

Improper coupling between inner nut and screw head leading to rod loosening and dislodgement

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Key words: Lumbar spine, Spinal fusion, Instrumentation, Fixation failure.

Although the true incidence is unknown, in a group of patients the construct failures may not actually be device failures but instead it can be a surgeon-related error. (1, 2) A 45 year-old male patient was operated for L5-S1 fixation for grade II lumbar spondylolisthesis one year back. He was apparently alright after surgery. For last three months he noticed recurrence of back pain. Follow up x-ray showed rod loosening on right side (Figure 1).

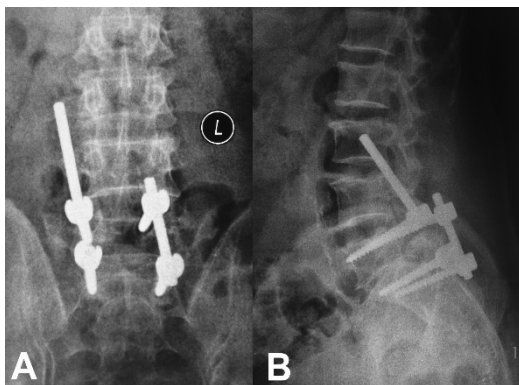


Figure 1 - X-ray lumbo-sacral spine AP and lateral view showing dislodgement and migration of the right rod superiorly from screw head

There were no focal neurological deficits. Wound was healed well. The patient underwent re-exploration of the previous incision. Screws and rod on right side were exposed. Rod was slipped superiorly from both the screws heads. It was recognized that there was mismatch between inner nut and screw head as the nut was not tightened properly and it was oblique (Figure 2). Rod was located and removed. Nuts were removed from both the screws. Lower screw was loosened in the bone, was removed and replaced with a bigger size of screw. Patient did well after surgery and doing well at follow up.

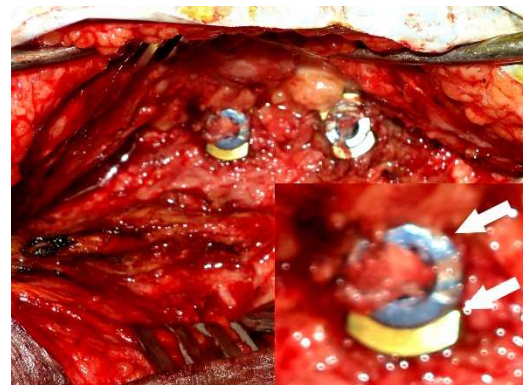


Figure 2 - Intra-operative images showing absence of rods between screw heads and (inset) improper coupling between inner nut and screw head

Pedicle screws are used to achieve reduction and fixation of the spine which allows early mobilization of the patient without external support (3) in the treatment of fractures, degenerative disease, neoplasm, and congenital deformities. (4) In spite of the routine use of pedicle screws for spinal fixation, these devices can be associated with complications. (1, 5-7) The complications associated with pedicle screws include screw fracture, rod fracture, loose screw (8-11), screw loosening/pullout, rod breakage (with or without rod dislodgement. (3, 5, 8) The hardware failure at the junction of the hardware components (a rod sliding off a pedicle screw or fracture along the middle portion of a plate or rod (4) can be due to coupling failure (insufficient tightening of the blocking elements) resulting in loosening of the rod. (3, 12, 13) Apart from insufficient tightening of the nut into the screw head, (as was seen in present case) the improper coupling between nut and screw head can also cause loosening and consequent dislodgement of the rod. (1) It has been suggested that, while tightening the nut, back off the adjusting nut and rotate counter-clockwise until it's loose in the screw head and produces a tuck sound. Following this the nut can be tightened to make sure that there is no mismatch in between the grooves in the screw head and the ridges of the nut. (1)

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