

A Novel Technique For Removing Broken Pedicle Screws

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I have no conflicts regarding
the subject of this
presentation

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A Bad Day



Rate of Pedicle Screw Failure

- Matsuzaki 1990 21%-plate/screw construct
- Esses 1993 2.9%
- Yuan 1994 2.6%-deg spondyl, 6.7%-Fx
- Yahiro 1994 7.1%
- Lonstein 1999 2.2%-Half had solid fusion
- Suda 2006 5.9%-isthmic spondylolisthesis

Risk Factors for Pedicle Screw Fracture in the Lumbar Spine

Matt El-Kadi, MD, PhD, Erin Donovan, MPAS, PA-C, Tarek El Halabi, BS, Michael El-Kadi, and Megan Macoskey, BS

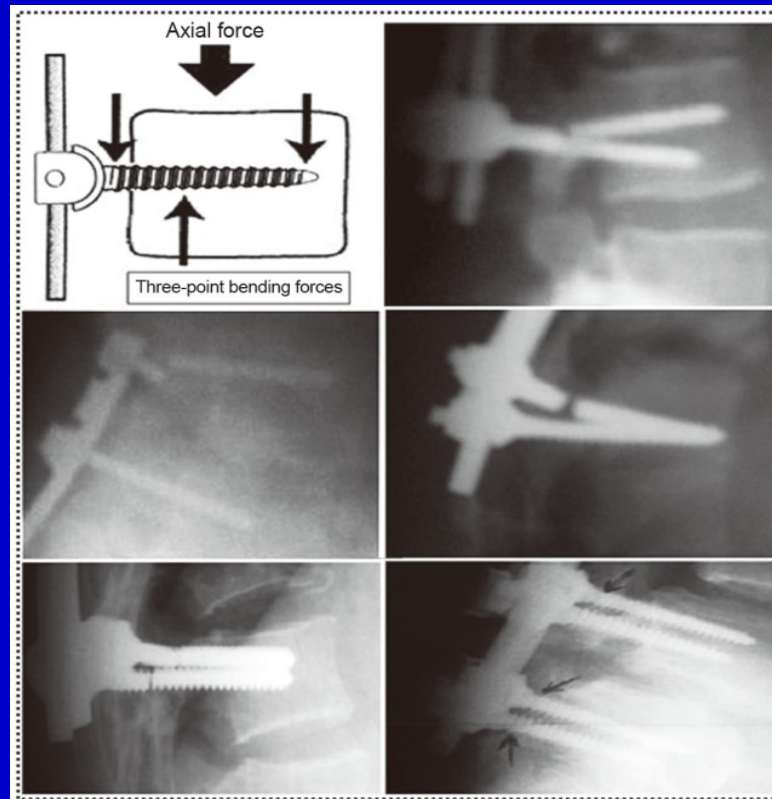
Contemporary Neurosurgery August 15, 2014

- Obesity
- Female Sex
- Smoking
- Pars defect with listhesis
- Fusions > 4 levels with scoliosis
- Interbody Fusion decreased failure rate

Mechanism of Pedicle Screw Failure

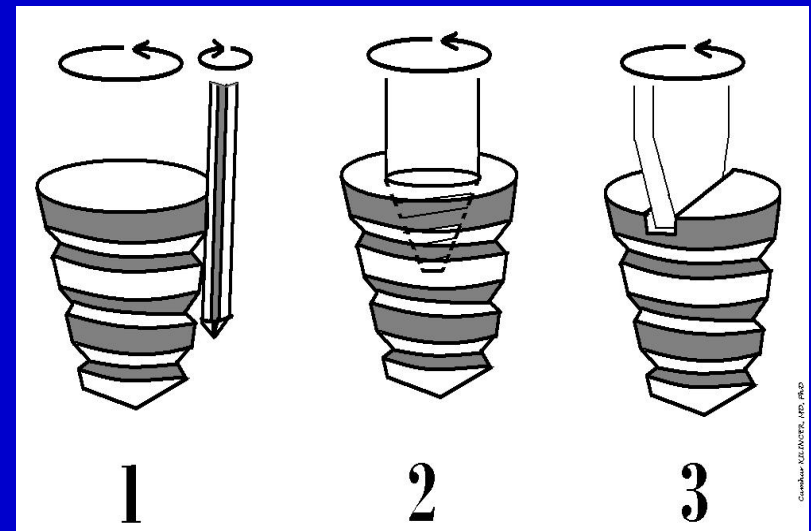
Lumbar Transpedicular Implant Failure

Eldin & Ali Asian Spine J. June 2014



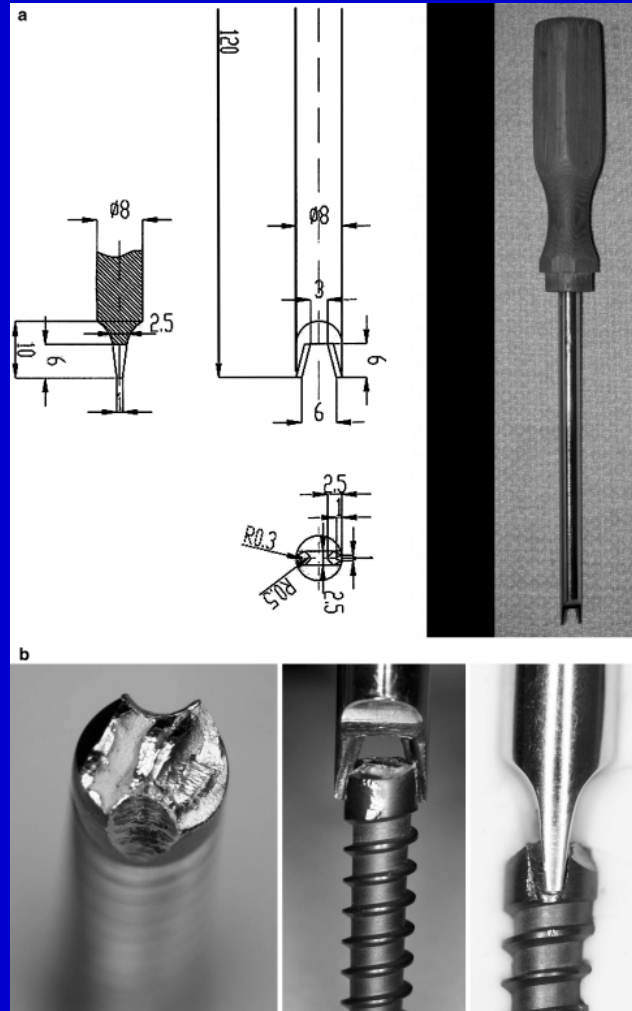
Removal Techniques For Failed Pedicle Screws

- Drill to rotate out pedicle screw
- McGuire-Ortho Review 1992-center hole and easy-out
- Duncan-Neurosurgery 1998-drill slot and use screwdriver
- DiLorenzo-J. Neurosurgery 2000-use instrument to grab proximal end of screw



Removal Techniques For Failed Pedicle Screws

- Kaya, et al.
Eur Spine J.
August 2008



Technique Development For Removal Of A Failed Pedicle Screw

- 1990s
- Rolando Puno M.D.
- PWB/Synergy Spinal
- Integral Pedicle Screws
- Difficulty removing failed screws



Goals Of Pedicle Screw Removal

- Safe
- Quick
- Preservation of the pedicle screw hole



A Removal Technique Is Born

- Modified Screwdriver
6.0 mm in diameter
- 3 mm slot milled into
the end



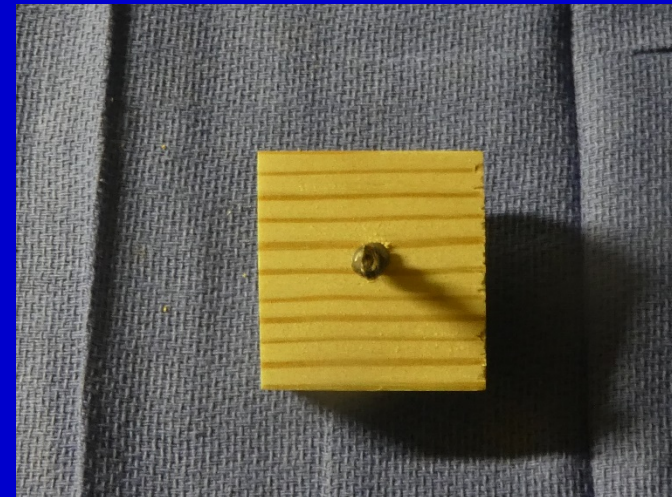
A Removal Technique Is Born

- Expose proximal end of failed screw with curette or bone cutting drill bit
- Crucial to expose leading edge of screw thread



A Removal Technique Is Born

- Form peg on proximal end of screw with metal cutting bit to fit screwdriver slot



A Removal Technique Is Born

- Gently impact screwdriver slot onto screw peg
- Remove screw

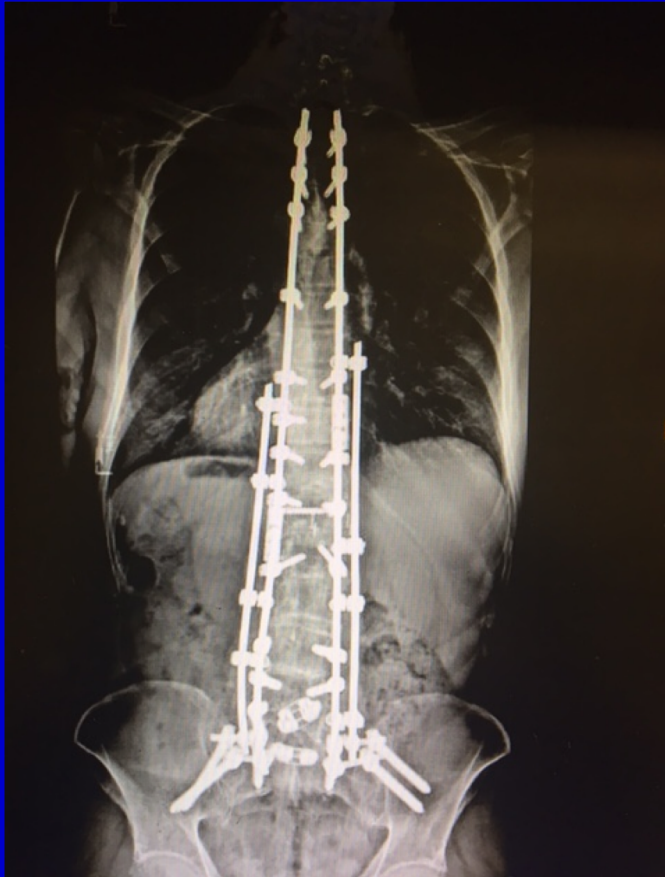


A Removal Technique Is Born

- Final removal
- Screw and screwdriver
- Both screw pieces back together



A Bad Day Turned Good



THANK YOU

