

Femoroacetabular Impingement: The Broad Current Perspective

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- I. The contemporary mechanical theory of osteoarthritis in the hip
 - A. OA in the hip is usually the final common pathway of mechanically-based degeneration rather than a distinct disease
 - B. A major etiologic factor in most osteoarthritis in the hip is pathologic loading of the acetabular rim, either because of instability, impingement, or a combination
 - C. OA in the hip usually is progressive unless the unfavorable mechanical environment is corrected
 - D. Hip OA in North America usually is secondary to developmental deformity (Harris et al; Aronson)

- II. Characteristics of the normal hip
 - A. Anatomic characteristics
 1. Congruous, well-aligned surfaces
 2. "Good" coverage; not too little; not too much
 3. Normal version
 4. Symmetric, wide cartilage space
 5. Horizontal sourcil
 - B. Mechanical characteristics
 1. Free mobility: ROM greater than needed for ADL
 2. Stability
 3. Narrow physiologic range of loading

- III. The functional challenge faced by the human hip
 - A. "The human hip joint represents an uneasy compromise between the need for stability and a joint that transmits loads of several times our body weight and the need to provide movement. Any geometric restriction has the potential to cause damage." (R.E.Field, eCommentary, JBJS 87B, 2005)
 - B. Mechanically sound hip function represents a balance between potential instability and potential impingement

- IV. Mechanisms of mechanical dysfunction in the hip
 - A. Abnormal anatomy: "normal" use leads to articular damage over time
 - B. Normal anatomy: abnormal use exceeds tolerance of joint structures: acute injury, chronic abuse or overuse (occupation, recreational) etc.
 - C. Combinations of abnormal anatomy and overuse: predisposition to arthrosis at an early age

- V. Femoroacetabular impingement as a cause of OA
 - A. "Classical" impingement: Pauwels, Bombelli, etc.
 - 1. Intraarticular incongruity; static overload
 - B. "Contemporary" hypothesis (Ganz et al)
 - 1. Abnormal contact/conflict between proximal femur and acetabulum causes damage to rim and adjacent acetabular cartilage; leads to OA
 - 2. The mechanical abnormality is often be dynamic and positional

- VI. Categories of FAI
 - A. Femur-based: Cam impingement
 - B. Acetabulum-based: Pincer impingement
 - C. Combination: Cam and Pincer (most common)

- VII. Specific conditions associated with FAI
 - A. Perthes disease
 - B. Slipped capital femoral epiphysis
 - C. Idiopathic retroversion
 - D. Coxa profunda/protrusio
 - E. Idiopathic reduced head-neck offset

- VIII. Basic principle of treatment for FAI
 - A. Improvement in clearance between femoral head and acetabulum to allow impingement-free motion for activities of daily living

General References

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