Causes of Dislocation in THR

Debbie Lees

ST3

Background

* Dislocation remains a major complication of total hip replacement (THR) with revision procedures required in 13% to 42% of patients who recurrently dislocate.

* Dislocation rates following THR vary between 0.5% and 5%, depending in part on the initial indication for replacement.

* More than three-quarters of all such dislocations occur within the first postoperative year; 30% to 50% take place within the first three months.

* 74% posterior, 16% anterior, and 8% lateral

Factors affecting dislocations

* Patient risk factors
* Positional dislocations
* Soft tissue laxity
* Component malposition
* Component impingement
* Femoral head size
* Component subsidence
* Lateral / medial offset

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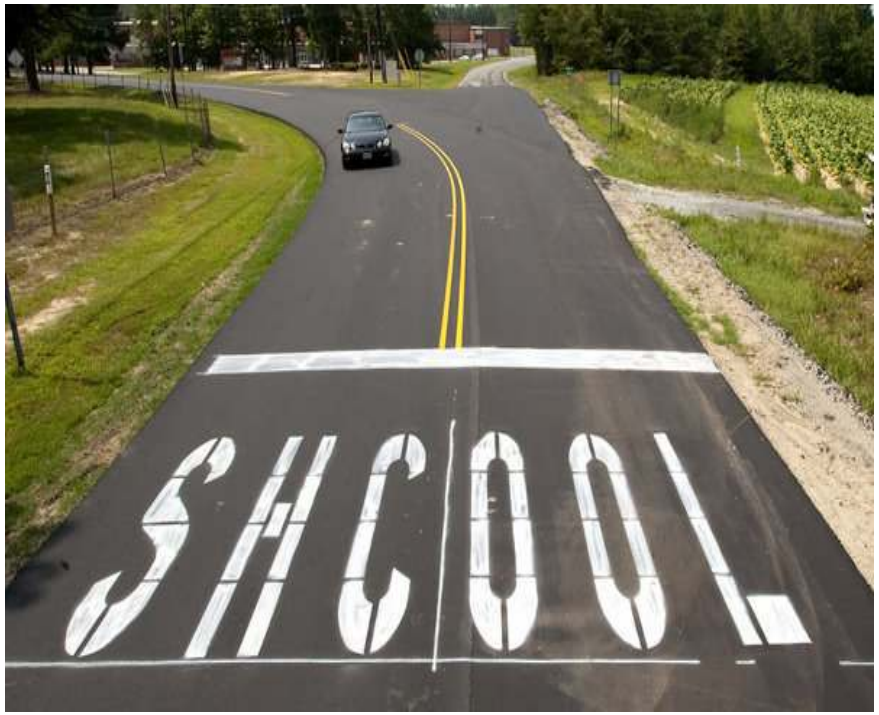

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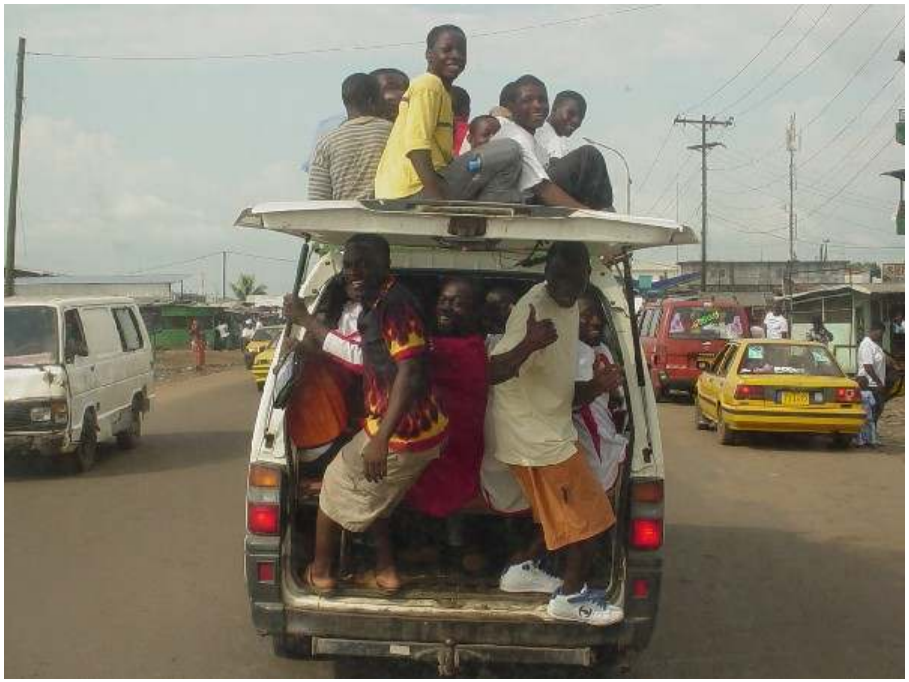

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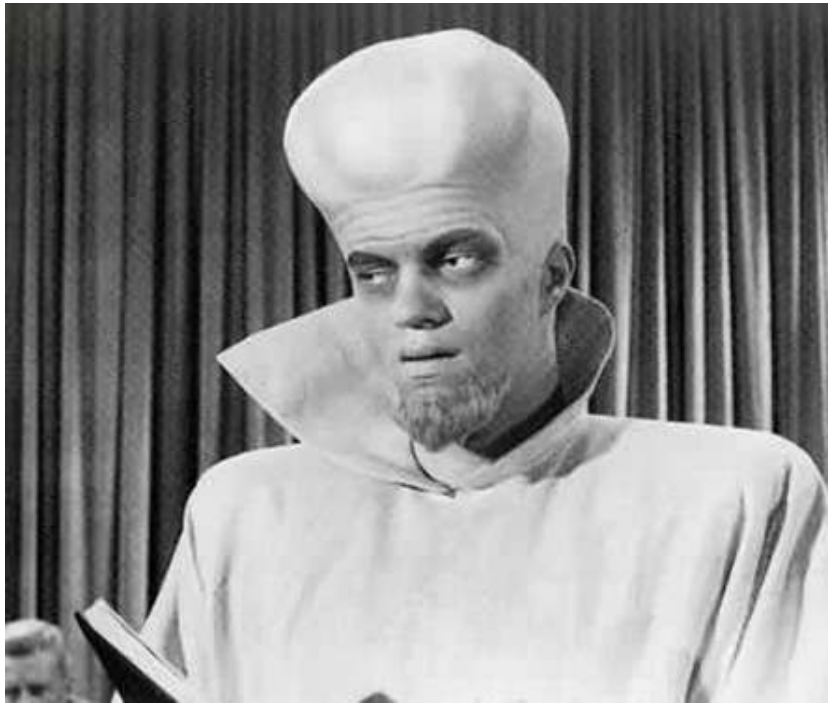

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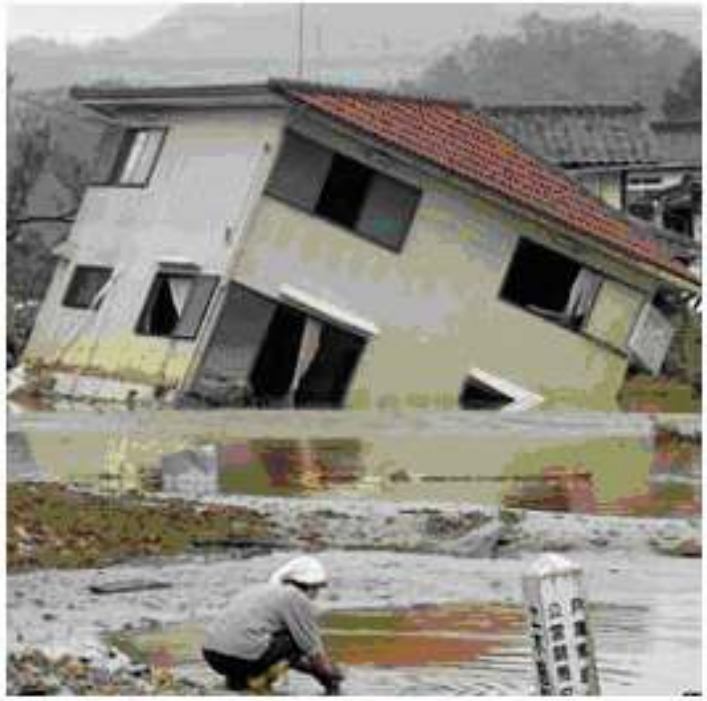

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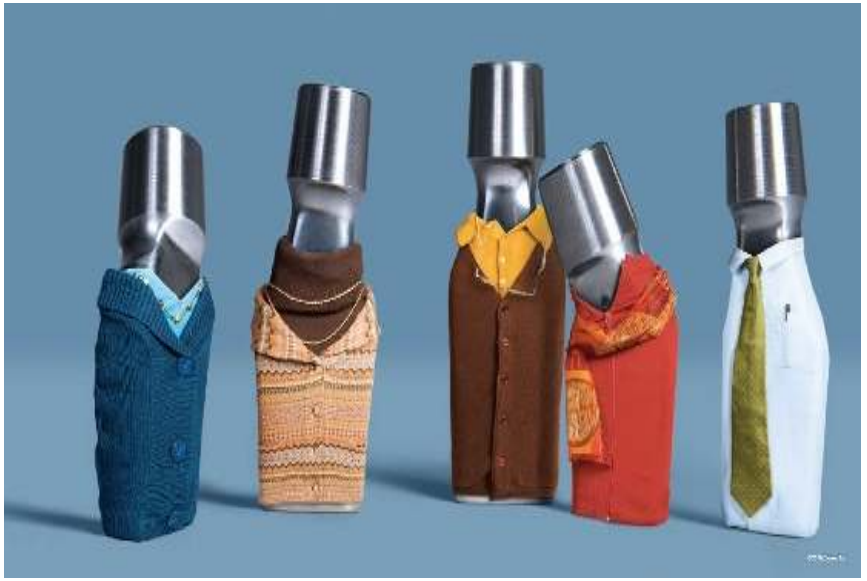

- **Patient risk factors**
  - Excessive alcohol intake (dislocation rate of up to 20 %)
  - In patients w/ DDH, risk of dislocation may be as high as 8%
- **Positional dislocations**
  - Components are positioned correctly & soft tissues are balanced
  - Patient puts the hip into a position that is beyond the range possible w/ prosthetic components
- **Soft tissue laxity**
  - Shortening in either vertical or horizontal direction causes soft tissue imbalance
  - Late dislocation may be related to gradual stretching of pseudocapsule
  - Laxity of soft tissue is most frequent cause of instability of THR when radiographs reveal good position of components
  - Trochanteric non union is another risk factor for dislocation because of soft tissue tension

* **Component malposition: (acetabular component)**
  * Safe position: 35 +/- 10 deg anteversion 40 +/- 10 deg abduction

* **Acetabular abduction angle**
  * Horizontal cup placement (less than 40 deg) may lead to early impingement in flexion
  * Impingement between neck and poly liner
  * Result can cause osteolysis, liner dislodgement, and component loosening

* **Version of acetabulum**
  * Unnoticed forward rotation of pelvis when surgical procedure is done in lateral position is one cause of mal-alignment of component that can result in an unnoticed retroversion position of cup

Version of femoral component;

- The femoral component should be neutral to 15 degrees of anteversion, small heads require less anteversion, no retroversion of the femoral component is allowed

Component impingement:

- Posterior dislocation may be caused by anterior osteophytes which protrude beyond the edge of the acetabular cup
- Anterior dislocation may be partially due to the presence of a high wall liner placed posteriorly

Over-medialization of the cup:

- More common in protrusio
- Over-medialization causes impingement of the femoral neck on the pelvis
- Management of this situation may involve use of a lateralized liner (high wall liner will not help this);
- Horizontal cup placement (less than 40 deg) may lead to early impingement in flexion
- In this case there is impingement between neck and poly liner;
- Result can cause osteolysis, liner dislodgement, and component loosening;

* **Femoral head size:**
  * Smaller diameter head (22-28 mm) allow less stress/torque but may result in increased central acetabular wear and dislocation;
  * Larger head sizes (32-36 mm) allow increased ROM and reduced dislocation, but have less net wall thickness for long term wear

* **Component subsidence:**
  * Limb length shortening is a known cause of dislocation

* **Lateral / medial offset:**
  * Lateralized femoral stem may be used to restore stability, but this may increase component micromotion;

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Thank You