Fixing Femoral Neck Fractures in Young Adults: INTRODUCTION

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We accept...
Femoral neck fracture in young adults
• Difficult injuries
• Early, skilled treatment essential
• Complications are potentially catastrophic
• Salvage Rx are common

Early Surgical Treatment
Protzman and Burkhalter, Femoral neck fractures in young adults, JBJS-AM, 1976
• 22 patients aged 20-40 (Army)
• Mostly CRIF

— 59% nonunions
— 86% AVN
Who Risks Failure?

What is likely to affect union?
- Host factors (hormones, smoking, etc.)
- Intra-articular injury (synovial fluid)
- Vascularity
- Fracture configuration

- Reduction
- Fixation

Affected by surgeon

Pauwels Classification (1935)

- Biomechanical view of hip fractures
- Compressive vs. shearing forces

Modern Treatment

Liporace et al., Results of IF of Pauwels’ III vertical femoral neck fractures, JBJS-AM, 2008

- 56 patients young patients with Pauwels’ III
- Mostly CRIF

- 17% nonunion
- 12% AVN

20-30% failure rate
Treatment Decisions

- Algorithms (e.g. MacCauley et al, JAAOS, 2006)

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ORIF?

Treatment Decisions

- Algorithm provided

AAOS

Treatment of Femoral Neck Fractures in Young Adults

Treatment Decisions

- What about pre-operative planning?

imaging, a Weber clamp or 2.0 mm Kirschner wire can provisionally hold the reduction. Definitive fixation can be obtained with three cannulated or crossed Kirschner wires. (Fig. 2). Closure is routine. Another approach, with that of a modified Smith-Petersen surgical exposure, has been described7. This allows direct access to and visualization of the femoral neck fracture, especially in the subcapital region. However, a separate incision is required for implant insertion. The postoperative regimen that
Treatment Decisions

• Is evaluating this in surgery OK?

CT provides great information
  – Axial cuts good
  – 2D recons very good
  – 3D recons excellent

AP Traction/ IR view
Reduction

- Must overcome deformity and muscle forces

Open Reduction

ORIF w/ Std. implant: Common mode of failure
A final thought

Pauwels III femoral neck Fx in young adult
- We need to understand the injury better
- Requires a thoughtful mechanical solution (?)

Discussion

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