskeletal pain among wheelchair users[2]
- Glenohumeral joint mobility is essential for wheelchair propulsion, transfers, pressure relief, activities of daily living (ADLs)[3]
- Chronic shoulder pain can impair functional independence and quality of life in individuals with SCI[1]

Case Description

- 78-year-old man with chronic T10 SCI, complete paraplegia, manual wheelchair user
- Presented with worsening bilateral shoulder pain limiting ADLs, transfers, wheelchair propulsion
- Severe bilateral glenohumeral joint osteoarthritis (OA)
- Failed corticosteroid injections
- Unable to tolerate physical therapy (PT) due to pain
- Shoulder arthroplasty was offered but declined due to concerns of loss of independence during post-operative recovery
- After successful diagnostic nerve blocks, underwent sequential bilateral 60-day peripheral nerve stimulation (PNS) of the axillary and suprascapular nerves
- Following PNS:
  - 60% reduction of bilateral shoulder pain
  - Able to tolerate PT
- After 3 months of PT, less pain and improved function with wheelchair propulsion, transfers, ADLs



A, B: Grashey radiographs of the right and left shoulders, respectively, demonstrating severe glenohumeral joint osteoarthritis
C, D: Fluoroscopic images of the right and left shoulders, respectively, demonstrating PNS lead placment targeting the axillary and suprascapular nerves

Outcome	Pre-PNS and PT	Post-PT
Active forward flexion- Right	30°	105°
Active forward flexion- Left	96°	122°
NRS* - Right	9/10	6/10
NRS* - Left	7/10	2/10
DASH score**	42.9	26.7

*Numeric Pain Rating Score
**Disabilities of the Arm, Shoulder, and Hand

Discussion

- Patients with paraplegia who use manual wheelchairs place repetitive strain and weightbearing demands on the shoulders and present unique treatment considerations
- Corticosteroid injections may not provide durable relief for chronic severe glenohumeral joint OA[4]
- Postoperative restrictions following shoulder arthroplasty may compromise independence in wheelchair users

Conclusion

- This case illustrates temporary PNS as a pain intervention that enabled participation in PT and resulted in improved ROM, functional mobility, and independence

References

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