

---

The Journal of Bone & Joint Surgery  
Continuing Medical Education

CME

Review Questions

---

January, February, March  
2002

1. **Magnetic resonance imaging of fibrolipomatous hamartoma of the nerve is diagnostic, obviating the need for biopsy. Both T1 and T2-weighted images show longitudinally oriented, cylindrical regions of signal voids. Which of the following tissues represents the signal voids?**
- fatty tissue
  - arteries
  - veins
  - nerve fascicles and surrounding fibrosis**
  - fascial bands
- Ogose A, Hotta T, Higuchi T, Katsumi N, Koda H, Umezue H. Fibrolipomatous hamartoma in the foot: magnetic resonance imaging and surgical treatment. A report of two cases. *J Bone Joint Surg Am.* 2002;84:432-436.
2. **To minimize stresses in the polyethylene insert on the tibial side of a total knee arthroplasty, the recommended minimal thickness of the insert is:**
- 3 mm
  - 6 mm**
  - 13 mm
  - 15 mm
  - 17 mm
- Edwards SA, Pandit HG, Ramos J, Grover ML. Analysis of polyethylene thickness of tibial components in total knee replacement. *J Bone Joint Surg Am.* 2002;84:369-71.
3. **The recommended initial treatment for an infant with a congenital clubfoot is:**
- early comprehensive soft-tissue release to allow for early remodeling of the deformed tarsal bones
  - range-of-motion exercises until the child is large enough for a comprehensive soft-tissue release
  - serial manipulation and casts**
  - preliminary Achilles tenotomy followed by serial manipulation and casts
  - observation until the severity of the involvement is established, followed by limited surgical correction, depending upon what requires correction
- Cummings RJ, Davidson RS, Armstrong PF, Lehman WB. Selected Instructional Course Lecture. Congenital clubfoot. *J Bone Joint Surg Am.* 2002;84:277-288
4. **Reverse oblique intertrochanteric fractures in the elderly are most successfully treated with which of the following methods:**
- Ilizarov-type external fixation
  - compression hip screw
  - 95° fixed-angle screw-plate
  - intramedullary fixation device**
  - hemiarthroplasty
- Sadowski C, Lübbecke A, Saudan M, Riand N, Stern R, Hoffmeyer P. Treatment of reverse oblique and transverse intertrochanteric fractures with use of an intramedullary nail or a 95° screw-plate. A prospective, randomized study. *J Bone Joint Surg Am.* 2002;84:372-381.
5. **Which of the following factors is most important in prognosticating whether a child with lumbosacral agenesis will walk:**
- spinopelvic fusion
  - dislocation of the hips
  - distal articulation of the lumbar spine**
  - muscle contractures
  - scoliosis
- Guille JT, Benevides R, DeAlba CC, Siriam V, Kumar SJ. Lumbosacral agenesis: a new classification correlating spinal deformity and ambulatory potential. *J Bone Joint Surg Am.* 2002;84:32-38.
6. **Which factor is most important when selecting the best procedure for local control in patients with osteosarcoma who have sustained a pathologic fracture?**
- anatomic location
  - fracture displacement
  - response to chemotherapy**
  - tumor size
  - histologic subtype
- Scully SP, Ghert MA, Zurakowski D, Thompson RC Jr, Gebhardt MC, in representation of the Musculoskeletal Tumor Society. Pathologic fracture in osteosarcoma. Prognostic important and treatment implications. *J Bone Joint Surg Am.* 2002;84:49-57
7. **Developmental dysplasia of the hip is one of the most common causes of secondary osteoarthritis. To prevent osteoarthritis, eccentric rotational acetabular osteotomy should be considered for young patients. Which of the following factors is not a prerequisite for this operation?**
- center-edge angle of less than 15° and discontinuity of Shenton's line
  - terminal stage of osteoarthritis**
  - age between fifteen and sixty years
  - joint congruity and femoral head coverage in maximum abduction
  - unsuccessful nonoperative treatment for at least six months
- Hasegawa Y, Iwase T, Kitamura S, Yamauchi K-I, Sakano S, Iwata H. Eccentric rotational acetabular osteotomy for acetabular dysplasia. Follow-up of one hundred and thirty-two hips for five to ten years. *J Bone Joint Surg Am.* 2002;84:404-410.
8. **With regard to decreasing symptoms, improving function, and allowing a full return to preinjury activity, a successful anterior cruciate ligament reconstruction is best achieved by:**
- autogenous bone-patellar tendon-bone graft
  - semitendinosus and gracilis graft
  - semitendinosus and gracilis graft with loose extra-articular reinforcement
  - any of the above three techniques**
  - allograft
- Evidence based orthopaedics. Three surgical methods of anterior cruciate ligament reconstruction were equally effective. *J Bone Joint Surg Am.* 2002;84:323.
9. **When using a jumbo femoral head to treat recurrent dislocation following total hip replacement, what minimum ratio of the femoral head diameter to the acetabular shell diameter appears critical to optimize hip stability?**
- less than 0.2

B. less than 0.5

C. **greater than 0.5**

D. greater than 1

E. greater than 2

**Beaulé PE, Schmalzried TP, Udomkiat P, Amstutz HC.** Jumbo femoral head for the treatment of recurrent dislocation following total hip replacement. *J Bone Joint Surg Am.* 2002;84:256-263

**10. All of the following are relative indications for treatment of a displaced acetabular fracture with an acute total hip arthroplasty EXCEPT:**

A. displaced comminuted fracture involving more than 40% of the femoral head

B. **T-type acetabular fracture with acetabular protrusion**

C. impaction of the acetabulum involving more than 40% of the articular surface

D. full-thickness abrasive loss of more than 40% of the articular surface of the femoral head

E. acetabular fracture with articular comminution producing more than ten fragments

**Mears DC, Velyvis JH.** Acute total hip arthroplasty for selected displaced acetabular fractures. Two to twelve-year results. *J Bone Joint Surg Am.* 2002;84:1-9.

**11. An eighty-one-year-old man has undergone biopsy of a femoral mass that is consistent with Ewing sarcoma on immunohistochemical analysis. Which of the following tests will best aid in confirmation of the diagnosis?**

A. **cytogenic analysis looking for a t(11:22) balanced translocation**

B. cell culture with analysis of growth characteristics

C. gross examination of the tissue specimen for texture and tissue quality

D. repeat biopsy from the periphery of the tumor

E. epithelial membrane antigen test

**Levine R, Bono CM, Benevenia J, Hameed M, Blacksin M, Cathcart C, Pavlick A.** Ewing sarcoma in an octogenarian. A case report. *J Bone Joint Surg Am.* 2002;84:445-448.

**12. Revision surgery after primary soft-tissue release for congenital clubfoot is needed in approximately what percentage of cases:**

A. 2

B. 10

C. **50**

D. 75

E. 90

**Cummings RJ, Davidson RS, Armstrong PF, Lehman WB.** Selected Instructional Course Lecture. Congenital clubfoot. *J Bone Joint Surg Am.* 2002;84:277-288

**13. Which of the following is not associated with spear tackler's spine?**

A. spearing

B. **cervical lordosis**

C. narrow cervical spinal canal

D. posttraumatic radiographic changes

E. axial energy input

**Torg JS, Guille JT, Jaffe S.** Current concepts review. Injuries to the cervical spine in American football players. *J Bone Joint Surg Am.* 2002;84:112-123

**14. Which of the following features of developing bones and epiphyses allows for magnetic resonance imaging of vascular phenomena?**

A. articular, epiphyseal, and physeal cartilage are all well supplied by blood vessels in cartilage canals

B. the secondary ossification centers are the only parts of the developing epiphyses that are vascularized

C. **the epiphyseal cartilage is vascularized even before formation of the secondary ossification centers**

D. the epiphyses receive the bulk of their blood supply via transphyseal vessels from the well-vascularized metaphyseal regions

E. epiphyseal and physeal cartilage is poorly vascularized

**Rivas R, Shapiro F.** Structural stages in the development of the long bones and epiphyses. A study in the New Zealand white rabbit. *J Bone Joint Surg Am.* 2002;84:85-100

**15. The most common reason for failure of the acetabular and femoral components of cemented Charnley total hip replacements after twenty-five years of follow-up is:**

A. component fracture

B. infection

C. dislocation

D. **aseptic component loosening**

E. polyethylene wear

**Berry DJ, Harmsen WS, Cabanela ME, Morrey BF.** Twenty-five-year survivorship of two thousand consecutive primary Charnley total hip replacements. Factors affecting survivorship of acetabular and femoral components. *J Bone Joint Surg Am.* 2002;84:171-177

**16. Ultrasonography has been shown to be a useful adjunctive tool in monitoring the reduction of distal extra-articular radial fractures. Which of the following is not one of its advantages?**

A. dynamic observation and immediate feedback during the reduction

B. rapid monitoring of the radius in multiple planes

C. **real-time measurement of the conventional radiographic criteria for reduction such as radial shortening and palmar tilt**

D. decrease in the number of reduction attempts and consequent reduction of trauma to the surrounding soft tissue

E. more frequent availability in developing countries than low-radiation portable fluoroscopy

**Chern T-C, Jou I-M, Lai K-A, Yang C-Y, Yeh S-H, Cheng S-C.** Sonography for monitoring closed reduction of displaced extra-articular distal radial fractures. *J Bone Joint Surg Am.* 2002;84:194-203

**17. Which of the following bone-grafting materials is osteoconductive, osteoinductive, and osteogenic:**

A. demineralized bone matrix

B. **coralline hydroxyapatite**

C. calcium sulfate

**D. autologous cancellous bone**

E. autologous bone marrow

**Finkemeier CG.** Current concepts review. Bone-grafting and bone-graft substitutes. *J Bone Joint Surg Am.* 2002;84:454-464

**18. Fractional lengthening of the iliopsoas tendon for iliopsoas snapping hip has what potential advantage over a complete surgical release?**

A. lower recurrence of snapping

**B. preservation of hip flexion strength**

C. less extensive surgical dissection

D. earlier return to activity

E. preservation of hip external rotation strength

**Dobbs MB, Gordon JE, Luhmann SJ, Szymanski DA, Schoenecker PL.** Surgical correction of the snapping iliopsoas tendon in adolescents. *J Bone Joint Surg Am.* 2002;84:420-424.

**19. A seventeen-year-old high-school football player has a congenital fusion at the third and fourth cervical levels. Which of the following findings is the most important basis for recommending that he give up football?**

A. a posterior hairline fracture that is low on the neck

B. a Pavlov-Torg ratio of 0.9

**C. an anteroposterior canal diameter of 12 mm**

D. 2 mm of anterior displacement of the fourth and fifth cervical vertebrae on a lateral flexion-extension radiograph

E. a 12° cervical-thoracic scoliosis

**Guille JT, Sherk HH.** Current concepts review. Congenital osseous anomalies of the upper and lower cervical spine in children. *J Bone Joint Surg Am.* 2002;84:277-289.

**20. Which of the following best represents the pattern of gait, in terms of stride length, arc of pelvic rotation, and shape of the ground-reaction force curve, of a patient who has had resection of the sciatic nerve of one lower extremity?**

A. long stride length, increased arc, two peaks

**B. short stride length, reduced arc, plateau**

C. long stride length, reduced arc, two peaks

D. short stride length, increased arc, plateau

E. short stride length, increased arc, triple sinusoidal curves

**Kawai A, Miyakawa T, Senda M, Endo H, Naito N, Umeda M, Inoue H.** Gait characteristics after limb-sparing surgery with sciatic nerve resection. A report of two cases. *J Bone Joint Surg Am.* 2002;84:264-268.

**21. Volitional co-contraction of the muscles crossing the knee increases the shear stiffness of the knee by:**

A. 0%

B. 10% to 20%

C. 50% to 60%

**D. 200% to 400%**

E. 1000%

**Wojtys EM, Ashton-Miller JA, Huston LJ.** A gender-related difference in the contribution of the knee musculature to sagittal-plane shear stiffness in subjects with similar knee laxity. *J Bone Joint Surg Am.* 2002;84:10-16.

**22. The addition of a flexor tenosynovectomy to the surgical procedure of an open carpal tunnel release for a fifty-three-year-old, otherwise healthy woman would lead to what expected outcome, compared with the outcome without a flexor tenosynovectomy?**

A. increased postoperative morbidity

B. improved relief of symptoms

C. improved hand function

**D. no difference in outcome**

E. improved return of sensation but no change in any altered motor function

**Shum C, Parisien M, Strauch RJ, Rosenwasser MP.** The role of flexor tendon tenosynovectomy in the operative treatment of carpal tunnel syndrome. *J Bone Joint Surg Am.* 2002;84:221-225.

**23. Both manual manipulation and finger-trap traction may be used for the reduction of Colles fractures. Which of the following statements is correct regarding their efficacy?**

A. both methods achieve a successful reduction in the majority of cases, but manual manipulation is associated with a significantly higher rate of redisplacement during cast immobilization

B. finger trap traction achieves a successful reduction more frequently than manual manipulation, but both methods are associated with redisplacement of the majority of fractures during cast immobilization

**C. both methods achieve a successful reduction in the majority of cases, but both are associated with redisplacement of the majority of fractures during cast immobilization**

D. finger-trap traction achieves a successful reduction less frequently than manual manipulation, but manual manipulation is associated with a significantly higher rate of redisplacement during cast immobilization

E. both methods achieve a successful reduction in the vast majority of cases

**Earnshaw SA, Aladin A, Surendran S, Moran CG.** Closed reduction of Colles fractures: comparison of manual manipulation and finger-trap traction. *J Bone Joint Surg Am.* 2002;84:354-358.

**24. In contrast to surgical repair, cast treatment for a patient with an acute complete Achilles tendon rupture:**

A. decreases the duration of sick leave

**B. leads to more reruptures**

C. yields better quality-of-life measures during the first two months after surgery

D. yields better long-term patient satisfaction

E. is more expensive

**Evidence based orthopaedics.** Surgical treatment of acute rupture of the tendo Achillis led to fewer reruptures and better patient-generated ratings than did nonsurgical treatment. *J Bone Joint Surg Am.* 2002;84:324.

**25. Septic osteomyelitis of the ischia:**

A. is a very frequent event after pelvic surgery

B. is a common complication of ischial enthesitis

- in patients with ankylosing spondylitis
- C. leads to unbearable pain in the buttocks within several days
- D. cannot lead to erosions at the insertions of the hamstrings
- E. can show significant clinical improvement when treated with steroids**
- Berthelot JM, Varin S, Caillon F, Prost A, Maugars Y. *Pseudomonas aeruginosa* osteomyelitis of both ischia. A case report. *J Bone Joint Surg Am.* 2002;84:441-444.
- 26. The primary advantage of bioabsorbable polylevulactic acid screws over metallic screws in the fixation of disruptions of the syndesmosis of the ankle is:**
- A. they can be inserted with use of a percutaneous surgical technique
- B. the polylevulactic acid has an osteoinductive effect that accelerates fracture union
- C. subsequent screw removal is not necessary**
- D. immediate weight-bearing is possible
- E. a strong inflammatory reaction about the screw leads to early loosening, which permits physiologic motions between the distal parts of the fibula and tibia
- Hovis WD, Kaiser BW, Watson JT, Bucholz RW. Treatment of syndesmotic disruptions of the ankle with bioabsorbable screw fixation. *J Bone Joint Surg Am.* 2002;84:26-31.
- 27. For treatment of a synovial pseudarthrosis of the humerus, the most appropriate graft is autologous cancellous bone in addition to plate fixation. If autologous bone is not available, the most appropriate grafting material is:**
- A. fibular strut graft
- B. allograft corticocancellous chips
- C. demineralized bone matrix**
- D. ceramic bone graft substitute
- E. bone marrow aspirate
- Finkemeier CG. Current concepts review. Bone-grafting and bone-graft substitutes. *J Bone Joint Surg Am.* 2002;84:454-464.
- 28. Venous thromboembolic disease is a major complication of total hip arthroplasty. Which of the following factors has been shown to decrease the incidence of this complication?**
- A. institution of immediate partial weight-bearing after the operation
- B. keeping the operative time as short as possible
- C. vacuum-suction prophylaxis against fat and bone marrow embolism during the operation**
- D. administration of aspirin before the operation
- E. avoiding the use of cell-saver blood recovery during surgery
- Pitto RP, Hamer H, Fabiani R, Radespiel-Troeger M, Koessler M. Prophylaxis against fat and bone-marrow embolism during total hip arthroplasty reduces the incidence of postoperative deep-vein thrombosis. A controlled, randomized, clinical trial. *J Bone Joint Surg Am.* 2002;84:39-48.
- 29. Which of the following preoperative factors is the most important in the prediction of the need for blood transfusion after prosthetic hip and knee surgery?**
- A. weight of the patient
- B. results of a preoperative coagulopathy panel
- C. sex of the patient
- D. preoperative hemoglobin level**
- E. age of the patient
- Salido JA, Marín LA, Gómez LA, Zorrilla P, Martínez C. Preoperative hemoglobin levels and the need for transfusion after prosthetic hip and knee surgery. Analysis of predictive factors. *J Bone Joint Surg Am.* 2002;84:216-220.
- 30. In a healthy, active sixty-eight-year-old man who has symptomatic isolated loosening of the acetabular component and a well-fixed femoral stem following unilateral total hip arthroplasty, management should consist of:**
- A. conservative treatment with anti-inflammatories and use of a cane
- B. nonoperative treatment until the femoral component loosens, and then revision of both components
- C. administration of alendronate and limitation of activities to encourage restabilization of the loose component
- D. revision with retention of the femoral component and revision of the acetabular component**
- E. revision of both the femoral and the acetabular component to facilitate exposure and to improve the outcome for the acetabulum
- Moskal JT, Shen FH, Brown TE. The fate of stable femoral components retained during isolated acetabular revision. A six- to-twelve-year follow-up study. *J Bone Joint Surg Am.* 2002;84:250-55.
- 31. What is the most common adverse outcome following arthroscopic débridement of the osteoarthritic knee in patients fifty years of age or older?**
- A. deep-vein thrombosis
- B. infection
- C. early failure of the procedure requiring repeat arthroscopic débridement
- D. early failure of the procedure requiring high tibial osteotomy
- E. early failure of the procedure requiring total knee arthroplasty**
- Wai EK, Kreder HJ, Williams JI. Arthroscopic débridement of the knee for osteoarthritis in patients over fifty years of age. Utilization and outcomes in the province of Ontario. *J Bone Joint Surg Am.* 2002;84:17-22.
- 32. The structure that is most often confused with the iliopsoas tendon during a standard iliofemoral approach is:**
- A. femoral nerve**
- B. femoral vein
- C. lateral femoral cutaneous nerve
- D. medial femoral circumflex artery
- E. spermatic cord in males
- Dobbs MB, Gordon JE, Luhmann SJ, Szymanski DA, Schoenecker PL. Surgical correction of the snapping iliopsoas tendon in adolescents. *J Bone Joint Surg Am.*

2002;84:420-424.

**33. Which of the following factors does not contribute to the differences in the liner wear rate and the rate of osteolysis between non-modular acetabular components and modular acetabular components in total hip arthroplasty?**

- A. liner-shell conformity
- B. polyethylene liner thickness
- C. liner-shell micromotion
- D. liner shelf life**
- E. sterilization process

**Young AM, Sychterz CJ, Hopper RH Jr, Engh CA.** Effect of acetabular modularity on polyethylene wear and osteolysis in total hip arthroplasty. *J Bone Joint Surg Am.* 2002;84:58-63.

**34. Which of the following factors is most responsible for motivating surgeons to avoid an open operative repair of an acute rupture of the Achilles tendon?**

- A. patients' limited level of participation in sports activities following open repair
- B. little likelihood of achieving a good-quality tendon repair
- C. problems with wound-healing**
- D. patients' dissatisfaction with the appearance of the surgical scar
- E. increased incidence of peripheral nerve injury

**Assal M, Jung M, Stern R, Rippstein P, Delmi M, Hoffmeyer P.** Limited open repair of Achilles tendon rupture. A technique with a new instrument and findings of a prospective multicenter study. *J Bone Joint Surg Am.* 2002;84:161-70.

**35. The long-term clinical outcomes after Salter innominate osteotomy for the treatment of developmental dysplasia of the hip in children is significantly influenced by:**

- A. the age of the patient at the time of the operation
- B. the addition of an intertrochanteric osteotomy
- C. the severity of any postoperative avascular necrosis of the femoral head**
- D. the sex of the patient
- E. the type of fixation used to stabilize the osteotomy

**Böhm P, Brzuske A.** Salter innominate osteotomy for the treatment of developmental dysplasia or subluxation of the hip in children. *J Bone Joint Surg Am.* 2002;84:178-186.

**36. High-quality plain radiographs are often inadequate to rule out a suspected cervical spine injury in a child because of the variability of radiographic findings in children. Which of the following techniques has been found to best demonstrate spinal injury in an obtunded, unconscious child with suspected cervical spine injury and normal radiographic findings?**

- A. additional lateral radiographs with flexion and extension of the cervical spine
- B. lateral tomography
- C. computed tomography with three-dimensional

reconstruction

- D. computed tomography with myelography
- E. magnetic resonance imaging**

**Dormans JP.** Selected Instructional Course Lecture. Evaluation of children with suspected cervical spine injury. *J Bone Joint Surg Am.* 2002;84:124-132.

**37. A twenty-two-year-old woman had a radiograph of the cervical spine made in an emergency room after a minor collision. She was found to have a congenital fusion of the second, third, and fourth cervical levels, but a week later in your office she is asymptomatic and her physical examination is unremarkable. You should order:**

- A. a computed tomographic scan of the cervical spine
- B. an intravenous pyelogram
- C. an electromyogram and neurological consultation
- D. an ultrasound evaluation of the renal system**
- E. a repeat radiograph of the cervical spine

**Guille JT, Sherk HH.** Current concepts review. Congenital osseous anomalies of the upper and lower cervical spine in children. *J Bone Joint Surg Am.* 2002;84:277-289.

**38. Which of the following factors is the most important in predicting favorable results of arthroscopic synovectomy in an elbow affected by rheumatoid arthritis?**

- A. the volume of excised synovial tissue
- B. the degree of preoperative joint destruction as seen on radiographs**
- C. whether posterior synovectomy as well as anterior synovectomy is done
- D. the type of disease-modifying anti-rheumatic drug (DMARD) that the patient is taking at the time of surgery
- E. the type of postoperative rehabilitation program

**Horiuchi K, Momohara S, Tomatsu T, Inoue K, Toyama Y.** Arthroscopic synovectomy of the elbow in rheumatoid arthritis. *J Bone Joint Surg Am.* 2002;84:342-47.

**39. Which of the following causes of elbow stiffness in children responds most favorably to open surgical treatment?**

- A. septic arthritis of the elbow
- B. intra-articular fracture of the distal part of the humerus
- C. extra-articular fracture of the distal part of the humerus**
- D. complex elbow fracture-dislocation
- E. multiple operations on the elbow

**Stans AA, Maritz NG, O'Driscoll SW, Morrey BF.** Operative treatment of elbow contracture in patients twenty-one years of age or younger. *J Bone Joint Surg Am.* 2002;84:382-387.

**40. In comparison with the parapatellar approach, the subvastus approach for total knee arthroplasty:**

- A. shortens hospital stay
- B. results in slightly greater blood loss
- C. allows the patient to resume unassisted straight-leg raises sooner**

- D. necessitates more postoperative pain medication
- E. results in more limited knee flexion at four weeks postoperatively  
Evidence based orthopaedics. The subvastus approach for total knee arthroplasty resulted in better short-term outcomes than did the parapatellar approach. *J Bone Joint Surg Am.* 2002;84:325.
- 41. The most common cause of early failure following total knee arthroplasty is:**
- infection
  - arthrofibrosis
  - anterior knee pain**
  - subluxation
  - patella baja
- Wood DJ, Smith AJ, Collopy D, White B, Brankov B, Bulsara MK. Patellar resurfacing in total knee arthroplasty. A prospective, randomized trial. *J Bone Joint Surg Am.* 2002;84:187-93.
- 42. The main reason for revision of an alumina-on-alumina total hip arthroplasty in the long term is:**
- fracture of the alumina femoral head
  - fracture of the alumina acetabular component
  - periprosthetic osteolysis
  - loosening of the femoral component
  - loosening of the acetabular component**
- Hamadouche M, Boutin P, Daussange J, Bolander ME, Sedel L. Alumina-on-alumina total hip arthroplasty. An 18-5-year follow-up study. *J Bone Joint Surg Am.* 2002;84:69-77.
- 43. An eighteen-year-old football player sustained a hyperextension injury to the cervical spine accompanied by four-extremity paresthesias. His spinal cord-vertebral body ratio is 0.7. It is predictable that:**
- he will have repeated "burners"
  - there is a 56% risk of recurrence of cervical cord neuropathia**
  - he is at greater risk of permanent paralysis than an asymptomatic player is
  - this is an absolute contraindication to continued participation in football
  - subsequent repeated episodes will eventually result in neurological impairment
- Torg JS, Guille JT, Jaffe S. Current concepts review. Injuries to the cervical spine in American football players. *J Bone Joint Surg Am.* 2002;84:112-123.
- 44. At the time of total hip arthroplasty in adults with congenital dislocation and severe dysplasia of the hip, the most common anatomical abnormalities observed are:**
- excessive retroversion of the femoral neck and deficiency of the superoposterior portion of the acetabulum
  - anterior position of the greater trochanter with acetabular protrusion
  - excessive anteversion of the femoral neck with a superolaterally deficient acetabulum**
  - severe coxa vara with anterior erosion of the acetabulum
- E. severe coxa valga with superior deficiency of the acetabulum  
Di Fazio F, Shon WY, Salvati EA, Wilson PD Jr. Long-term results of total hip arthroplasty with a cemented custom-designed swan-neck femoral component for congenital dislocation or severe dysplasia. A follow-up note. *J Bone Joint Surg Am.* 2002;84:204-207.
- 45. Definitive treatment of fungal osteomyelitis most commonly requires which of the following?**
- lifetime suppressive antibiotics
  - repeated surgical débridements and intravenous antifungal therapy**
  - intravenous antifungal therapy alone
  - amputation
  - extensive débridement only with secondary wound-healing
- Di Fazio F, Shon WY, Salvati EA, Wilson PD Jr. Long-term results of total hip arthroplasty with a cemented custom-designed swan-neck femoral component for congenital dislocation or severe dysplasia. A follow-up note. *J Bone Joint Surg Am.* 2002;84:204-207.
- 46. The availability of modular components of the prosthetic knee replacement has provided opportunities for tibial insert exchange. It appears that the patient who might benefit most from tibial insert replacement has:**
- a well-aligned and stable knee with extensive wear debris
  - a well-aligned knee with a worn tibial insert and instability
  - a knee with concurrent wear debris from a metal-backed patella**
  - a knee with asymmetrical wear medially and a varus deformity
  - a posterior stabilized tibial component
- Babis GC, Trousdale RT, Morrey BF. The effectiveness of isolated tibial insert exchange in revision total knee arthroplasty. *J Bone Joint Surg Am.* 2002;84:64-68.
- 47. A painful heel is a common orthopaedic syndrome. Its cause, however, remains enigmatic. The efficacy of which of the following procedures has not been investigated in a randomized controlled trial?**
- topical corticosteroids administered by iontophoresis
  - stretching of the plantar fascia
  - dorsiflexion night splints
  - surgical release of the plantar fascia**
  - application of extracorporeal shock waves
- Rompe JD, Schoellner C, Nafe B. Evaluation of low-energy extracorporeal shock-wave application for treatment of chronic plantar fasciitis. *J Bone Joint Surg Am.* 2002;84:335-341.
- 48. Children who are less than eight years old have unique features of the cervical spine when compared with adults. Which of the following features are not found in children under eight years old?**
- relative muscle weakness

- B. decreased laxity of ligaments**  
 C. wedge-shaped vertebral bodies  
 D. horizontal orientation of shallow facet joints  
 E. increased vertical height of the uncinate processes

**Dormans JP.** Selected Instructional Course Lecture. Evaluation of children with suspected cervical spine injury. *J Bone Joint Surg Am.* 2002;84:124-132.

- 49. Which of the following cells are particularly sensitive to treatment with ultra-high molecular weight polyethylene particles in vitro, producing nitrous oxide and prostaglandin E<sub>2</sub>, potent mediators known to be involved in transducing signals between neighboring cells?**

- A. **mature osteoblasts**  
 B. fibroblasts  
 C. chondrocytes  
 D. mesenchymal stem cells  
 E. perimyocytes

**Lohmann CH, Dean DD, Bonewald LF, Schwartz Z, Boyan BD.** Production of nitric oxide and prostaglandin E<sub>2</sub> by osteogenic cells in response to ultra-high molecular weight polyethylene particles is dependent on cell maturation state. *J Bone Joint Surg Am.* 2002;84:411-419.

- 50. Particle-induced osteolysis is the most common cause of implant loosening after joint replacement. Alendronate, a bisphosphonate, may slow or reverse the osteolysis. Which of the following statements best describes the mechanism of action of alendronate?**

- A. increases the catabolism of microparticles  
 B. prevents formation of Howship lacunae  
 C. **blocks osteoclastic resorption**  
 D. increases osteoblast recruitment  
 E. increases bone turnover

**Millet PJ, Allen MJ, Bostrom MPG.** Effects of alendronate on particle-induced osteolysis in a rat model. *J Bone Joint Surg Am.* 2002;84:236-249.

## ANSWER KEY

The correct answers are blacked out.

- |                      |                      |                      |
|----------------------|----------------------|----------------------|
| 1. A B C <b>D</b> E  | 18. A <b>B</b> C D E | 35. A B <b>C</b> D E |
| 2. A <b>B</b> C D E  | 19. A B <b>C</b> D E | 36. A B C D <b>E</b> |
| 3. A B <b>C</b> D E  | 20. A <b>B</b> C D E | 37. A B C <b>D</b> E |
| 4. A B C <b>D</b> E  | 21. A B C <b>D</b> E | 38. A <b>B</b> C D E |
| 5. A B <b>C</b> D E  | 22. A B C <b>D</b> E | 39. A B <b>C</b> D E |
| 6. A B <b>C</b> D E  | 23. A B <b>C</b> D E | 40. A B <b>C</b> D E |
| 7. A <b>B</b> C D E  | 24. A <b>B</b> C D E | 41. A B <b>C</b> D E |
| 8. A B C <b>D</b> E  | 25. A B C D <b>E</b> | 42. A B C D <b>E</b> |
| 9. A B <b>C</b> D E  | 26. A B <b>C</b> D E | 43. A <b>B</b> C D E |
| 10. A <b>B</b> C D E | 27. A B <b>C</b> D E | 44. A B <b>C</b> D E |
| 11. <b>A</b> B C D E | 28. A B <b>C</b> D E | 45. A <b>B</b> C D E |
| 12. A B <b>C</b> D E | 29. A B C <b>D</b> E | 46. A B <b>C</b> D E |
| 13. A <b>B</b> C D E | 30. A B C <b>D</b> E | 47. A B C <b>D</b> E |
| 14. A B <b>C</b> D E | 31. A B C D <b>E</b> | 48. A <b>B</b> C D E |
| 15. A B C <b>D</b> E | 32. <b>A</b> B C D E | 49. <b>A</b> B C D E |
| 16. A B <b>C</b> D E | 33. A B C <b>D</b> E | 50. A B <b>C</b> D E |
| 17. A B C <b>D</b> E | 34. A B <b>C</b> D E |                      |

## ACCREDITATION STATEMENT

This activity has been planned and implemented in accordance with the Essential Areas and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint sponsorship of the American Academy of Orthopaedic Surgeons (AAOS) and *The Journal of Bone and Joint Surgery* (JBJS). The AAOS is accredited by the ACCME to provide continuing medical education for physicians. The AAOS designates this educational activity for up to 10 hours of category-1 credit toward the AMA Physicians' Recognition Award. Each physician should claim only those hours of credit that he/she actually spent in the educational activity.

## QUESTIONS?

Please contact the CME Division of *The Journal of Bone and Joint Surgery* at 781 449 9780 x143.