Current Conservative Operative Management of Patients with Patellofemoral Pain

Why and When to Operate

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Mandatory Financial Disclosure

I have nothing to disclose, no financial conflicts and no relationships with industry that would relate in any way to the content of this talk.
Loss of Homeostasis = Pain

Some tissue is under excessive load because there has been an acute injury or chronic overload.
Why does it hurt?

Loss of tissue homeostasis causes

**Soft tissue pain** chronic nerve injury
neural growth factor, prostaglandins, substance P  Sanchis-Alfonzo/Fulkerson

**Bone pain** osseous hypertension
overload.  Dye/Waisbrod
Goal: restore homeostasis

relative rest / pharmacology
restore flexibility and strength
whole extremity/person rehab
live/exercise within the envelope
Surgery? Pause first

Before considering surgery for anterior knee pain re-think the whole diagnosis and question if there has truly been a thorough, patient and correct treatment plan because if there was-it should have worked almost every time.
Specific Diagnosis First

Why? Fix the “why” (usually not surgery)

What? What tissue is damaged/overloaded?

Is surgery logically necessary to create the mechanical and biological conditions to restore homeostasis?
History and Physical Exam

Hx: overuse/injury/insidious: be 
VERY specific

PE: alignment, tenderness, flexibility 
(quad/ham/hip), effusion, dynamic 
control (single leg squat)
Often there is loss of the normal balance of strength/flexibility and neuromuscular control required to perform the desired activities.
Imaging refines diagnosis

X-ray, CT scan: bone and alignment
Bone scan: biological response
SPECT: bone, alignment and biology
MRI: bone, cartilage, soft tissue, alignment
Ultrasound: soft tissue
So, isn’t there an “alignment” problem?

NOT NECESSARILY

Patellofemoral “alignment” is the result of a combination of passive (soft tissue, bony) constraints and dynamic factors (strength / flexibility / neuro-muscular control)
Then what is “malalignment?"

When bony alignment, joint geometry, soft tissue restraints, neuromuscular control and functional demands combine to produce symptoms as a result of abnormally directed loads which exceed the physiological threshold of the tissues.

Post, Teitge, Amis Clin Sp Med 2002
How to apply this definition of “malalignment"

Must look beyond the viewbox/imaging study to understand malalignment

No single imaging finding defines absolute indication for a surgery or predicts failure of non-op treatment
Where’s the problem?

- Intra-articular pain source?
- Extra-articular soft tissue overload?
- Deficient articular surface?
- Objective “malalignment” causing overload?
How Can Surgery Help?

Remove focus
pathologic
inflammatory tissue
(plica, fat pad, synovium, chondral)

Pathologic plica
Medial condyle
Arthroscopic partial synovectomy

PF pain, focal tenderness, temporary relief with good non-op care and injection

Meticulous excision focal areas of synovial hypertrophy

May be associated with fat pad but not necessarily, often peripatellar

Hemostasis, gentle rehab in envelope
How Else Can Surgery Help?

Stimulate healing environment
(tendonopathy surgery: rare in my experience)
Patellar tendonopathy surgery

Open or arthroscopic effective
Debride damaged tissue to fresh healthy tendon
Rehabilitate within envelope of function
Don’t rush back to sports or activity
How Else Can Surgery Help?

Correct refractory tightness: lateral release (rarely in my experience)
An approach to LR

**Symptoms:** Pain *not instability*

**PE:** hypomobile tender lateral retinaculum

**Imaging:** excessive tilt XR or CT

**Surgical findings:** Minimal articular degeneration Outerbridge I / II

**LR:** *I hardly ever need to do this, non op* treatment excellent for this problem
Lateral release results

80% satisfactory, most series short f/u results may deteriorate with longer follow up particularly in patients with instability

Metcalf 1982
Betz 1987
Christensen 1988
Dandy 1994
Avoiding complications:
Lateral release

Don’t do it for patellar instability
Do it for symptoms secondary to a tight lateral retinaculum (ELPS)
Avoid hypermobile patients
Avoid cases with lateral subluxation and large Q angles
How Else Can Surgery Help?

Relieve articular overload:
  anteriorization +/- medialization
Patellar axial view

Mid-patellar CT scan 15 deg. flexion
Anteromedialization of the tibial tuberosity
Lateral release is not likely to be successful with advanced articular degeneration.
AMZ indications in PF Pain

Pathologic lateral tilt with Outerbridge III-IV changes
Pathologic lateral tilt and subluxation
No tibiofemoral arthrosis
Distal and lateral articular lesions respond best

Pidoriano et al. AJSM 1997
AMZ results

93% subjective ex./good results

No excellent results in group with advanced arthrosis

Fulkerson AJSM 1990
Avoiding complications:
LR / tuberosity transfer

rigid fixation of adequate sized osteotomy fragment
early range of motion, protected weightbearing
beware skin contractures
How Else Can Surgery Help?

Improve surface: biological, prosthetic, resurfacing.
Avoiding complications: PF Arthroplasty

Patient selection strict criteria
Careful alignment, soft tissue balancing
Trochlea component placement
Surgery to Restore Homeostasis

COMBINATIONS OF ROLES COMMON

Removing focus of inflammation

Stimulate healing

Relieve overload / resurface

ALL WITH GOAL OF RESTORING HOMEOSTASIS
Summary: Surgery for PF Pain

Be slow to operate
Be precise in your diagnosis
Avoid unrealistic expectations
IN THE BLEACHERS

"I'm sorry. We tried everything. Your knee is dead."
Thank you for your attention