ORTHOVERSE · HIGH-YIELD CARD

Brachial Plexus: Find the Lesion

Interactive simulator
orthoverse.org/simulators/brachial-plexus-lesion/

HIGH-YIELD

- The plexus runs C5-T1 through roots, trunks, divisions, cords, and terminal nerves.
- Preganglionic (root avulsion): winging, rhomboid weakness, elevated diaphragm, Horner syndrome, severe pain.
- Postganglionic: serratus and rhomboids intact; no Horner; spontaneous recovery possible.
- Erb palsy (C5-C6): shoulder and elbow lost; hand intact; classic waiter's tip posture.
- Klumpke palsy (C8-T1): hand intrinsics and finger flexors lost; proximal muscles spared.
- Posterior cord lesion: axillary and radial both out; deltoid and extensors lost; biceps intact.
- Lateral cord lesion: elbow flexion, pronation, and lateral forearm sensation affected; extensors intact.
- Medial cord lesion: intrinsics and finger flexors lost; extensors and triceps intact; no Horner.
- Narakas group 4 (neonatal): pan-plexus plus Horner syndrome, indicating T1 sympathetic injury.
- Repair result worsens when delay to surgery exceeds 3 to 6 months from injury.

PITFALLS

- Full abduction with a paralyzed deltoid is possible via supraspinatus; always palpate the deltoid to confirm its function.
- Brachioradialis can mask complete biceps paralysis; palpate the biceps belly during elbow flexion testing.
- Lower-trunk lesion alone does not cause Horner syndrome; Horner requires preganglionic T1 root avulsion.

NUMBERS TO KNOW

Plexus roots	C5 to T1 (5 roots)
Classic Narakas groups	4
Neonatal plexus surgery window	5 to 12 months of age
Passive external rotation threshold for intervention (infant)	60 degrees
Age at which absent elbow flexion predicts worse outcome if late to recover	3 months
Phrenic involvement in upper neonatal lesions (approximate frequency)	up to 5 percent
Elbow flexion contracture threshold for serial casting	more than 30 degrees

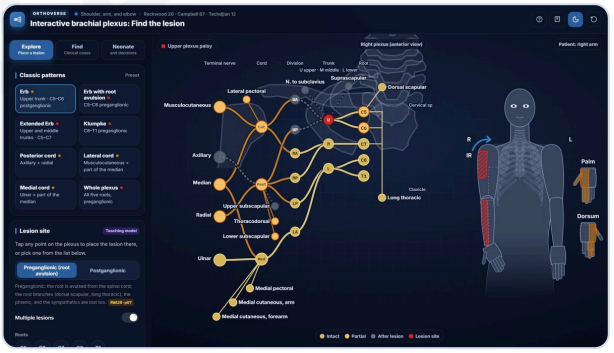


Figure. Erb palsy: an upper trunk lesion, C5 and C6. See which muscles and which skin go silent.

FURTHER READING

Rockwood and Green's Fractures in Adults, 10th edition: ch 20 (nerve injuries and the brachial plexus).
Campbell's Operative Orthopaedics, 15th edition (2026): ch 67 (peripheral nerve injuries).
Tachdjian's Pediatric Orthopaedics: ch 12 (brachial plexus birth palsy).

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