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# SICOT

## e-Newsletter

### Exam Corner

#### Hips and Knees

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- 1) The anterior impingement test used for diagnosis of Femoroacetabular impingement includes:**
  - a) Passive flexion, abduction and external rotation of the affected hip
  - b) Passive flexion, adduction and internal rotation of the affected hip
  - c) Passive flexion, adduction and external rotation of the affected hip
  - d) Passive extension, abduction and external rotation of the affected hip
  - e) Passive flexion, abduction and internal rotation of the affected hip
  
- 2) Which of the following tests are used to diagnose the tightness in the iliotibial band?**
  - a) Duncan-Ely's test
  - b) Thomas test
  - c) FABER test
  - d) Ober's test
  - e) Trendelenburg test
  
- 3) The radiographic view which gives more information about the acetabular morphology is the?**
  - a) Cross-table lateral view
  - b) Frog lateral view
  - c) 90 degrees Dunn view
  - d) False profile view
  - e) 45 degrees Dunn view

**4) The following radiologic parameters are used to diagnose acetabular dysplasia EXCEPT?**

- a) Acetabular index
- b) Central edge angle
- c) Extrusion index
- d) Sharp's angle
- e) Meary's angle

**5) All the following statements are true about Periacetabular Osteotomy EXCEPT?**

- a) It preserves the acetabular vascularity
- b) It can be done through an abductor sparing approach
- c) It can be combined with hip arthrotomy to manage associated intra-articular pathology
- d) Patients require postoperative external immobilization
- e) It does not violate the posterior column of the acetabulum

**6) In the new generation ceramics, the improvement in the fracture toughness is attributed mainly to?**

- a) Alumina
- b) Chromium
- c) Zirconium
- d) Cobalt
- e) All of the above

**7) The pink colour of the new fourth generation ceramics is attributed to?**

- a) Alumina
- b) Chromium
- c) Zirconium
- d) Cobalt
- e) All of the above

**8) The most common cause of failed hip arthroscopy for Femoroacetabular impingement is?**

- a) The presence of underlying hip dysplasia
- b) The presence of degenerative changes
- c) Advanced age
- d) Persistent Femoroacetabular impingement
- e) Avascular necrosis of the femoral head

**9) Regarding bone cement, the following material can be used as a radio-opacifier?**

- a) Zirconium dioxide
- b) N,N-Dimethyl para-toluidine
- c) Methylmethacrylate
- d) Benzoyl peroxide
- e) Hydroquinone

**10) The following system is used to assess radiolucency around the cemented femoral stem?**

- a) Charnley and De Lee
- b) Gruen
- c) Paprosky
- d) Crowe
- e) Barrack

**11) Which of the following statements is true about the mechanism of failure of TKRs within the first five years of implantation?**

- a) Aseptic loosening is the commonest cause
- b) Failure rates of cemented TKRs are higher than cementless TKRs
- c) Infection and instability are the commonest causes
- d) Patellofemoral problems are the commonest cause
- e) Fractures and dislocations are the commonest causes

**12) Following an uncomplicated TKR procedure, the ESR typically remains high for?**

- a) Up to 3 weeks
- b) 3 to 6 weeks
- c) 6 to 12 weeks
- d) 3 to 6 months
- e) 6 to 12 months

**13) Following an uncomplicated TKR procedure, CRP routinely returns to normal value by?**

- a) 3 weeks
- b) 6 weeks
- c) 3 months
- d) 6 months
- e) 9 months

**14) Whilst investigating subtle ligamentous instability following TKR, if femorotibial contact position in deep flexion is substantially more anterior than in full extension, this suggests?**

- a) Weak quadriceps tendon
- b) Weak patellar tendon
- c) PCL instability
- d) Patellar maltracking
- e) Rotational instability

**15) Which of the following is NOT associated with patellar clunk?**

- a) Old generation of PS femoral component design
- b) Proximal placement of the patellar component
- c) Patella baja
- d) Anterior positioning of the tibial component
- e) Extended femoral component

**16) Which of the following is NOT a risk factor for arthrofibrosis following TKR?**

- a) Poor preoperative range of motion
- b) Component malposition
- c) Retained PCL
- d) Oversizing of the components
- e) Retained osteophytes

**17) All of the following have been utilised for restoration of the joint line in revision total knee arthroplasty EXCEPT:**

- a) Adductor and epicondylar ratios
- b) Medial epicondyle lies 20mm and lateral epicondyle 40 mm from the joint line
- c) Meniscal scar
- d) Inferior pole of the patella lies within 10 mm of joint line in mid flexion
- e) Top of the fibular head is around 15mm inferior to the joint line

**18) Which of the following is NOT an indication for a linked hinged design knee replacement?**

- a) Loss of collateral ligament support
- b) Uncontrolled hyperextension (e.g. neuromuscular pathology)
- c) Large flexion gap
- d) A type IIB defect according to the Anderson Orthopaedic Research Institute (AORI) classification
- e) Revision of previous hinges

**19) For successful patellar resurfacing minimum patellar bone stock required is:**

- a) 8 mm
- b) 10 mm
- c) 12mm
- d) 14 mm
- e) 16mm

**20) Which of the following is FALSE?**

- a) Proximal tibial cortical defects that exceed 5mm in depth and or > 30 % of cortical rim are best managed with modular augments
- b) Augments translate compressive loads to the proximal tibia
- c) Isolated small cavity defects that are less than 5 mm in depth on both the femur and the tibia can be managed with cement alone
- d) Linked hinged components have no role in major bone defects
- e) The Anderson Orthopaedic Research Institute (AORI) classification depends on the amount of supportive metaphyseal bone involving the femoral condyle or tibial plateau

**Answers:**

- 1) Answer: b) Passive flexion, adduction and internal rotation of the affected hip

Reference: J McCarthy et al. "Hip Joint Restoration, Worldwide Advances in Arthroscopy, Arthroplasty, Osteotomy and Joint Preservation Surgery". Springer Science, Business Media LLC 2017. DOI 10.1007/978-1-4614-0694-5

- 2) Answer: d) Ober's test

Reference: J McCarthy et al. "Hip Joint Restoration, Worldwide Advances in Arthroscopy, Arthroplasty, Osteotomy and Joint Preservation Surgery". Springer Science, Business Media LLC 2017. DOI 10.1007/978-1-4614-0694-5

- 3) Answer: d) False Profile view

In general, the anteroposterior pelvic and false profile views provide the most information about acetabular morphology, whereas the lateral and Dunn views highlight pathoanatomy of the proximal part of the femur.

Reference: John C. Clohisy. "A Systematic Approach to the Plain Radiographic Evaluation of the Young Adult Hip" J Bone Joint Surg Am. 2008 Nov 1; 90 (Suppl 4): 47–66.

- 4) Answer: e) Meary's angle

Meary's angle is the angle between a line drawn from the centres of longitudinal axes of the talus and the first metatarsal.

Reference: Moritz Tannast et al. "What Are the Radiographic Reference Values for Acetabular Under- and Overcoverage?" Clin Orthop Relat Res. 2015 Apr; 473(4): 1234–1246.

- 5) Answer: d) Patients require postoperative external immobilization

PAO is an inherently stable osteotomy and does not violate the posterior column of the acetabulum. Therefore, patients typically do not require external mobilisation.

Reference: M. B. Millis and M. McClincy. Periacetabular osteotomy to treat residual dysplasia in adolescents and young adults: indications, complications, results. J Child Orthop. 2018 Aug 1; 12(4): 349–357.

6) Answer: c) Zirconium

Zirconium constitutes approximately 17% of the new fourth generation ceramics and it is responsible for improvement of their toughness properties due to phase transformation which arrest crack propagation.

Reference: RJ Napier "Ceramic-on-ceramic bearings in total hip arthroplasty: "The future is now". Seminars in Arthroplasty Volume 27, Issue 4, December 2016, Pages 235-238

7) Answer: b) Chromium

Chromium constitutes approximately 0.3% of new fourth generation ceramics and it is responsible for improving their wear properties and it gives the ceramics their pink colour.

Reference: P White et al. "Ceramic-on-polyethylene: The experience of the Ranawat Orthopaedic Center". SEMINARS IN ARTHROPLASTY 24(2013)206–210

8) Answer: d) Persistent Femoroacetabular impingement

The most common cause of failure of hip arthroscopy is inadequate bony resection (persistent/unaddressed FAI).

Reference: L. Bogunovic et al. "Why Do Hip Arthroscopy Procedures Fail?" Clinical Orthopaedics and Related Research®, August 2013, Volume 471, Issue 8, pp 2523–2529

9) Answer: a) Zirconium dioxide

Reference: Steffen J. Breusch and Henrik Malchau. "The Well-Cemented Total Hip Arthroplasty Theory and Practice". Springer Berlin Heidelberg New York. 2005.

10) Answer: b) Gruen

According to Gruen's classification, radiolucency is assessed in 7 zones around the cemented femoral stem.

Reference: Steffen J. Breusch and Henrik Malchau. "The Well-Cemented Total Hip Arthroplasty Theory and Practice". Springer Berlin Heidelberg New York. 2005.

11) Answer: c) Infection and instability are the commonest causes

Aseptic loosening is the commonest cause of late failure. The failure rates of uncemented TKRs are higher than cemented TKRs in the early years after knee replacements.

Reference: Revision total hip & knee arthroplasty, D Berry: Mechanism of failure in total knee arthroplasty. P 425-7

12) Answer: d) 3 to 6 months

Reference: Revision total hip & knee arthroplasty, D Berry: Evaluation of painful TKR. P 431

13) Answer: a) 3 weeks

Reference: Revision total hip & knee arthroplasty, D Berry: Evaluation of painful TKR. P 431

14) Answer: c) PCL Instability

Clinically this is typically manifested by chronic pain particularly in deep flexion activities such as stair descent or chair transfer.

Reference: Revision total hip & knee arthroplasty, D Berry: Evaluation of painful TKR. P 432

15) Answer: e) Extended femoral component

Patellar clunk syndrome occurs due to development of a suprapatellar fibrous nodule on the superior aspect of quadriceps tendon. During deep flexion this nodule becomes entrapped within the intercondylar notch of the femoral component and then clunks out as the knee extends. All of the above except an extended femoral component are associated with this condition.

Reference: Revision total hip & knee arthroplasty, D Berry: Evaluation of painful TKR. P 433

16) Answer: c) retained PCL

A tight PCL can lead to a stiff TKR not a retained PCL

Reference: Revision total hip & knee arthroplasty, D Berry: The Aseptic, failed total knee arthroplasty, Indications for revision. P 445



17) Answer: b) Medial epicondyle lies 20mm and lateral epicondyle 40 mm from the joint line  
The normal distance for the medial epicondyle to the joint line is around 30 mm and lateral epicondyle 25 mm.

Reference: 1) Revision total hip & knee arthroplasty, D Berry: Preoperative planning and prosthetic choices. P 453. 2) Miller Review of Orthopaedics 6<sup>th</sup> Edition P 408

18) Answer: d) A type IIB defect according to The Anderson Orthopaedic Research Institute (AORI) classification

A type IIB defect includes metaphyseal bone damage affecting the femoral condyles or tibial plateaus and can usually be treated using cement fill, augments or bone grafting. Large flexion gap is an indication to use linked hinged implants due to the risk of dislocation in flexion. Also mobile bearing designs of hinged implants show superior results than fixed bearings.

Reference: Revision total hip & knee arthroplasty, D Berry: Preoperative planning and prosthetic choices. P 456

19) Answer: c) 12 mm

Reference: Revision total hip & knee arthroplasty, D Berry: Preoperative planning and prosthetic choices. P 459

20) Answer: d) Linked hinged components have no role in major bone defects

Linked hinged prostheses are used in major bone defects but have 2 disadvantages. They remove the bone rather than restore it and make the construct prone for aseptic loosening due to poor bone stock.

Reference: Revision total hip & knee arthroplasty, D Berry: Major bone defect management. P 506