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Le labrum acétabulaire: “pointe de l’iceberg”

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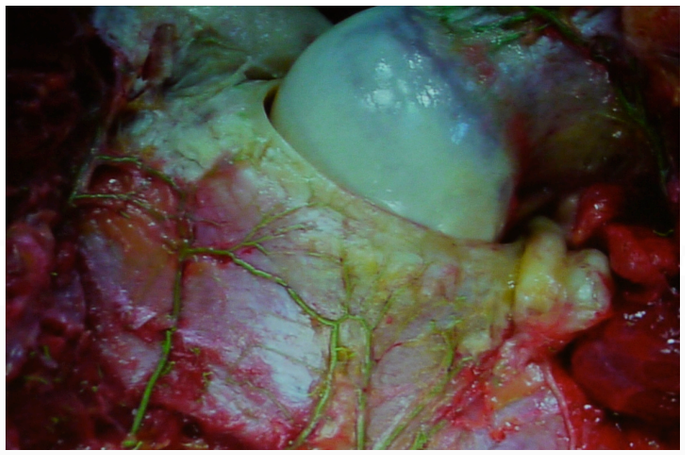
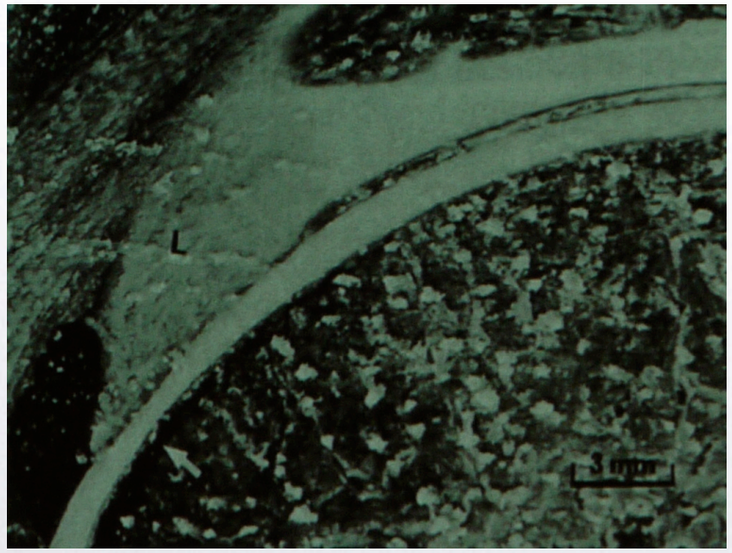
Service de Chirurgie Orthopédique et Traumatologie de l’appareil moteur

Labrum



Presented by Kalhor M. Bernese hip symposium 2010



Terayama et al. Eng Med 1980

Structure fibro-cartilagineuse [1]
Entoure le rebord cotyloidien
Hauteur env 5.3mm [2]
Vascularisé du coté capsulaire [3]
Vascularisation périphérique [3]
Fusionné au cartilage cotyloidien [4]

1. Petersen W, et al. Structure and vascularization of the acetabular labrum with regard to the pathogenesis and healing of labral lesions. Arch Orthop Trauma Surg. 2003 Jul;123(6):283-8
2. Tan V, et al. Contribution of acetabular labrum to articulating surface area and femoral head coverage in adult hip joints: an anatomic study in cadavera. Orthop (Belle Mead NJ). 2001 Nov;30(11):809-12.
3. Kelly BT, et al. Vascularity of the hip labrum: a cadaveric investigation. Arthroscopy. 2005 Jan;21(1):3-11.
4. Seldes RM, et al. Anatomy, histologic features, and vascularity of the adult acetabular labrum. Clin Orthop Relat Res. 2001 Jan;(382):232-40.

Fonction?

⇑stabilité passive de la hanche [1,2,3,4]

⇑ la lubrification de la hanche [4]

Medialisation passive de la tête fémorale [4]

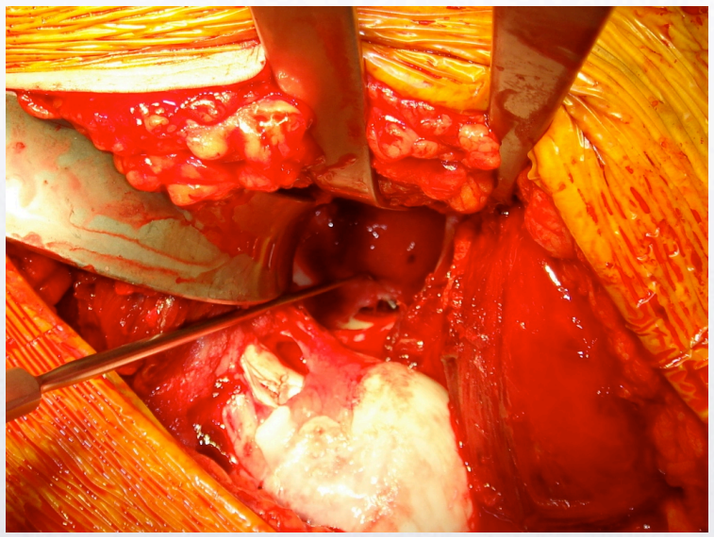
⇓la pression dans la zone de contact [4, 5]

1. Takechi H, et al. Intra-articular pressure of the hip joint outside and inside the limbus. Nippon Seikeigeka Gakkai Zasshi. 1982 Jun;56(6):529-36.
2. Tan V, et al. Contribution of acetabular labrum to articulating surface area and femoral head coverage in adult hip joints: an anatomic study in cadavera. Orthop (Belle Mead NJ). 2001 Nov;30(11):809-12.
3. Ferguson SJ, et al. The influence of the acetabular labrum on hip joint cartilage consolidation: a poroelastic finite element model. J Biomech. 2000 Aug;33(8):953-60.
4. Ferguson SJ, et al. An in vitro investigation of the acetabular labral seal in hip joint mechanics. J Biomech. 2003 Feb;36(2):171-8.
5. Ferguson SJ, et al. The acetabular labrum seal: a poroelastic finite element model. Clin Biomech (Bristol, Avon). 2000 Jul;15(6):463-8.

Lésions labrales

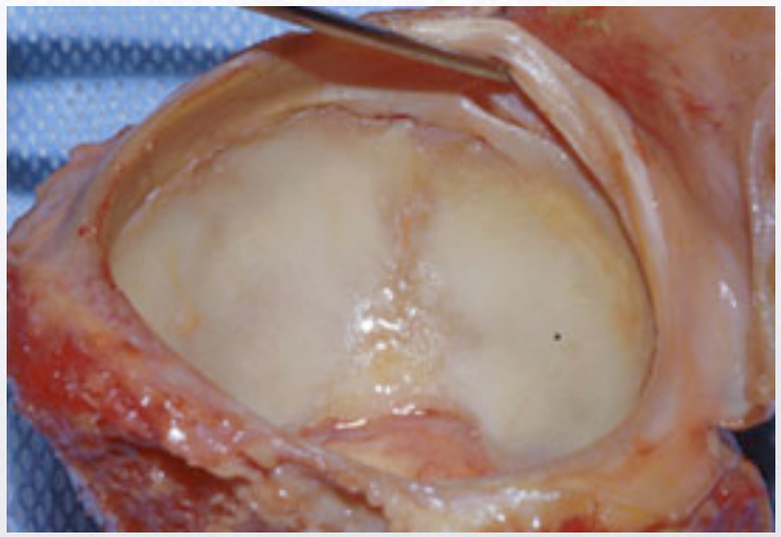
Traumatiques

Haute énergie
Accidents de sport
Hanches normales?

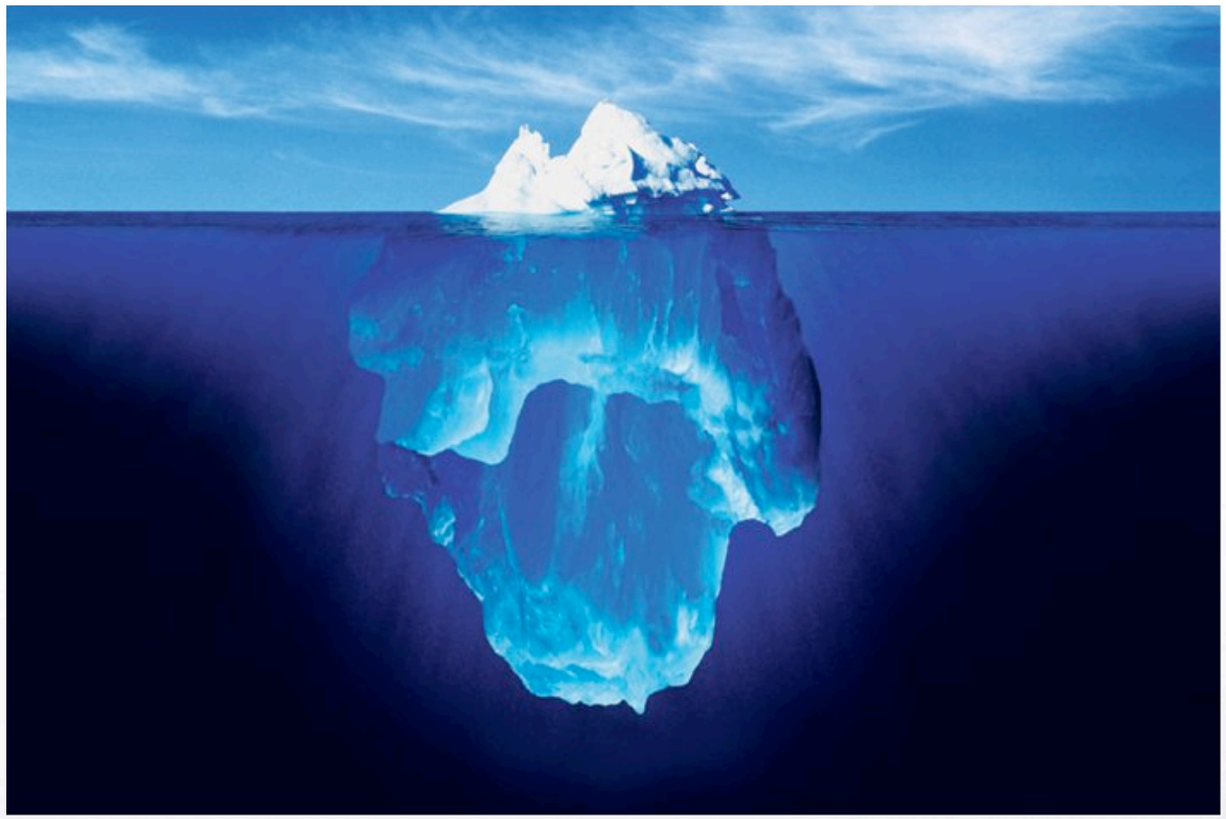


Non-Traumatiques

Microtraumatismes
Patients actifs
Hanches "à risque"



Symptôme



Problème

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Lésions labrales

MICROTRAUMATISMES

CONFLIT FEMORO-ACETABULAIRE

CFA

C’est un mécanisme et non pas une maladie !

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Mal-alignements de la hanche

Statiques

Dynamiques

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Mal-alignements de la hanche

DDH

PROBLEME STATIQUE

incongruence

25-50% d'arthrose

à 50 ans

Prevalence: 2-5 %

F/M: 4:1

Bilateral: 20%

Coopermann et.al. Clin. Orthop., 175:79, 1983

Pauwels F. Springer Verlag, 1976

Buckwalter JA et al. JBJS, 76-A:1405, 1994

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Mal-alignements de la hanche

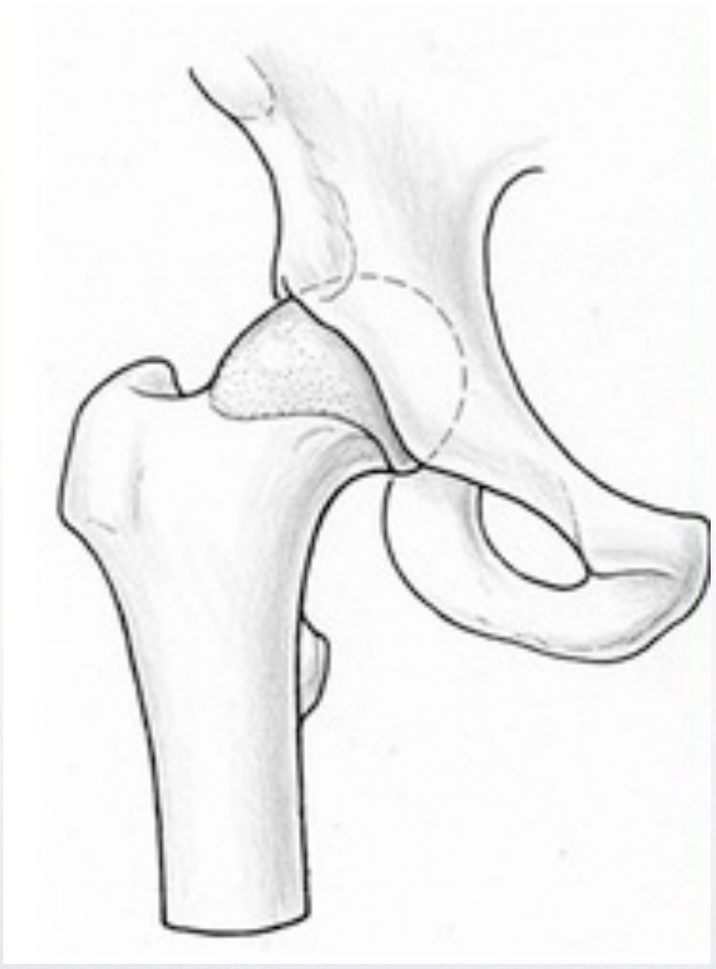
CFA

PROBLEME DYNAMIQUE

"Dynamic" femoroacetabular impingement causes acetabular rim damage

Ganz R, et al. **Femoroacetabular impingement: a cause for osteoarthritis of the hip.** CORR, 417:112, 2003

Physiopathologie du FAI



Mécanisme

Pathomorphologie

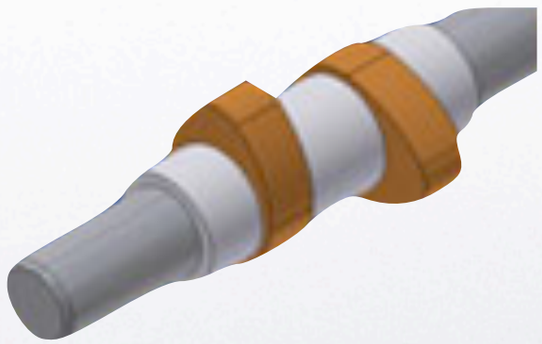
Mouvement

Pathomorphologie du FAI

Orientation et/ou profondeur acetabulaire

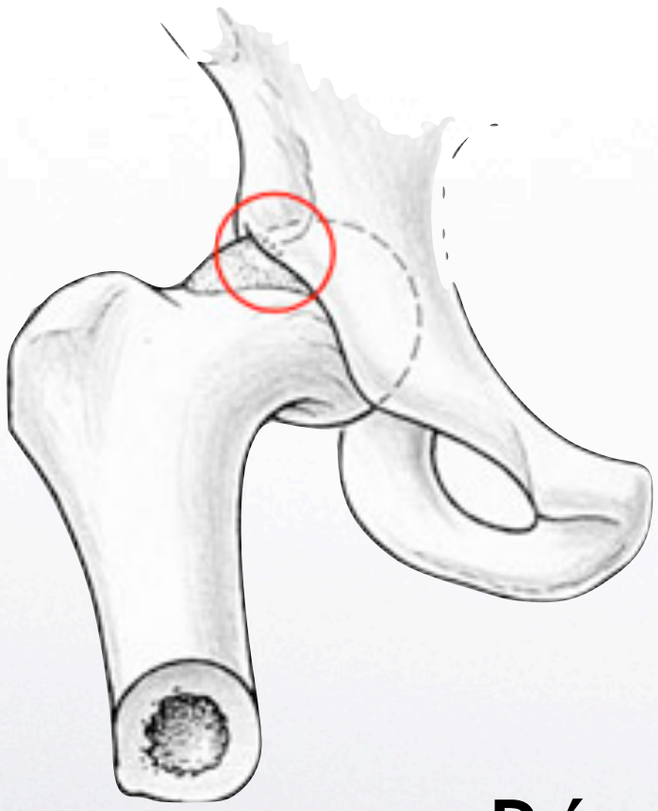
Pincer

Forme de la jonction tête-col



Cam

Physiopathologie du FAI



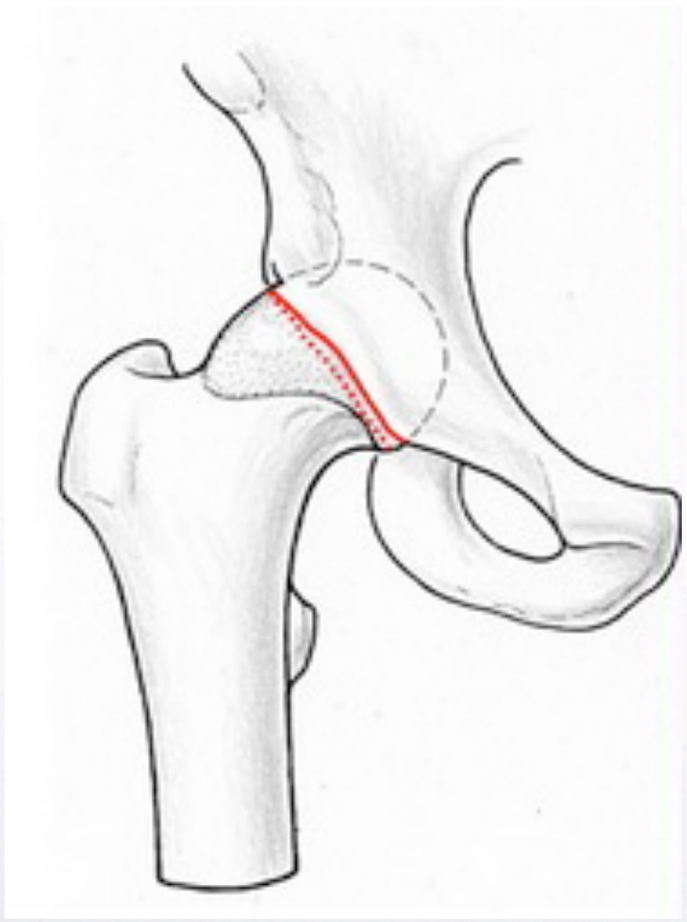
Dans les 2 cas le problème ce situe dans le quadrant A-S [1,2]

Le problème est dynamique et survient lors de la flexion-rotation interne [3]

Résultat: Lésion du rebord cotyloidien

1. Ito et al. Femoroacetabular impingement and the cam-effect. A MRI-based quantitative anatomical study of the femoral head-neck offset. J Bone Joint Surg Br. 2001 Mar;83(2):171-6
2. Nötzli et al. The contour of the femoral head-neck junction as a predictor for the risk of anterior impingement. J Bone Joint Surg Br. 2002 May;84(4):556-60.
3. Ganz R, et al. Femoroacetabular impingement: a cause for osteoarthritis of the hip. CORR, 417:112, 2003

Cotyle

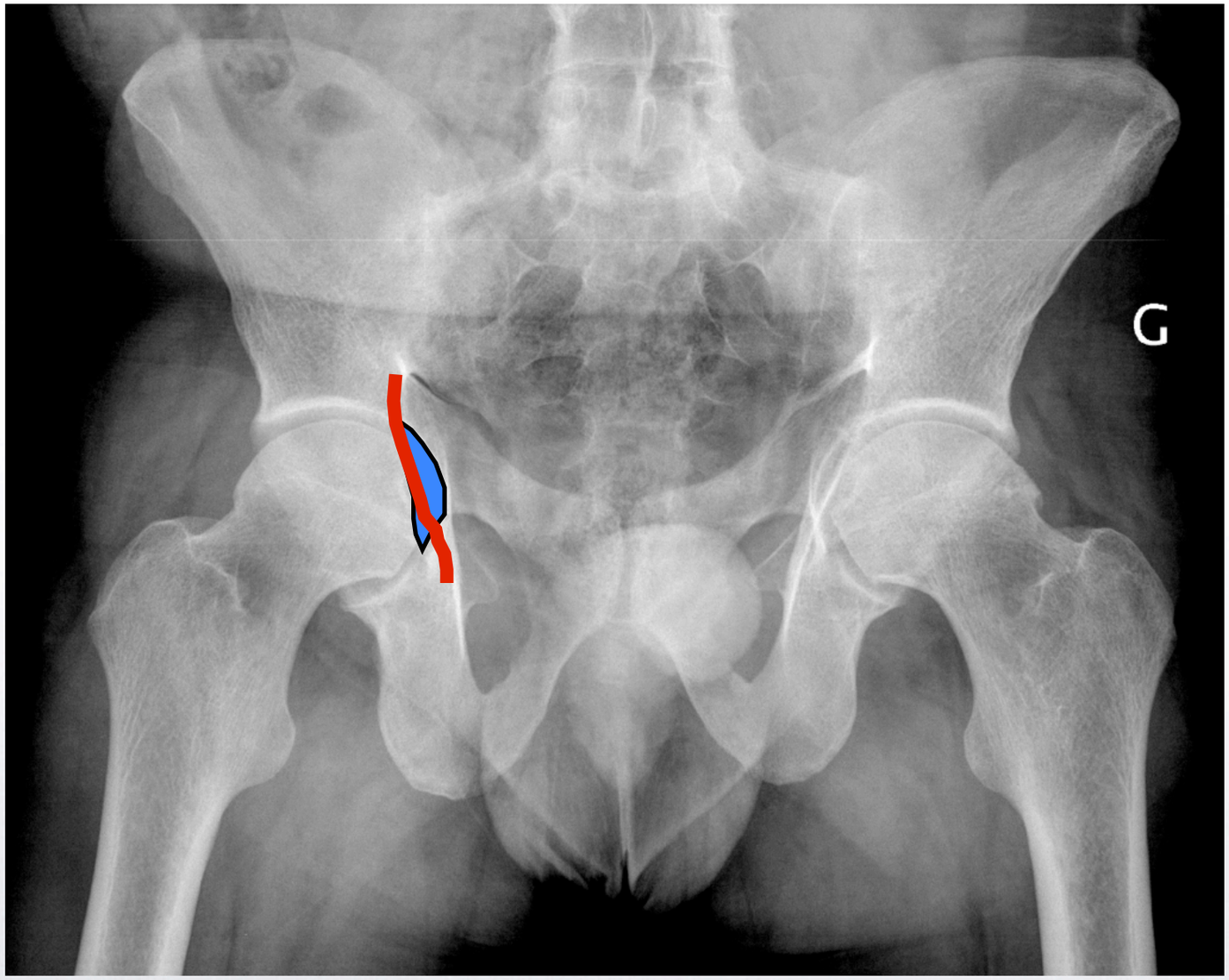


Problème d'orientation et/ou de profondeur acetabulaire

- Global
  - Profunda
  - Protrusio
- Segmentaire
  - Ant
    - Rétroversion
  - Post
    - Hypertrophie

Couverture excessive globale

Coxa profunda/ protrusio acetabuli



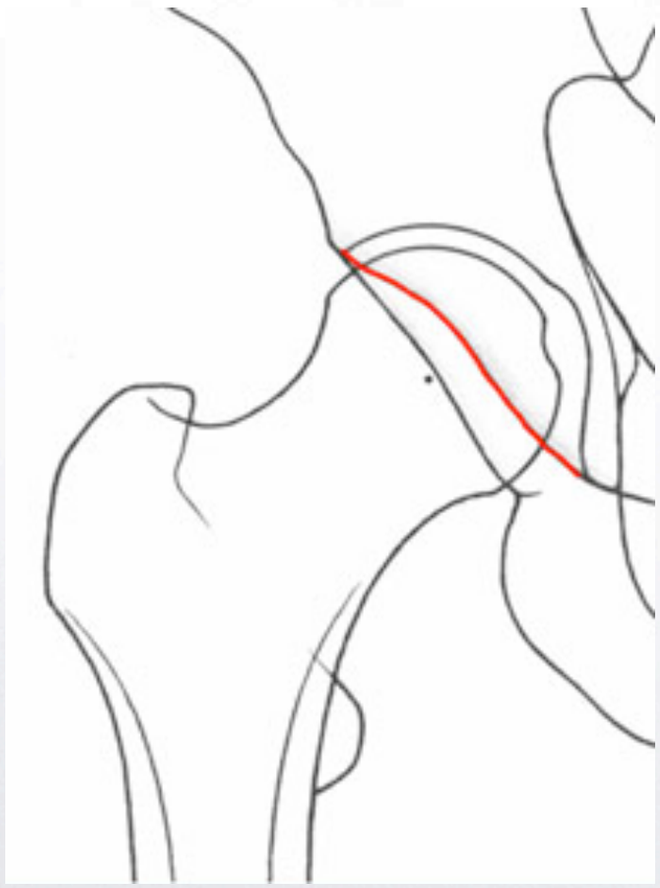
Prevalence: 20% des arthroses

F/M: 9:1

Bilateral: >95%

Rétroversion acétabulaire

Orientation physiologique du cotyle

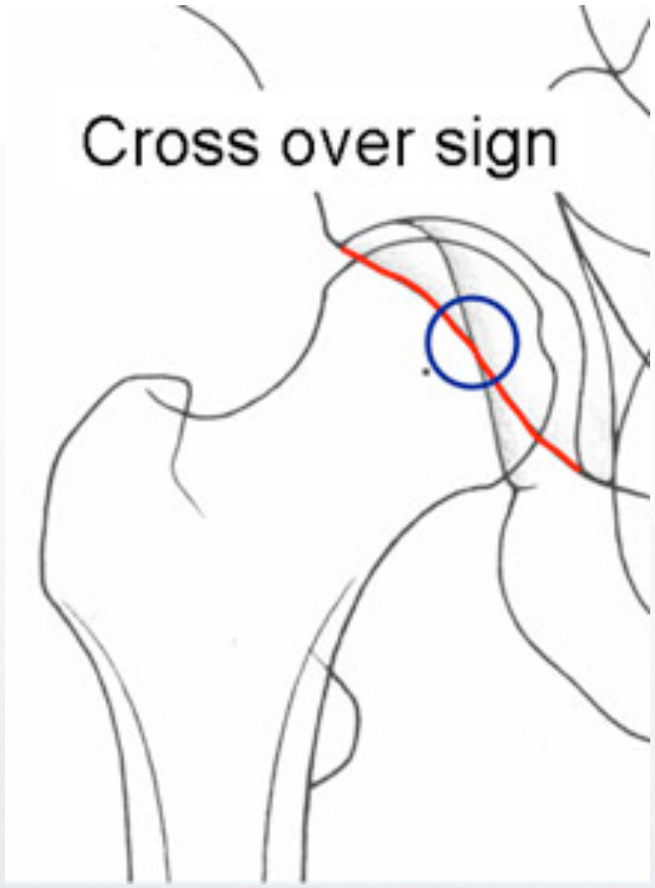


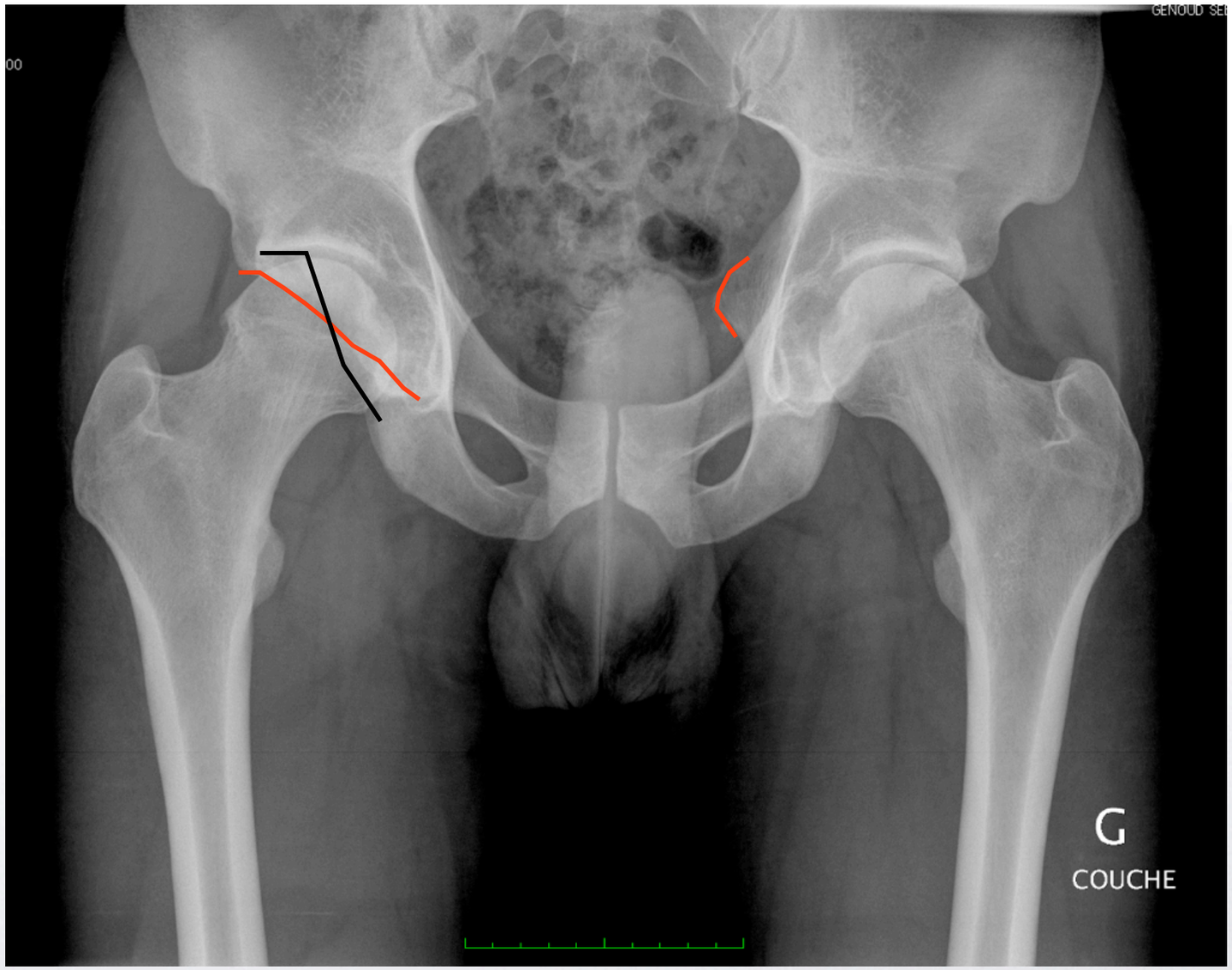
Anteversion

Augmente de cranial à caudal

env. 13-20deg

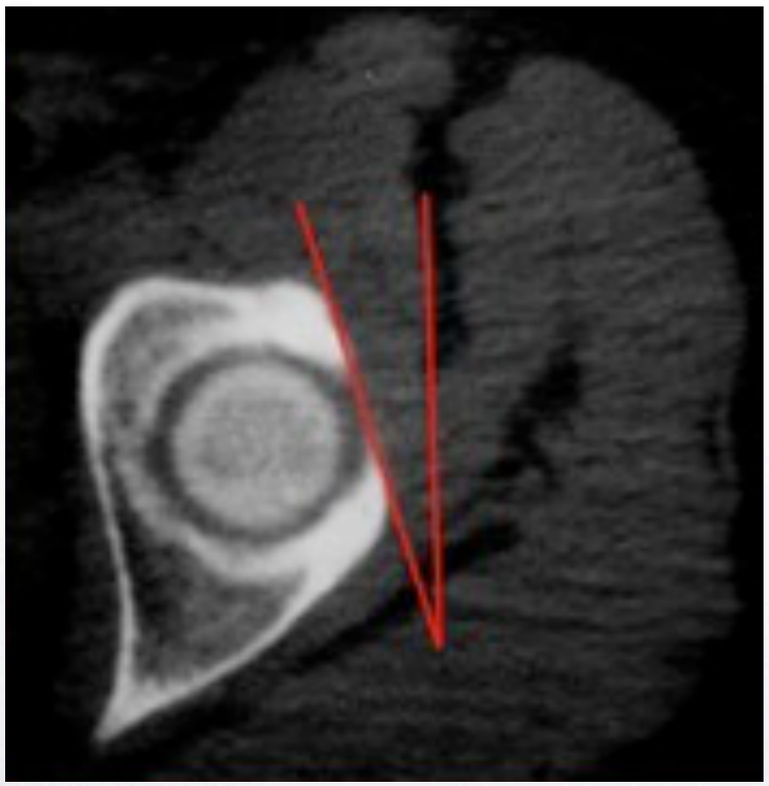
Rétroversion acétabulaire

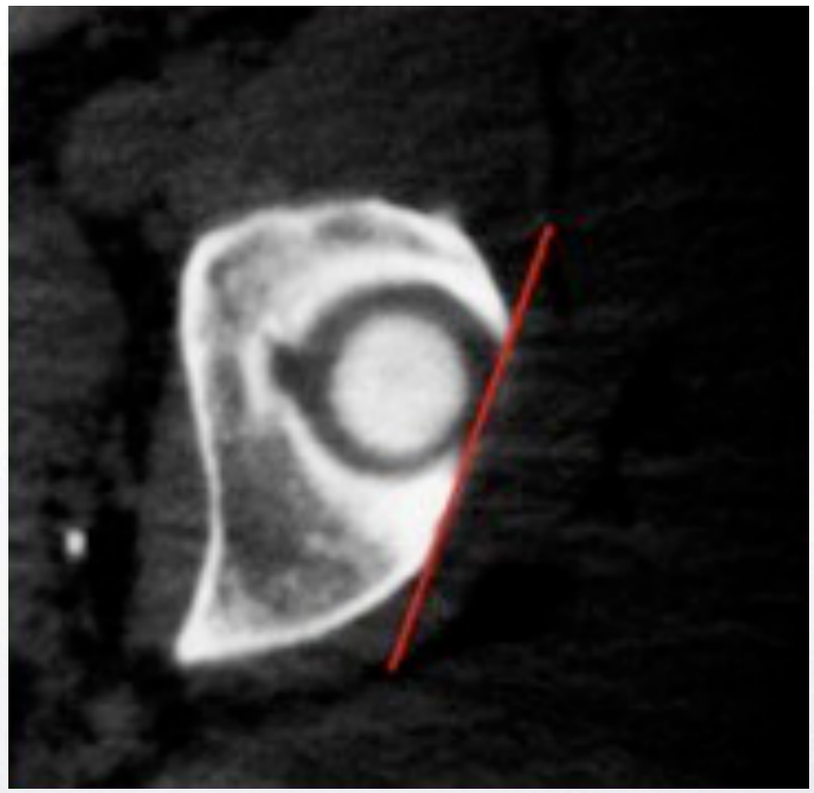




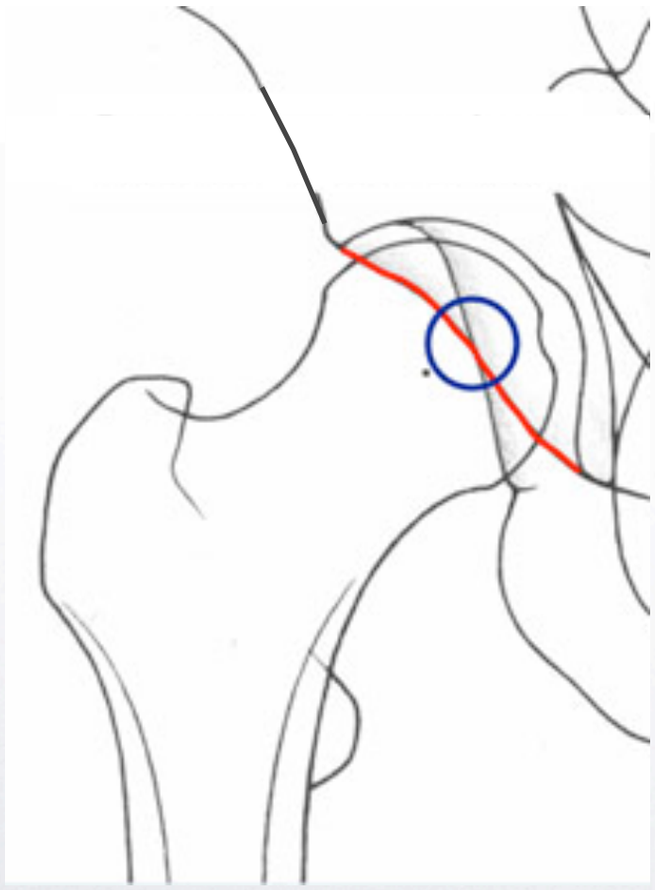
Reynolds D, et al ,Retroversion of the acetabulum. A cause of hip pain.JBJS, 81-B:281, 1999
Jamali AA, et al. Anteroposterior pelvic radiographs to assess acetabular retroversion: high validity of the cross-over sign. J Orthop Res. 2007;25:758-765
Kalberer F, et al. Ischial spine projection into the pelvis: a new sign for acetabular retroversion. CORR 2008;466:677-683

Rétroversion acétabulaire





Rétroversion acétabulaire



Causes

Idiopathique

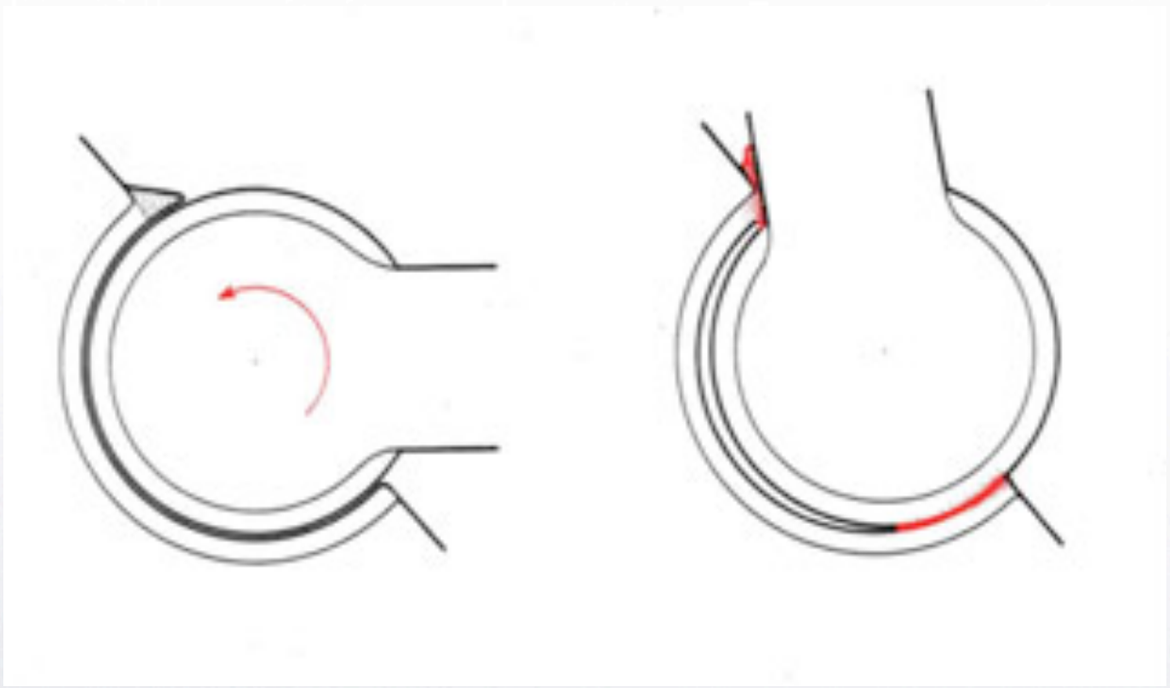
Prevalence: 22%
F/M: 1:14
Bilateral 80% [1]

Secondaire

DDH 18-36% [2,3]
Perthes 42% [4]
Trauma
Extrophie vésicale
Post op OT

1. Jamali AA, et al. Anteroposterior pelvic radiographs to assess acetabular retroversion: high validity of the cross-over sign. J Orthop Res. 2007;25:758-765
2. Mast J et al. Recognizing acetabular version in the radiographic presentation of hip dysplasia., 418:48, 2004
3. Li PL et al. Morphologic features of congenital acetabular dysplasia: one in six is retroverted. CORR, 416:245, 2003
4. Ezoe M, et al. The prevalence of acetabular retroversion among various disorders of the hip., 88-A: 372, 2006

Mécanisme lésionnel "Pincer"



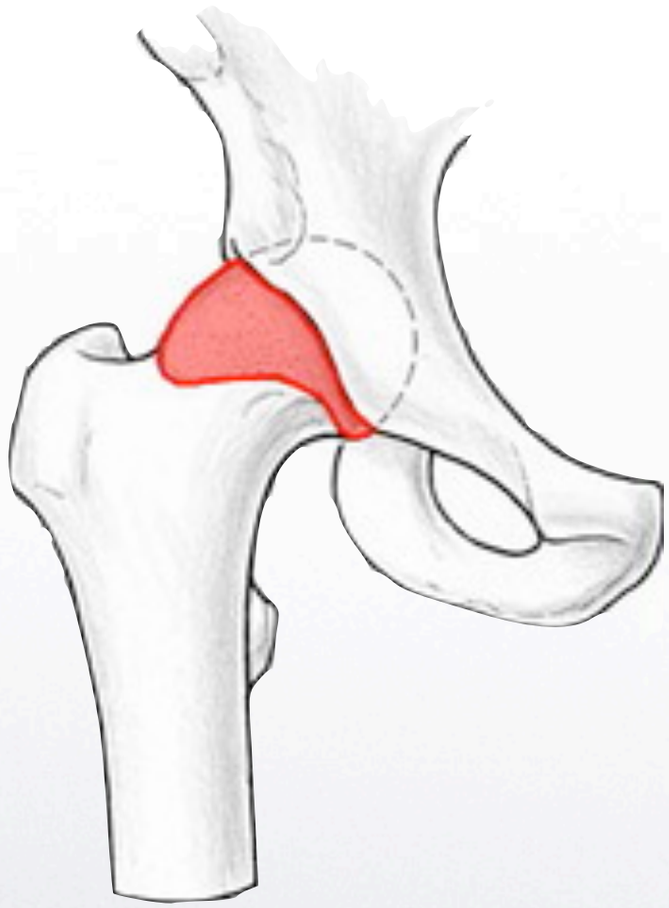
➡Le labrum est comprimé entre le rebord du cotyle et le col fémoral

➡En fin de course la force est transmise au cartilage

➡Empreinte dans la jonction tête-col

➡Délaminage labral

Fémur



Problème dans la jonction tête-col

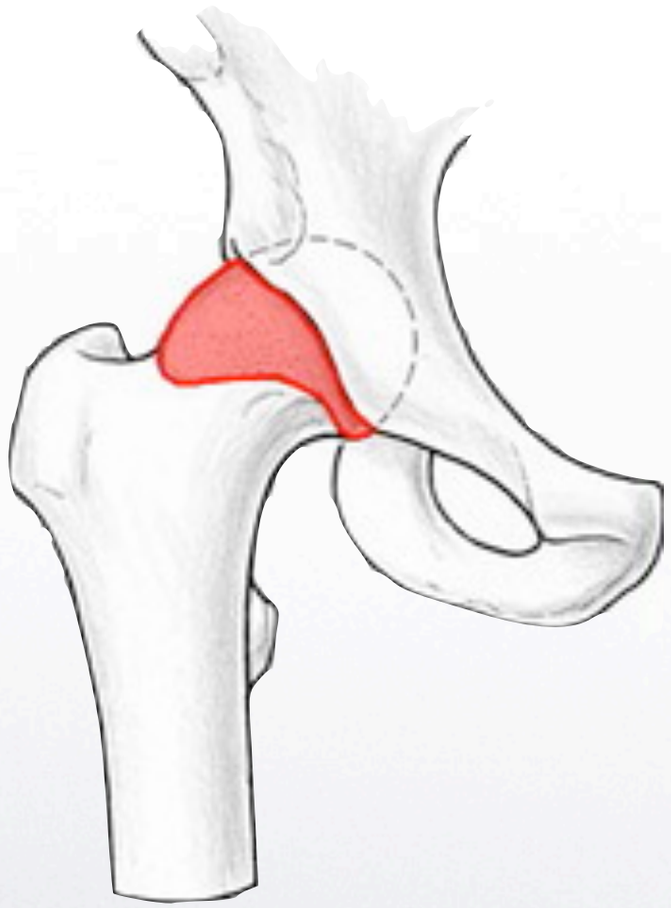
Tête fémorale non-sphérique

“Pistol grip”

Stulberg et al. **Unrecognized childhood hip disease: a major cause of idiopathic OA of the hip.** Meeting of hip society 1975

Fémur

Fémur



Causes

Idiopathique

Génétique?
Développement?

Secondaire

Perthes
Slip
DDH
Post trauma

Harris WH et al. **Etiology of osteoarthritis of the hip.** *Clin Orthop Relat Res.* (1986)

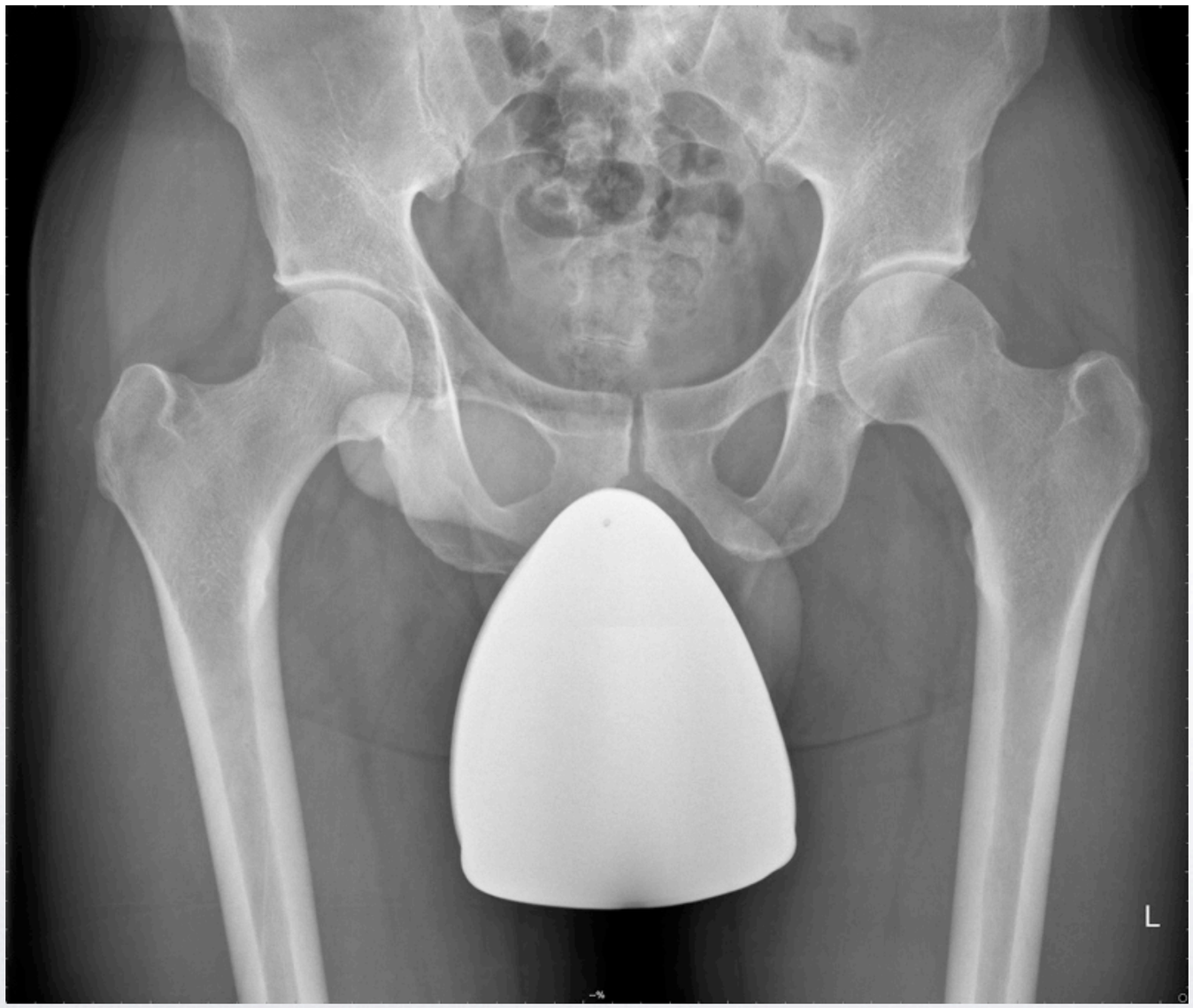
Goodman DA, et al. **Subclinical slipped capital femoral epiphysis. Relationship to osteoarthrosis of the hip.** J Bone Joint Surg Am. 1997 Oct;79(10):1489-97.

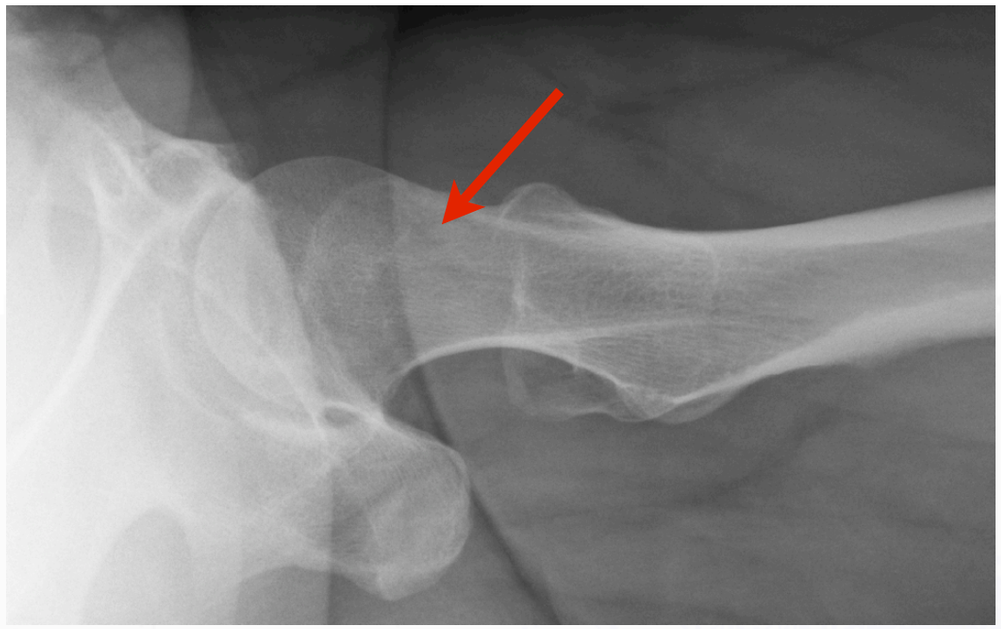
Stulberg et al. **Unrecognized childhood hip disease: a major cause of idiopathic OA of the hip**. Meeting of hip society 1975

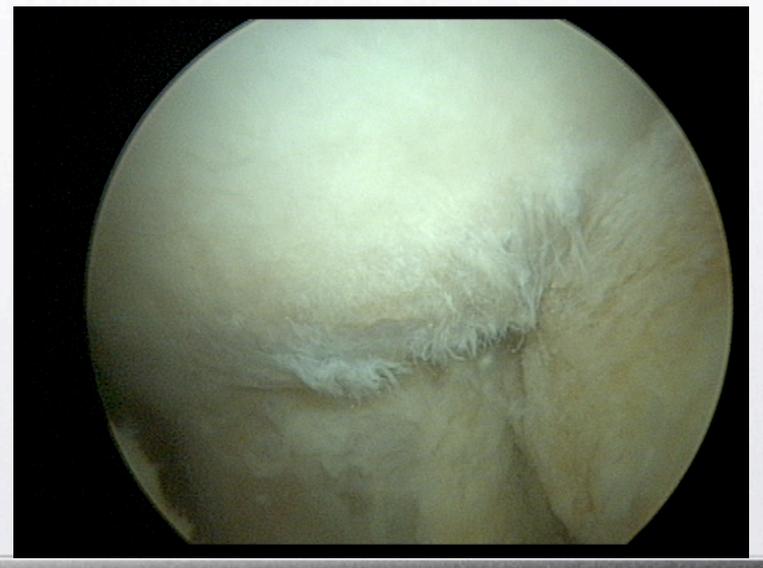
Murray RO. **The aetiology of primary osteoarthritis of the hip.** Br J Radiol. 1965 Nov;38(455):810-24.

Ganz et. al. **Cervico-acetabular impingement after femoral neck fracture**. Unfallchirurg 1991

Fémur







Dudda M, et al. **Do normal radiographs exclude asphericity of the femoral head-neck junction?** Clin Orthop Relat Res. 2009 Mar;467(3):651-9. Epub 2008 Nov 20.
Clohisy JC, et al. **Radiographic evaluation of the hip has limited reliability.Clin Orthop Relat Res.** 2009 Mar;467(3):666-75.

Asphéricité idiopathique

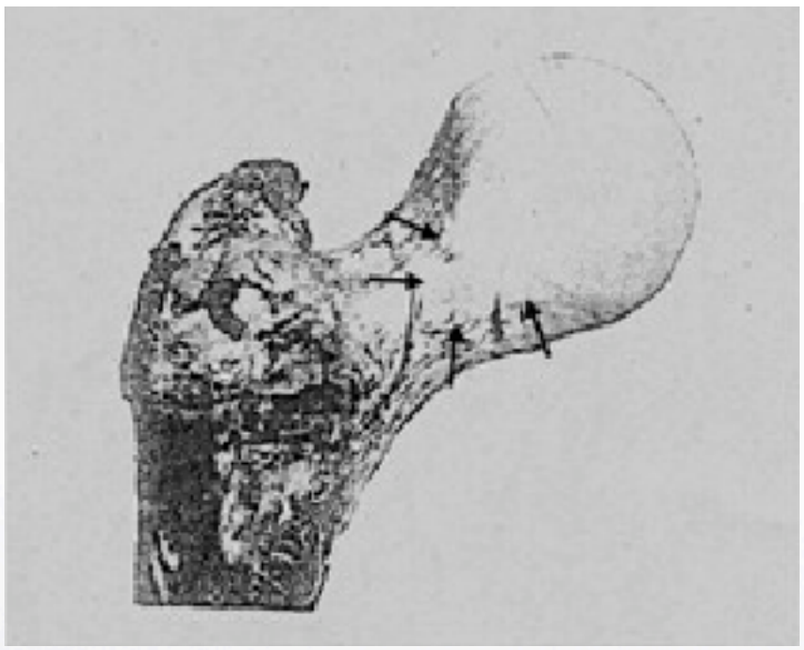
Prévalence: 25%

F/M: 1:12

Bilateral: 90%

Leunig M. et al. (accepted for publication 2008)

Nouvelle mode?



"...il existe une extension bizarre de cartilage sur le col fémoral antérieur..."[1]

The reaction area of the femoral neck [2]

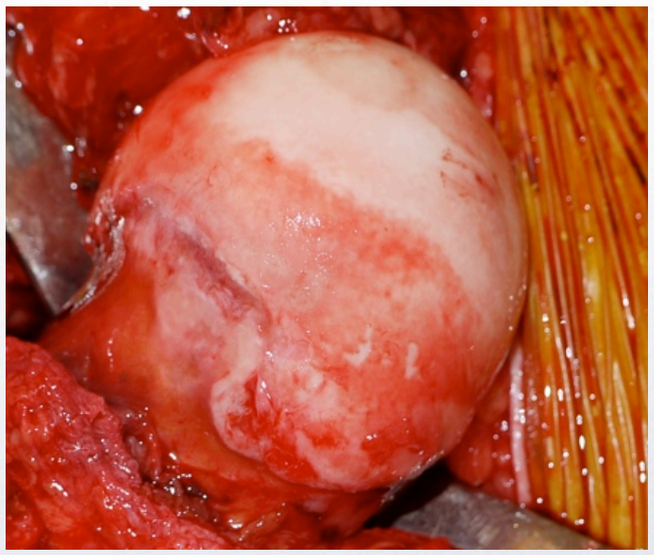
1.Sudeck P. **Zur Anatomie und Aetiologie der Coxa vara adolescentium** Clin Chirurg 1899; 59:504-24

2.Angel JL. **The reaction area of the femoral neck.Clin Orthop Relat Res.** 1964 Jan-Feb;32:130-42.

Cause génétique?

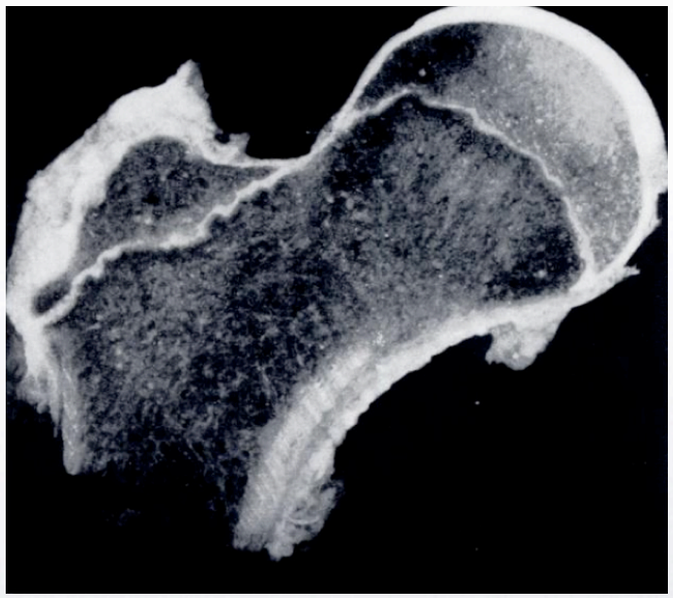
Cartilage hyalin sur la bosse [1]

Extension epiphysaire comme cause de CAM? [1,2]



1. Serrat MA.et al. **Variation in mammalian proximal femoral development: comparative analysis of two distinct ossification patterns.** J Anat. 2007 Mar;210(3):249-58
2. Siebenrock et al.**Abnormal extension of the femoral head epiphysis as a cause of cam impingement.** Clin Orthop Relat Res. 2004 Jan; (418):54-60.

Développement?



Lütken P. **On the development and growth of the long bones.Acta Orthop Scand.** 1957;26(4):319-21
Mau H. Z. **On the etiology and pathogenesis of ossification disorders of the femur neck and head**.Z Orthop Ihre Grenzgeb. 1962 Jul;96:156-63.

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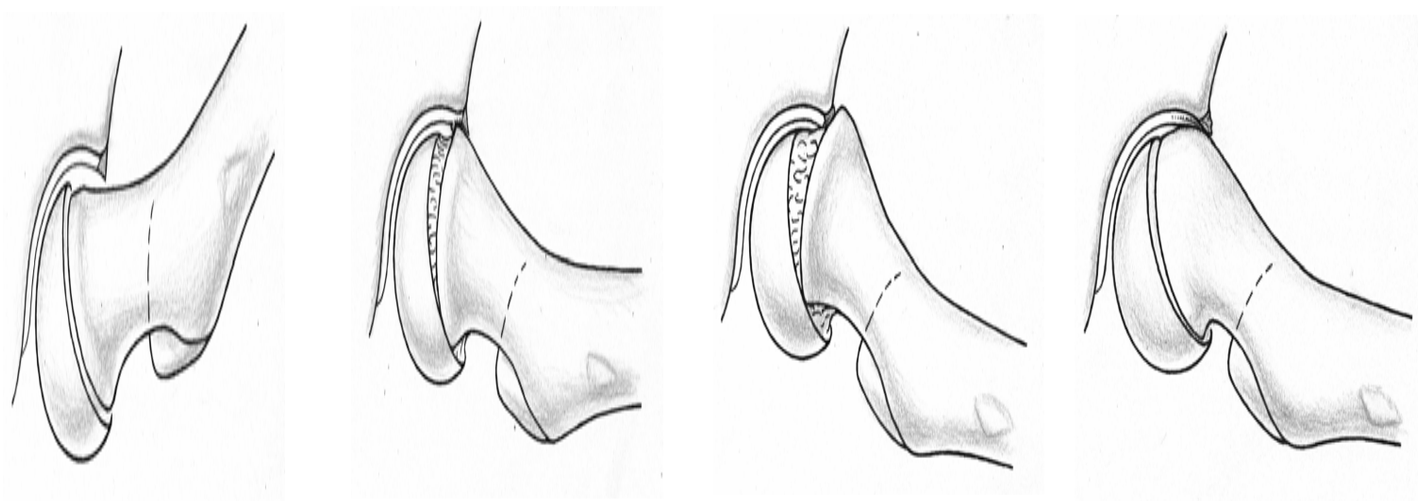
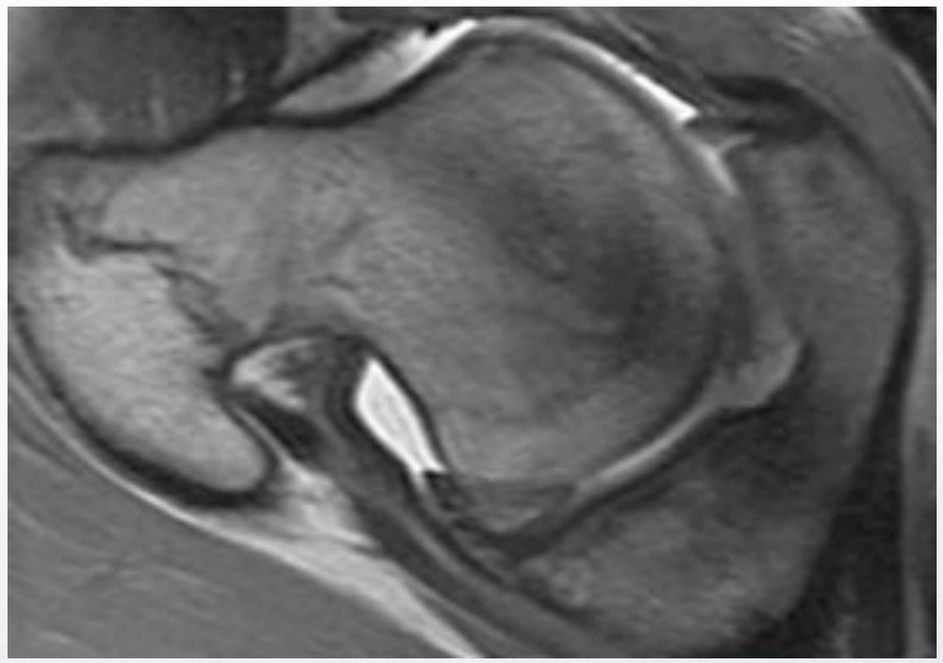
Epiphysiolyse

FAI bei der Epiphysiolyse

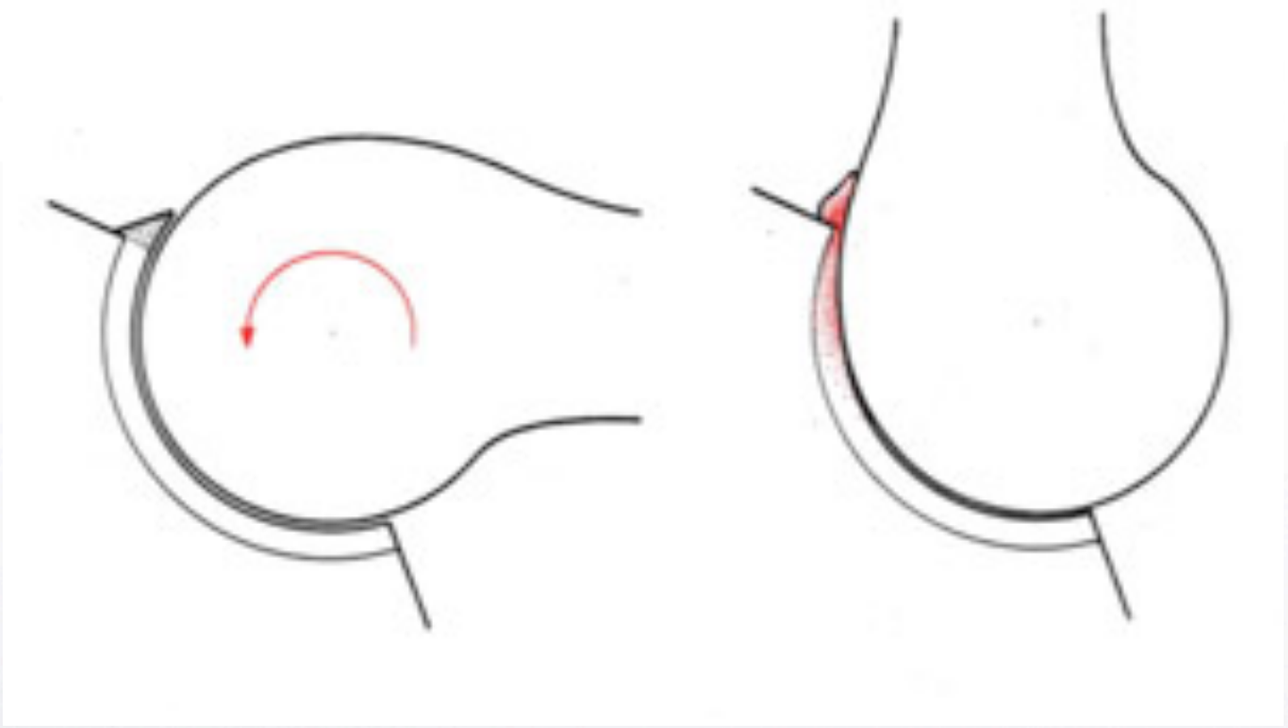


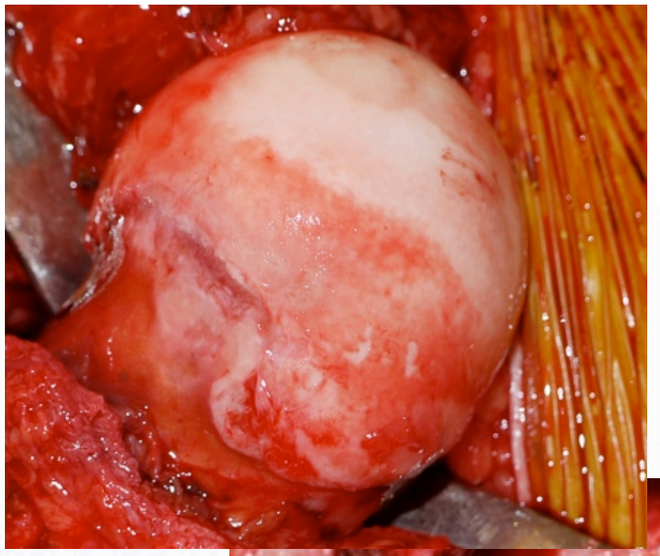
Leunig, M., et al. *Acta Orthop Scand,* **71:** 370, 2000.

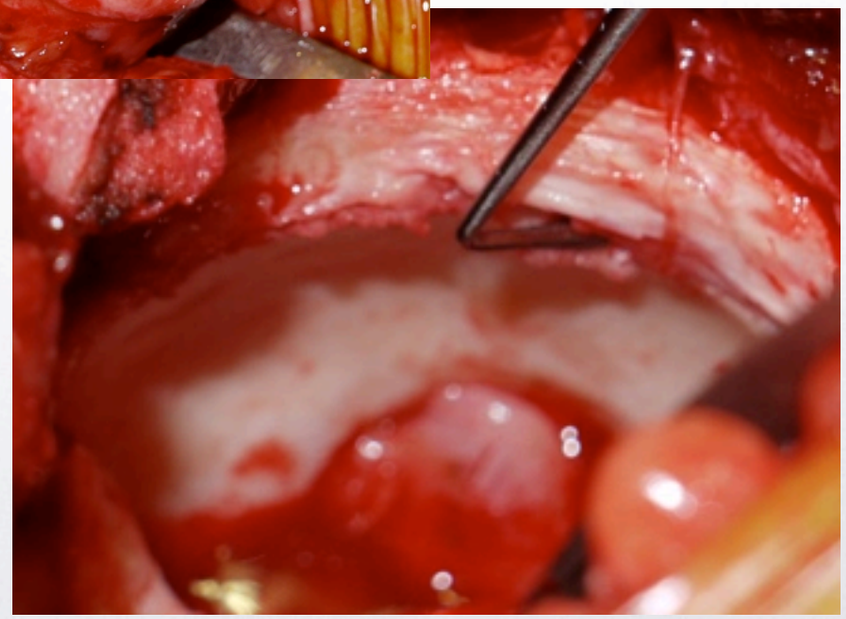
Perthes



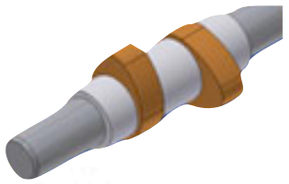
Mécanisme "cam"

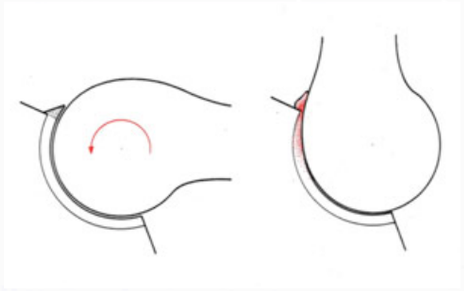




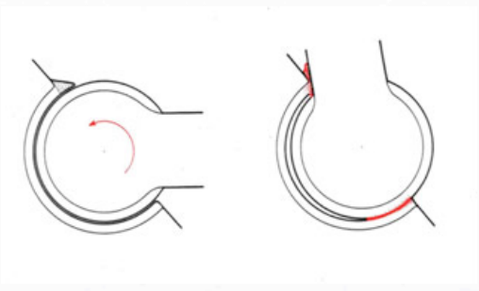


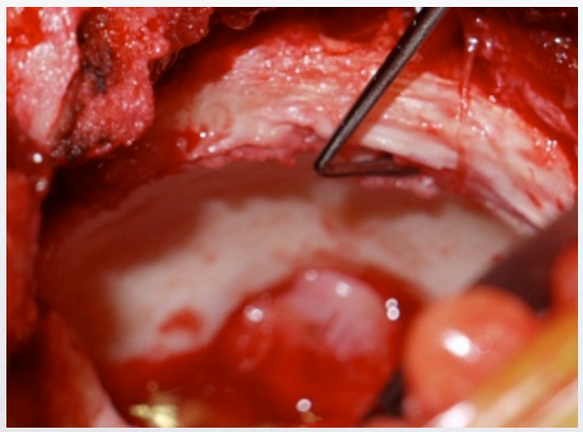
Mécanismes

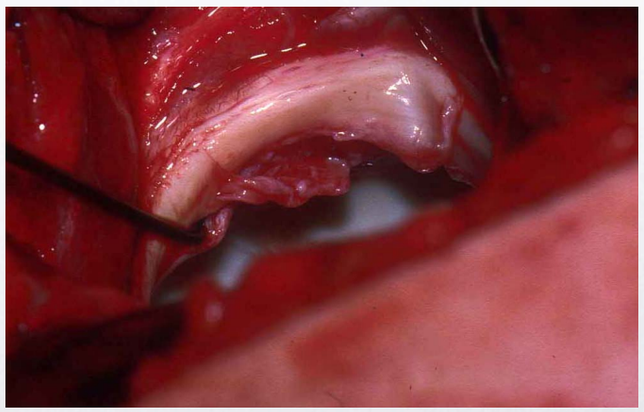




80%
association

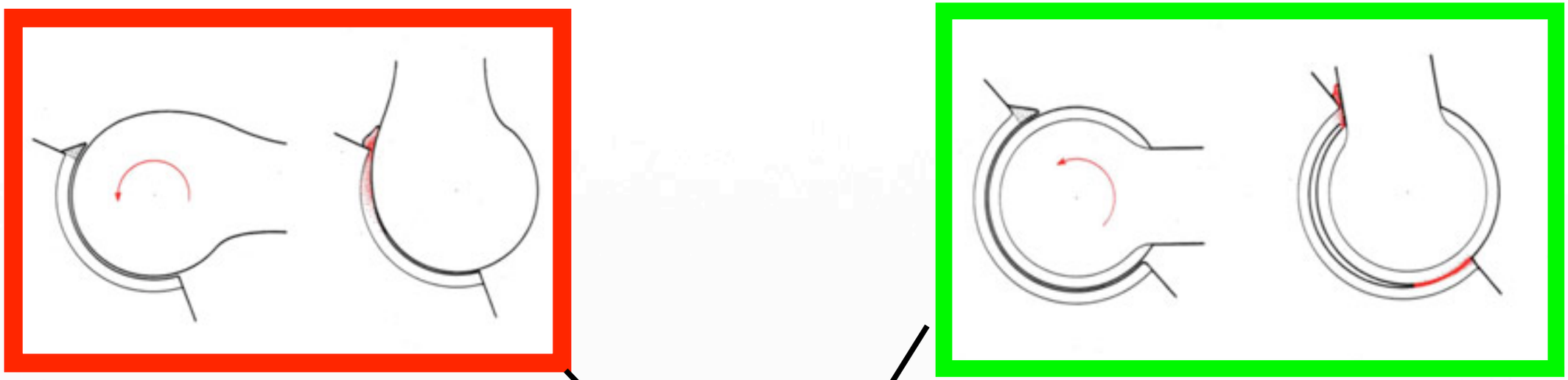


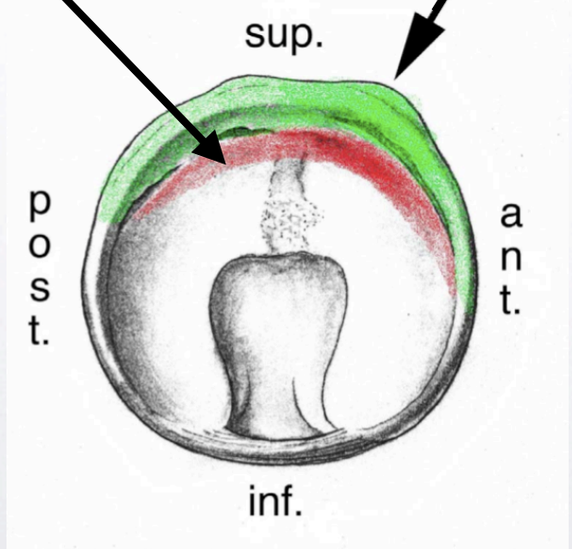


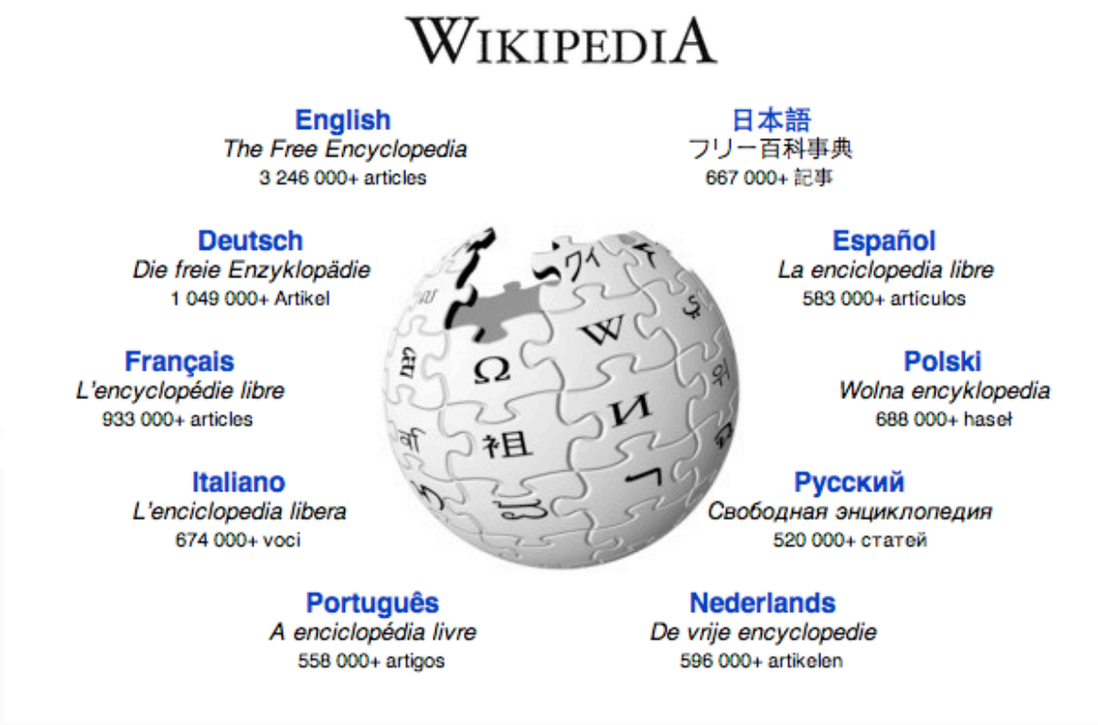


Beck M. et al. **Hip morphology influences the pattern of damage to the acetabular cartilage: femoroacetabular impingement as a cause of early osteoarthritis of the hip**. JBJS-Br, 87:1012-8, 2005

Dégâts







Osteoarthritis (OA, also known as degenerative arthritis, degenerative joint disease), is a condition in which low-grade inflammation results in pain in the joints, caused by **abnormal wearing of the cartilage** that covers and acts as a cushion inside joints and destruction or decrease of synovial fluid that lubricates those joints.

FAI- Coxarthrose

Le conflit F-A a été proposé comme cause de coxarthrose

Tönnis D, et al.**Acetabular and femoral anteversion: relationship with osteoarthritis of the hip.**JBJS, 81-A:1749, 1999
Reynolds D, et al **,Retroversion of the acetabulum. A cause of hip pain.**JBJS, 81-B:281, 1999
Giori NJ, Trousdale RT.**Acetabular retroversion is associated with osteoarthritis of the hip**.CORR, 417:263, 2003
Ganz R, et al.**Femoroacetabular impingement: a cause for osteoarthritis of the hip.**CORR, 417:112, 2003
Beck M. et al. Hip morphology influences the pattern of damage to the acetabular cartilage: femoroacetabular impingement as a cause of early osteoarthritis of the hip. JBJS-Br, 87:1012-8, 2005

Anamnèse

Jeune patient
M/F : 12/1
Douleurs au pli de l'aine

"...ça va passer..."

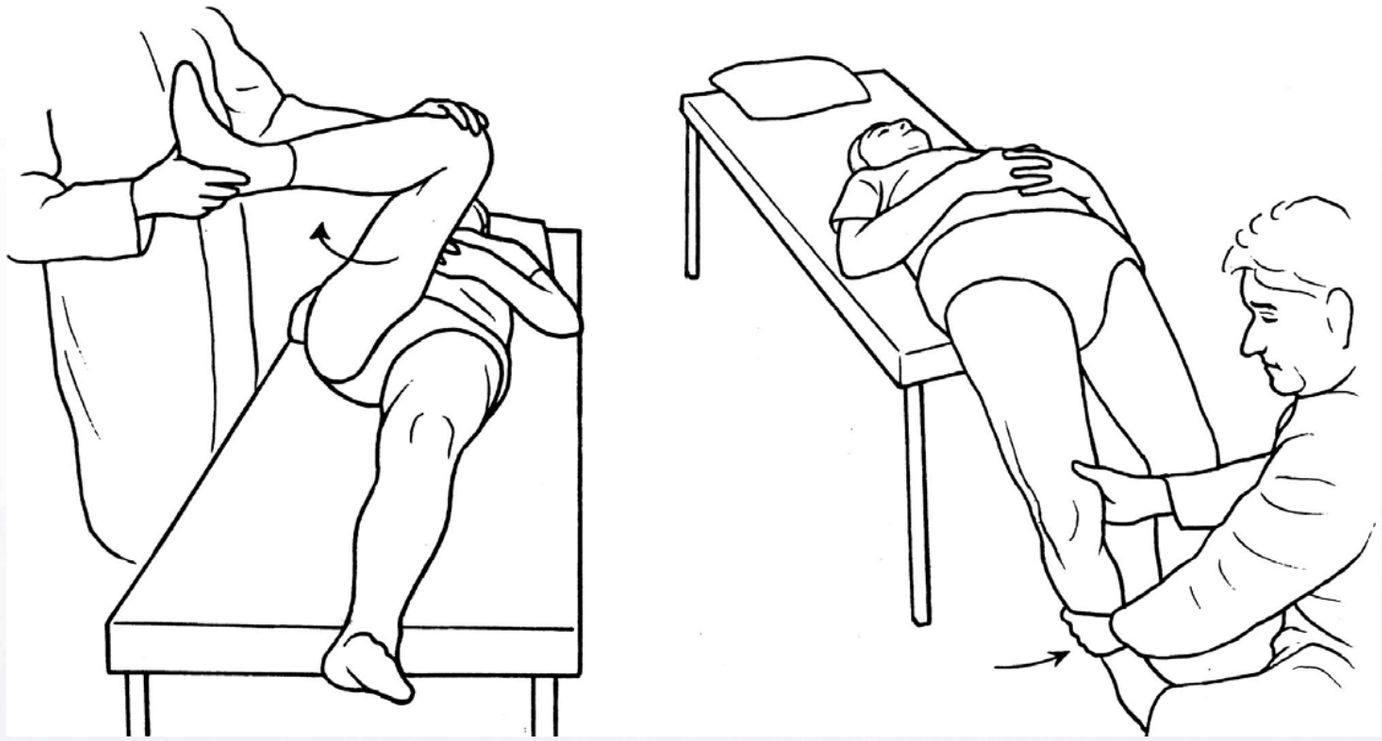
Examen clinique

Rotation interne réduite

Predicting radiographic hip osteoarthritis from range of movement.

Birrell, F., et al.
Rheumatol, 40:506,
2001.

Examen clinique

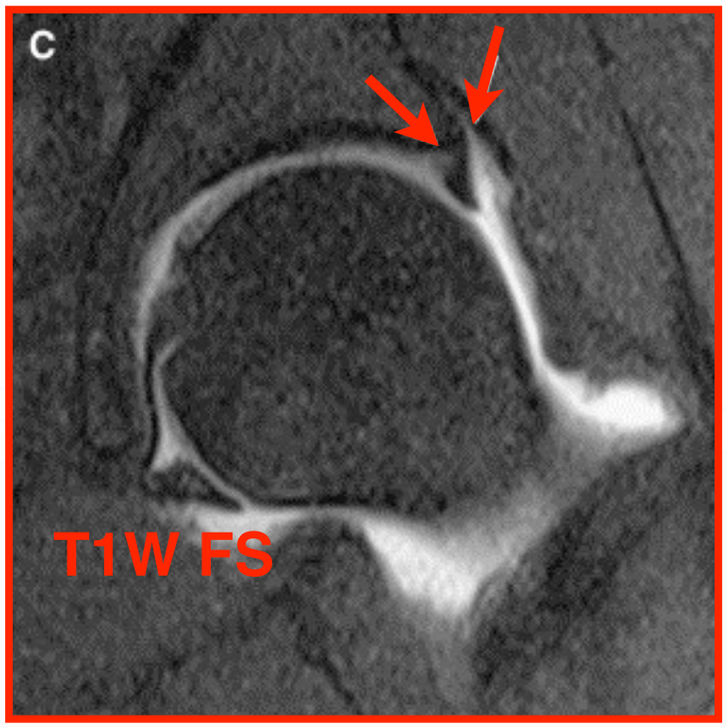


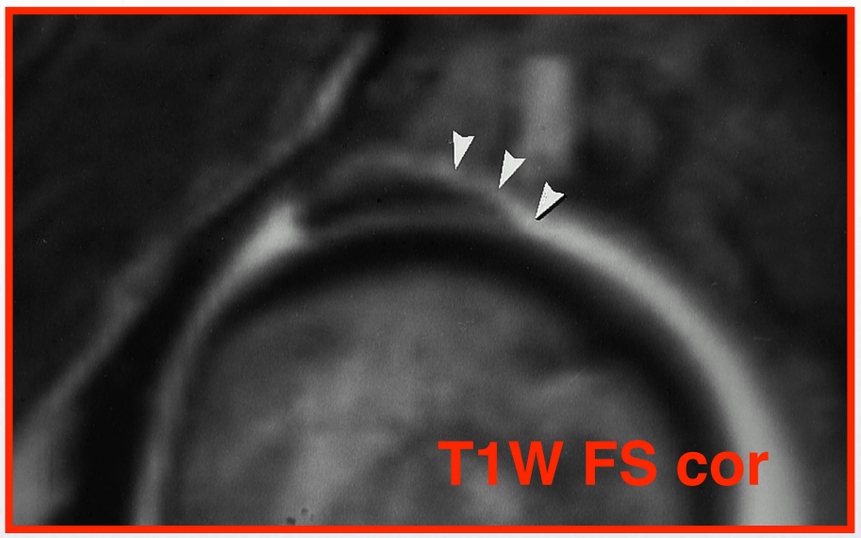
Tests de conflit positif

MacDonald, S.J., et al. Sem Arthroplast, 8:3, 1997.

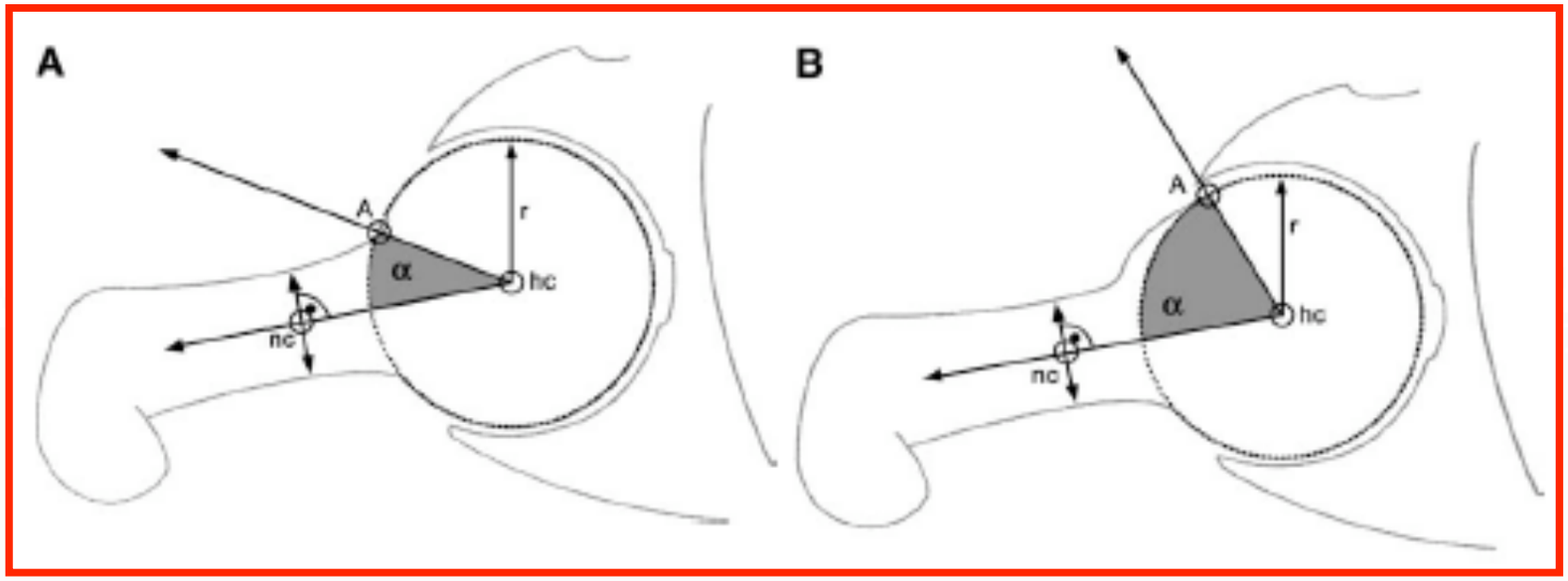
Bilan radiologique

Bassin de face
Axiale de hanche
Arthro IRM
Arthro-CT


C
T1W FS


T1W FS cor

Alpha angle



The alpha angle is defined by the line connecting the *center of the femoral head* and the *center of the femoral neck* at its narrowest point and the line connecting the *center of the femoral head* and the *point were* the distance between the bony contour of the femoral head and the center of the femoral haed *exceed the radius of the head*

Pathologic if > 50 °

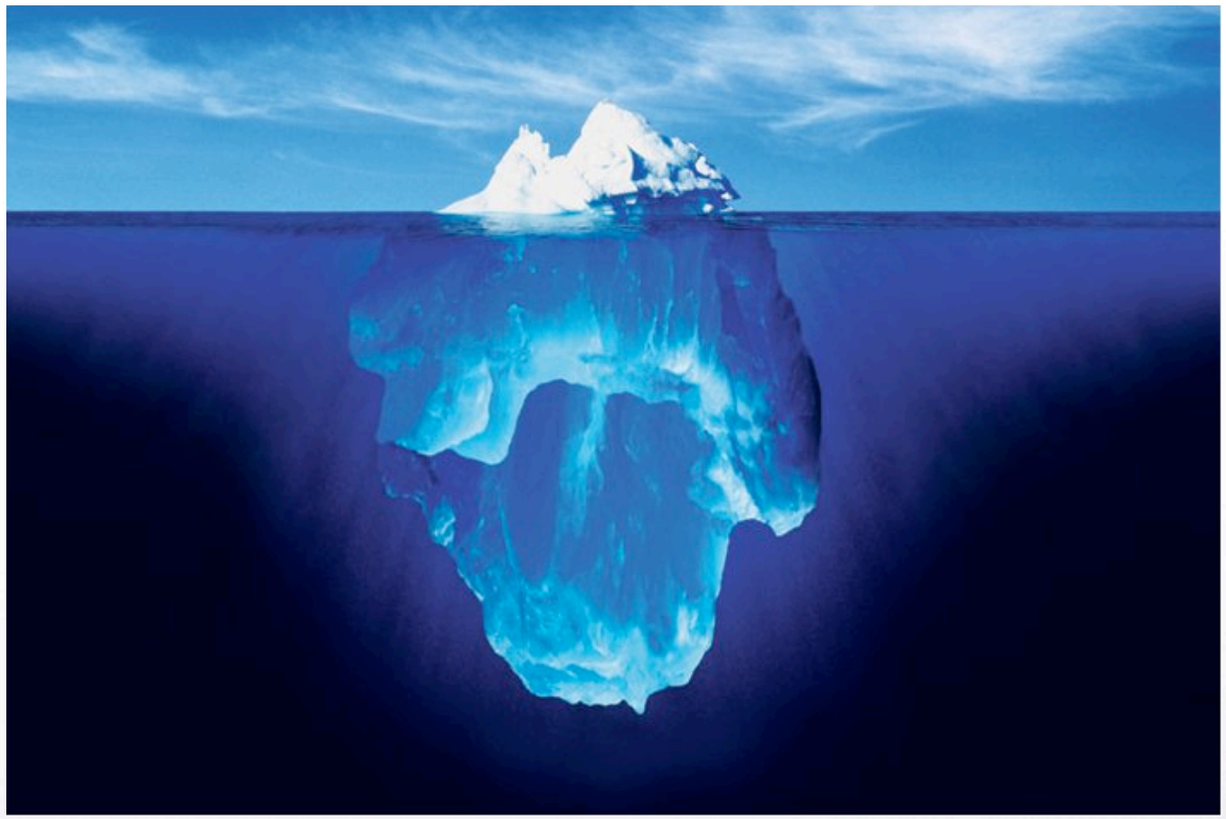
Notzli et al. The contour of the femoral head -neck junction as a predictor for the risk of anterior impingement; J Bone Joint Surg. Br 2002 may

Traitement des lésions labrales

Haut taux d'echec si l'origine de la lésion n'est pas traitée!

Heyworth BE, et al. Radiologic and intraoperative findings in hip arthroscopy. Arthroscopy 2007;23:1295-1302
Kim KC, et al. Influence of FAI on results of hip arthroscopy in patients with early OA. CORR 2007;456:128-132
Santori N. Acetabular labral tears: result of arthroscopic partial limbectomy. Arthroscopy. 2000 Jan-Feb;16(1):11-5.
Bardakos NV, et al. Early outcome of hip arthroscopy for femoroacetabular impingement: the role of femoral osteoplasty in symptomatic improvement. J Bone Joint Surg Br. 2008 Dec;90(12):1570-5.

Symptôme



Problème