Geriatric Acetabular Fractures

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Expanding Problem

Sullivan MP et al. Geriatric fractures about the hip: divergent patterns in the proximal femur, acetabulum and pelvis

NIS data annual trends over 18 year period (1993-2010)

Hip fractures peaked 1996 and have declined by 25.7%

Geriatric Acetabular Fractures increased by 67%
Orthopedics 2014

74 yo male ground level fall

Posterior column / posterior wall
74 yo male ground level fall

PLAN?

Posterior column / posterior wall

11/19/2018
5 months post op

COMPLETE FAILURE

WAS THE TREATMENT REASONABLE?

WAS IT TECHNICALLY SOUND?

WAS IT THE OPTIMAL CHOICE?

Risk Factors:
- Osteoporotic
- G L F
- Dome involvement
- Marginal impaction
- Head impaction

Was the treatment reasonable? Was it technically sound? Was it the optimal choice?

O’Toole RV et al. How often does open reduction and internal fixation of geriatric acetabular fractures lead to hip arthroplasty?

46 of 147 geriatric fractures over 5 year period

28% Conversion rate at average of 2.5 yrs

J Orthop Trauma 2014

Fractures of the Acetabulum: Accuracy of Reduction and Clinical Results in Patients Managed Operatively within Three Weeks after the Injury

- Single series 262 fractures
- Outcomes:
  - Quality of reduction
  - Age
  - Initial displacement
  - Acetabular involvement
- No Differences within power of study:
  - Fracture type
  - Fracture level
- Overall:
  - 40% excellent
  - 36% good
  - 8% fair
  - 8% poor
  - 28% converted surgery at minimum two years
Outcomes

These findings are consistent with findings of other authors

- Wright R et al. Acetabular fractures: long term follow up of open reduction and internal fixation. JOT 1994

Advanced age a risk factor for poor outcome
Future usually evident by 2-3 yrs

WHAT SETS THE ELDERLY APART?

Conversion Rates 3X That Of Non-Geriatric

WHAT SETS THE ELDERLY APART?

FRACTURE
- Osteoporosis
  - 70% ABC or AC/PHT
  - Rout et al. Arch Bone Jt Surg 2017

PATIENT
- Limited physiologic reserve
  - 33% 1 yr mortality
- Poor balance / strength
  - Difficulty with WB restrictions
Geriatric Fractures

Anglen JO et al. The “gull  sign”: a harbinger of failure for internal fixation of geriatric acetabular fractures. JOT 2003

Retrospective series of 48 acetabular fractures patient age > 60 yrs
• Mean age 71. 6 yrs
• 20. 8 % mortality at mean 37 month follow up

Results:
• 61 % anatomic reduction, 31 % imperfect , 5% poor
• 30 % excellent
• 30% good
• 9 % fair
• 23 % poor
• 7 % converted to arthroplasty

Superomedial Dome Impaction – high association with early failure

WHAT SETS THE ELDERLY APART?

FRACTURE
• Osteoporosis
• 70 % ABC or AC/PHT

PATIENT
• Limited physiologic reserve
• 33 % 1 yr mortality
• Poor balance / strength
• Difficulty with WB restrictions
• Fear of Secondary Surgery

Significantly greater difficulty Obtaining and maintaining reduction

There is a Lack of Consensus Regarding the BEST treatment

All or nothing is most prevalent
• Standard fixation or Non op

Percutaneous Fixation
30.6 % conversion JOT 2012

Fixation with Acute Arthroplasty

Rout et al. Arch Bone Jt Surg
2017
Manson et al. *Variation in Treatment of Displaced Geriatric Acetabular Fractures Among 15 Level – 1 Trauma Centers*

269 pts age > 60

60 % Operative
- 88 % ORIF
- 12 % THA

40 % Non Operative

Of known risk factors only dome impaction significantly associated with THA

Examining the fracture pattern and patient profile may lead to the optimal treatment for each patient.

88 yo female
GLF
Increasing pain with attempts at mobilizing
Transfer for possible ORIF
Lives alone
Ballroom dances 3 days/ wk

Conversion Rates:
ORIF 28%  JOT 2014
Non Op 15%  JOT 2017
83 yo female, GLF, Community Ambulator

Mobilized TTWB

Increasing Pain after 4 days

Bed Traction Assisted Reduction
For Patterns With Predictably Poor Outcomes

Elderly with
- Head impaction
- Posterior fracture dislocation (communion or marginal impaction)
- Dome impaction
  - Central dislocation

What should you do?

Fix Anyway?

Makes No Sense to Me

NON OPERATIVE

1123 acetabular fractures, 156 > age 60 over 5 yr period
36.5% operative
33% 1 yr mortality (75% within 90 days of injury)
89% of deaths were Non-Operative patients
Traction Alone: 79% 1 yr mortality, 50% 90-day mortality

Two level I centers
27 patients > 60 over 11 years (COHF for almost all)
14% fall in hospital
15% conversion rate
NON OPERATIVE (staged)

Acute Arthroplasty

- Single surgical exposure
  - Limited physiologic reserve
- ORIF posterior column with wall dome reconstruction
- Stabilization of anterior column
- Autograft residual fracture gaps (femoral head)
- Simple reconstruction for simple patterns
- Complex patterns treated with principles of pelvic discontinuity
- Weight bearing status varies

Posterior Fracture Dislocation Patterns

Posterior column / posterior wall
Metal Augments
Individualized planning with acceptance of multiple Techniques may allow Optimal outcome for the elderly with single surgical intervention