Advantages and Disadvantages of the Modified Dunn Approach
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• There is recent evidence that the metaphyseal deformity, in even a mild SCFE, results in acetabular labral and cartilage injury. A SCFE is the most extreme example of femoroacetabular impingement and the mechanism of cartilage and labral injury is similar.

• The goal of SCFE treatment to achieve optimal outcomes are:
  - to arrest slip progression
  - restore normal proximal femoral anatomy to decrease the damage to the hip joint secondary to impingement

• A modified Dunn subcapital osteotomy can be performed which addresses the optimal outcomes above
  - restores the normal femoral head anatomy
  - fixing the slipped physis to its appropriate position.

• There are now 3 studies in the literature regarding the Modified Dunn
    ▪ 40 patients at 2 centers
    ▪ NO AVN
    ▪ Near normal hip scores
    ▪ 3 cases of implant failure
    ▪ (30 hips) treated
    ▪ The mean postoperative slip angle was 5.2 degrees,
    ▪ 26/28 patients had excellent clinical outcome
    ▪ 4 cases of implant failure.
    ▪ 1 AVN after showing no evidence of epiphyseal perfusion intra-operatively.
    ▪ 23 patients
    ▪ 1 case of AVN
    ▪ 1 case of OA
    ▪ 1 implant failure
• ADVANTAGES OF THE MODIFIED DUNN
  o Correction at the site of the deformity therefore normalizing the head and neck offset abnormality and lessening the change of impingement
  o There is no longer abnormal metaphyseal impingement in physiologic motion
  o Therefore the mechanical environment resulting in cartilage injury and eventual OA is decreased
  o Normal hip range of Motion and function
  o Visualization of the retinacular tissue compared to other osteotomies
  o Visualization of the retinacular vessels in unstable SCFE will lessen the incidence of the retinaulum under tension by the callous or when the hip is reduced
  o In the unstable SCFE the capsule is decompressed

• DISADVANTAGES OF THE MODIFIED DUNN
  o Technically complex requiring significant experience with surgical hip dislocation and creating an extended retinacular flap
  o It is not available at most centers
  o A potential for AVN that is higher than in-situ pinning for stable SCFE
  o More invasive than in-situ pinning
  o Many hips with insitu pinning will do well for decades with a minimally invasive effective treatment
**Pros and Cons of the Open Surgical Dislocation Approach**
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**BACKGROUND**

A. Open Surgical Hip Dislocation Technique
   iii. Adolescent cohort (n=57) included patients with slipped capital femoral epiphysis (SCFE) and Legg-Calvé-Perthes disease. Similar results. Rebello et al. *CORR* 2009.

B. Arthroscopic surgical technique
   i. Described in 2005 by Weiland and Philippon.

C. Open technique versus arthroscopic technique
   i. Matsuda et al. *Arthroscopy.* 2011. Review of 6 open surgical dislocation studies and 8 arthroscopic studies. Major complication rates of 0 – 20% (open) and 0 – 5% (arthroscopic). Arthroscopy had equal or better outcomes. Both methods are effective in alleviating pain and improving function in the short-term.
   ii. Zaltz et al. 2011. 66 patients under 40 years of age. N=33 (open); N= 33 (arthroscopic). Results showed that the techniques are comparable in efficacy. Open technique is preferred in cases requiring full visualization of subtle abnormalities.

D. Surgical management of professional athletes
   i. Naal et al. *Am J Sports Med.* 2011. Studied 22 professional male athletes (30 hips) following surgical hip dislocation for FAI. Results at a mean follow-up of 45 months revealed return to professional career in 96% of patients. Patient satisfaction was rated 82% for hip surgery and 86% for post-operative sports ability.
   ii. Philippon et al. *Am J Sports Med* 2010. Studied 28 professional hockey players (28 hips) were followed after arthroscopic surgery for FAI. Mean
follow-up of 24 months, all patients had returned to the NHL. Mean mHHS increased from 70 to 95.

PROS OF THE SURGICAL HIP DISLOCATION

• **Visualization**
  - Able to visualize where the impingement is occurring, specifically both intra and extra-articular impingement in all ranges of motion
  - Able to observe and confirm impingement free range of motion after decompression
• Management and confirmation of extra-articular impingement
  - Impingement may be occurring from the trochanter
  - Perthes
• The approach makes labral repair and osteochondroplasty simple
• At allows access to all regions of the femoral head and acetabulum
• Complex deformities can be addressed such as Perthes, SCFE, tumors, and even autografts or allografts.
• Can perform adjunctive osteotomies
• Low complication rate
• Intramuscular dissection
• Less revisions than other techniques (anecdotal evidence)

CONS OF THE SURGICAL HIP DISLOCATION

• 1% rate of a trochanteric non-union
• 2-4 month difference in rehabilitation compared to arthroscopic (appear to be similar by 6 months)
• Older patients ( >40 years).
• With long-term muscle testing (M. Leunig, unpublished) the only muscle deficiency on testing is external rotation strength but patients do not note this. It is only objective testing.
• Tannest et al: no significant change in muscle volume or quality on MRI
• Societal impression of SHD versus “less invasive” techniques

SELECTED REFERENCES


- Observation of the impingement in different ranges of motion
- Easily able to address all the pathology
- Low complication rate