The Dilemma

Tx of 1st time PD:
< 25 yrs & Elite level vs the rest of us!

IS THERE A DIFFERENCE?

The literature is confusing!!!
**Patellar Dislocation**

**“The Issues”**

- Non-op Tx 50% will experience persistent symptoms
- Failure to RTS up to 55% of pts
- Over 100 open/arthroscopic techniques (not good!)

_Cofield et al J Trauma 1977 Atkin et al AJSM 2000_

**Traditional Treatment**

1st Time PD → Non op
- Closed reduction
- Brief immobilization
- Rehab
- Surgery reserved for:
  - OCD/Loose fragment
  - Failed conservative management
  - Tear in VMO or +2 MCL

_UPMC University of Pittsburgh Medical Center_

**Meta Analysis 2015**

Does Op Tx of 1st time PD lead to increased PF stability

_The Conundrum_

“Surgical intervention for acute patellar dislocation may lead to lower rates of recurrent dislocation”

_Eriksen, Cole, Bach 2015_
Non-Op Management
What is the Natural History of 1st time dislocation

Patellofemoral Arthritis
Sanders T AJSM 2016

609 pts with 1st time PD
Development of DJD:
1.2 % at 5yrs
2.7 % at 10yrs
8.1 % at 15 yrs
14.8 % at 20 yrs
48.5 % at 25 years

Factors ass. with PF Arthritis
Recurrent PF instability
Sanders AJSM 2016
Osteochondral Injury
Farakone Arora Sept 2017
Trochlea dysplasia
Schuttler KISTA 2014
Epidemiology
Overall vs < 25 yrs

1st time PD
• Up to 50% will develop recurrent PF instability
• Pts < 25 yrs with trochlear Dys 60-70% recurrence by 5yrs
  Hawkins AJSM 1986, Lewallen AJSM 2004

< 25 yrs Non-Op Tx 69% failure rate
  Lewallen AJSM 2013

What about Age?
Influence of younger age as an outcome modifier

Open Physes & < 25yrs will benefit from primary op intervention
  Lewallen L 2013

Previous reviews heterogeneous pt population
  Erickson Arthroscopy 2015
  Smith KSSTA 2011 Stefanson CORR 2007

Surgical vs Conservative
Systematic Review
Children & Adolescent pts
470 non-op & 157 surgical
Recurrence rate
33% (non-op) vs 22% (surgery) p<0.05
Surgery: higher KOOS sports & quality of life p<0.001
Older surgical techniques

Trochlear Dys & skeletal immaturity greater risk for recurrence
Anatomical Risk Factors

Which are more important??
1) Trochlear dysplasia
2) Increased TT-TG distance
3) Patella alta
4) Inc Q angle
5) Ext tibial torsion
6) Femoral antversion
7) Genu valgum
8) Valgus thrust
9) Pronation Foot
10) Lig laxity

Anatomical Risk Factors

103 skeletally immature pts with PFI
Matched to 69 controls
Incidence
Trochlear dysplasia in 74% vs 4% (control group)
TT-TG distance 38% vs 9 % (control group)
Patellar tilt: 50% vs 0% (control group)
Patella alta:76% vs 36% (control group)

“Trochlear dysplasia & patellar tilt have strongest association with PI in skeletally immature pts”

Askenberger - AJSM 2016
Predictors of recurrent instability

Case-control study patients < 18 yo
222 knees 1st time dislocators
  89.2% treated non-op initially
  38.4% had recurrence
  51.3% of recurrent instability required surgery
Pts with open physes & trochlear dysplasia had a recurrence rate of 69%

“Skeletally immature patients with trochlear dysplasia had only a 31% success rate with non-op management”

Lewallen - AJSM 2013

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MPFL Injury

1st Time PD
MRI & arthroscopy correlation
74 patients (Open physis)
99% MPFL injury on MRI & arthroscopy
MRI: 60% MPFL injury @ patella insertion
Scope: 81% MPFL injury @ patella insertion

“Skeletally immature children are more prone to sustaining an MPFL injury at the patellar attachment site”

Askenberger - AJSM 2015

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Primary MPFLR following acute PD

Level 1 (41 knees)
G/E results
  71% op vs 25% non-op
Recurrence rate
  0% op vs 35% non-op

Bitar AJSM 2012
Absolute Surgical Indications

1. Osteochondral fragment
2. Irreducible dislocation
3. Tear in VMO, MCL (femoral)
4. Fx of LFC or Patella
5. Failed non-op Tx

Significant Risk Factors will determine my Tx
7 major factors
1. Age < 25 yrs
2. female
3. Trochlear dysplasia
4. Patellar Alta
5. Lateral offset (TT-TG distance)
7. Status of MCL (my opinion)

My General Approach

1st time PF Dislocation
Closed Physis >25
Open physis, no risk factors
Non Op
Open physis or <25 w risk factors
Non Op
Surgery
My Algorithm

1) NL TT-TG, no alta                        MPFL recon
2) Trochlear dysplasia, no alta                        MPFL recon
3) TT-TG >15mm, no alta or Dys                        TT medialization
4) NL TT-TG, alta (C.D.>1.4)                        TT distalization
5) TT-TG >15mm, alta + dysplasia                        MPFLR + TT med & distalization
6) MCL (+2-3) no alta, nl TT-TG –                        MPFL recon + MCL repair + IB

✓ correction of alta to C/D ratio between 0.8 – 1.0
✓ correction of TT-TG to < 10mm

My Approach

NFL players represent a “different” population
Their ability to play & participate is their “job”
Tx of injuries based on
RTS as soon as is reasonable
Methods that reduce future disability & downtime
Acute repair results in lower recurrence rates,
higher RTS, minimal downtime

My level 5 experience has been very good in this population

Conservative tx typically has recurrence rates of 15-44%1,2,3
17% will suffer a second event over next 2-5 yrs. Fithian AJSM 2004

Thank you