Chondromalacia

Visible cartilage alterations

Leads to patellofemoral arthritis

Can occur at any age - common in teenagers and incidence increases with age

More common in females

Stages

Stage 1: Cartilaginous swelling and softening

Stage 2: Partial thickness fissuring

Stage 3: Full thickness fasciculations

Stage 4: Cartilage destruction with exposure of subchondral bone (onset of DJD)

Patella cartilage

- Thicker, more permable, less stiff and more compressible than other cartilage

- Imbalanced actions of dynamic knee stabilisers can stress the patella cartilage and joint

Risk Factors

- Alteration of normal patellofemoral mechanics

- Imbalance of dynamic knee stabilisers

- Lateral tracking disorders

- Tightness in lateral knee capsule

- Weakness of Vastus medialis or quads

- Pes Planus

- Hip abductor weakness

- Joint overload/overuse

- Trauma (prior cruciate ligament injury, f# or patella subluxation)

- Patella hypermobility

- Quads, ITB hypertonicity

- Obesity

- Hypermobility/instability

Presentation

- Complaints similar to PFPS

- Dull peripatellar pain

- Aggravated by activities that load the joint e.g. prolonged walking, running, squatting, kneeling, jumping, arising from a seated position or stair climbing

- Crepitus, locking, giving way

- TTP: soleus, hamstring, iliopsoas, piriformis, thigh adductor, ITB, posterior hip capsule (tightness)

- Weakness in quads/hamstrings/glut med/max

- Can present with back pain (biomechanics)

- +ve patella compression +ve patella grind test

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Presentation (cont)

- Differentiation between patella and meniscus during two legged squat - meniscal pain is aggravated by the bottom of the squat and PFP is present during ascent and descent

Imaging

- If knee f# is suspected (hx of trauma/OA)
- Other considerations = significant swelling, recent hx of knee surgery and no improvement with conservative care
- Presence of osteophytes, cysts, subchondral sclerosis, articular space narrowing
- MRI gold standard

DDx

- F#
- Infection
- Neoplasm
- Patella/Quad tendinopathy
- Bursitis
- Cartilaginous irritation (osteochondritis dissecans, PF arthritis)
- Sinding Larsen Johanson syndrome
- ITB syndrome
- Bipartate patealla
- Referred pain from spine/hip

Management

- Fear avoidance behaviours should be addressed
- Reduction of pain provoking activities
- Ice and electrotherapy
- NSAIDs (short term)
- Myofascial release and stretching of TFL, Gastrosoleus, hamstring, piriformis, hip rotators and psoas
- Strengthening of Glut med and VMO
- Pillow Push, Supine heel slide, terminal knee extension, clams, posterior lunge
- Eccentric quads strengthening (squats)
- SMT of lumbosacral and lower extremities
- Hypermobility of ipsilateral SI joint is common
- Kinesiotaping
- Glucosamine sulfate can be effective
- Arch support for hyperpronation

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PFPS

- Excessive/imbalanced forces on the knee
- Young athletes affected
- Patella tracking = static and dynamic stabilisers of the lower extremity
- Imbalance of these alters the distribution of forces to the PF articular surfaces and soft tissues
- Lateral tracking (patella migrates laterally due to pull of quads and natural valgus of the LL

Risk Factors

- Pes Planus - causes internal rot of the tibia
- Glut medius weakness
- Loss of core stability
- Overuse/overload of joint
- Trauma
- Tight lateral knee capsule
- Patella hypermobility
- Muscular imbalance - quads/itb hypertonicity , vastus medialis or quads weakness

Presentation

- Dull peripatellar pain
- Aggravated by activities that load the joint: prolonged walking, running, squatting, jumping, kneeling, arising from a seated position, stair climbing (walking down stairs/downhill)
- May be swelling
- Crepitus, locking, giving way (if cartilage is damaged)
- Gait changes - greater knee flex, greater ankle dorsiflexion, greater transverse plane hip motion in stance phase
Chronic cases may show: greater frontal plane hip motion, greater knee abduction, reduced ankle eversion/greater ankle inversion
- Assess for hypertonicity in soleus, hamstring, iliopsoas, piriformis, thigh adductor muscles, ITB and posterior hip capsule
- Assess weakness in quads, hamstrings, glut med
- Patella Grind +ve Patella glide +ve patella tracking (patella tracking during AROM - knee flex/ext
- Can be differentiated between meniscus and PF pain by squat - meniscal pain usually at the bottom of the squat - PF pain is present during ascent and descent

Imaging

- Knee radiographs to rule out f# or other pathology
- May be appropriate for pts with significant swelling, recent hx of knee surgery, pain does not improve with con care

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DDx

- f#
- Neoplasm
- Patellar/quad tendinopathy
- Osgood-schlatters
- Bursitis
- Cartilage irritation - osteochondritis dissecans, chondromalacia patella, PF arthritis
- Sinding-Larsen Johansson syndrome
- Plica
- ITB syndrome
- Bipartite patella
- Referred pain from spine/hip

Management

- Decrease fear avoidance behaviours
- Retraining of faulty movement patterns
- Electrotherapy
- NSAIDs
- Myofascial release of hypertonic muscles (TFL, gastrosoleus, hamstring, piriformis, hip rotators, psoas, ITB, VL, posterior hip capsule, lateral knee retinaculum
- Strengthening of gluts and VMO (pillow push, supine heel slide, terminal knee extension, clam, glute bridge, semi-stiff deadlift, posterior lunge, monster walk)
- Closed chain exercises + eccentric quads strengthening
- SMT/EMT of LS and LL
- Arch supports
- Surgical intervention if fails con care

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