Peripheral nerve injury is a grave postoperative complication and a significant source of professional litigation. An upper limb neuropathy after a lower limb surgery is even worse and difficult to defend in medicolegal litigations as it is essentially avoidable. Radial Nerve Injury can happen due to mechanical compression between hard surgical table and proximal arm while the patient is in a lateral decubitus position. This report signifies the importance of patient positioning and prevention of pressure points perioperatively to reduce the risk of this mishap.

Case Report: A 68 year old female who underwent hemiarthroplasty of the left hip complained of numbness and weakness of the right hand and inability to hold objects. The procedure was done in right lateral decubitus position and it lasted for about 45 minutes. The patient and treatment team had a tough time in the initial postoperative period as she was unable to feed herself, hold on to objects and walk with the support of a quadrangular walker due to the weakness of right hand. Splint, rehabilitative exercises and galvanic current stimulation were employed for her treatment.

Conclusion: Our case report stresses the importance of perioperative patient positioning and general awareness of potential complications that can happen which are preventable.

Keywords: Radial Nerve Palsy, Hemiarthroplasty, Lateral decubitus position
The patient was evaluated by same doctor during the whole follow-up.

Discussion
Injury to an upper limb peripheral nerve is scarcely seen after lower limb surgery. It can occur as rare sequelae to general anesthesia [3]. Ulnar neuropathy occupies one-third of these cases followed by brachial plexus injuries (23%) and lumbosacral roots (16%) [4]. Only a single case of radial nerve palsy was seen associated with hip arthroplasty after PubMed and Cochrane database search. The incidence of nerve palsies after hip replacement surgery is 1–2% [5]. The predisposing factors include female gender, smoking, and leg lengthening [2]. Superficial nerves such as ulnar nerve and common fibular nerve are commonly seen injured due to mechanical compression. Another important factor is the time taken for the surgical procedure as longer duration of compression raises the chance of neuropathy. The radial nerve is not commonly injured due to mechanical compression [6]. As the nerve runs on the posterior aspect of humerus, poor positioning of the arm on the edge of table or against a hard object can produce stretch or compression of the nerve resulting in ischemia of vasa nervorum, leading to neuropraxia. Literature has shown radial nerve palsy from the use of blood pressure monitor, a self-retractor for the dissection of the left internal mammary artery for coronary artery bypass grafting, and a Kent retractor for upper abdominal surgery [6, 7]. Lateral decubitus position has produced “Saturday night palsy” in perioperative period [3]. Our patient too was in the right lateral position, and the impingement of proximal humerus on the surgery table was believed to be the cause of wrist drop. We believe that the problem could have been avoided with extra padding over proximal arm. Manipulation of the patient’s leg like giving traction or relocating the prosthesis head into acetabulum could have produced different forces and traction on areas where nerve could have been compressed or stretched. The relatively simple structure of radial nerve must have been another causative factor as its response to injury would have been suboptimal. In our case, the whole procedure was finished in almost 45 min, and the occurrence of wrist drop was contradictory to the common belief that only increased operative time posed a significant threat of injury to the peripheral nerves due to mechanical compression. Furthermore, the appearance of nerve damage needs not be in the immediate post-operative period. It can occur several days later after the procedure [8]. Wallerian degeneration occurs indistal part of the nerve subjected to compression or stretch injury [3] which lasts for about 2–7 days. The regeneration rate varies from 4 to 11 mm per day [8], and remyelination of the regenerated axons lags behind by 9–20 days [8]. It took almost 9 months in our case to achieve full recovery of the nerve.

### Table 1: Electrophysiological study of bilateral radial nerve showing conduction block of the right radial nerve at above elbow level and the right-sided distal axonal loss due to Wallerian degeneration

<table>
<thead>
<tr>
<th></th>
<th>Right radial nerve</th>
<th>Left radial nerve</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMAPstimulation below elbow</td>
<td>8mV</td>
<td>12mV</td>
</tr>
<tr>
<td>CMAPstimulation above elbow</td>
<td>7.9mV</td>
<td>11.3mV</td>
</tr>
<tr>
<td>SNAP</td>
<td>11.7µV</td>
<td>28.3µV</td>
</tr>
</tbody>
</table>

CMAP: Compound muscle action potential, SNAP: Sensory nerve action potential.
Conclusion
Peripheral nerve injuries in the post-operative period account for great stress both to the patient and doctor. From a medicolegal perspective, this complication is difficult to defend being essentially avoidable. Here arises the importance of patient positioning and adequate preventive measures perioperatively. The whole operative staff including surgeon, anesthetist, and the nursing staff should be aware of the same. The surgeon should also document the appropriate protective measures taken in the operative notes so as to avoid future litigation.

References

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