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THE JOURNAL OF BONE & JOINT SURGERY  
CONTINUING MEDICAL EDUCATION

CME

REVIEW QUESTIONS

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**1. It may be possible to use transforming growth factor beta-1 (TGF- $\beta$ 1) clinically to enhance chondrogenesis for the repair of articular cartilage. This cytokine may enhance cartilage formation through one of several mechanisms. It has been shown that one of the most likely mechanisms is:**

- A. induction of chondrogenesis in chondrocytes
- B. induction of chondrogenesis in prechondrocytes**
- C. inhibition of osteogenesis in osteoblasts
- D. inhibition of osteogenesis in preosteoblasts
- E. inhibition of cell proliferation in periosteal explants

**Miura Y, Parvizi J, Fitzsimmons JS, O'Driscoll SW.** Brief exposure to high-dose transforming growth factor- $\beta$ 1 enhances periosteal chondrogenesis in vitro. A preliminary report. *J Bone Joint Surg Am.* 2002;84:793-9.

**2. Athletes who throw, such as baseball players, have a high prevalence of medial elbow instability. Which of the following factors is the most significantly associated with medial elbow pain in college baseball players?**

- A. medial shift of the proximal part of the ulna
- B. lateral shift of the proximal part of the ulna
- C. angular deformity of the ulnar collateral ligament**
- D. osteophyte formation medially
- E. stretching of the lateral collateral ligament

**Sasaki J, Takahara M, Ogino T, Kashiwa H, Ishigaki D, Kanauchi Y.** Ultrasonographic assessment of the ulnar collateral ligament and medial elbow laxity in college baseball players. *J Bone Joint Surg Am.* 2002;84:525-31.

**3. In in vitro biomechanical testing of internal fixation of proximal humeral fractures, the addition of an injectable calcium triphosphate cement is associated with:**

- A. improved stability at the interface between the implant and cancellous bone**
- B. necrosis of adjacent cancellous bone due to the exothermic nature of the curing reaction
- C. frequent fracture of the cement due to its brittleness
- D. elimination of the influence of bone density on specimen stiffness
- E. no change in interfragmentary motion during nondestructive testing

**Kwon BK, Goertzen DJ, O'Brien PJ, Broekhuysen HM, Oxland TR.** Biomechanical evaluation of proximal humeral fracture fixation supplemented with calcium phosphate cement. *J Bone Joint Surg Am.* 2002;84:951-61.

**4. Which of the following is an example of indirect gene therapy?**

- A. harvesting muscle-derived cells from a patient, introducing a retrovirus to express BMP-4 cells, and injecting the cells into the site of an osseous nonunion**
- B. injecting a retrovirus containing the BMP-4 gene into the site of a nonunion
- C. placing a BMP-4-impregnated collagen sponge into the intervertebral disc space
- D. injecting an adenovirus containing the BMP-2

gene into the knee joint

- E. injecting an adenovirus containing BMP-2 intravenously

**Hannallah D, Peterson B, Lieberman JR, Fu FH, Huard J.** Instructional Course Lecture, American Academy of Orthopaedic Surgeons. Gene therapy in orthopaedic surgery. *J Bone Joint Surg Am.* 2002;84:1045-61.

**5. When treating a patient who has osteonecrosis of the knee with severe bone loss on the femoral side, the best result will most likely be achieved with:**

- A. a cementless component on the femoral side
- B. a cemented component on the femoral side
- C. a fully constrained component
- D. cemented standard components on both sides of the knee
- E. a cemented component with a stem on the femoral side**

**Mont MA, Rifai A, Baumgarten KM, Sheldon M, Hungerford DS.** Total knee arthroplasty for osteonecrosis. *J Bone Joint Surg Am.* 2002;84:599-603.

**6. The most common complication after intramedullary nailing of a fracture of the tibial shaft is:**

- A. pseudarthrosis
- B. malunion
- C. anterior knee pain**
- D. deep infection
- E. superficial infection

**Toivanen JAK, Väistö O, Kannus P, Latvala K, Honkonen SE, Järvinen MJ.** Anterior knee pain after intramedullary nailing of fractures of the tibial shaft. A prospective, randomized study comparing two different nail-insertion techniques. *J Bone Joint Surg Am.* 2002;84:580-5.

**7. After injury, muscle-healing proceeds according to the following timetable:**

- A. degeneration and inflammation at one to two weeks, regeneration at one to two weeks, and fibrosis at two to four weeks**
- B. degeneration and inflammation at one to two months, regeneration at one to two months, and fibrosis at two to four months
- C. degeneration at one week, inflammation at two weeks, regeneration at two weeks, and fibrosis at four weeks
- D. degeneration at two weeks, regeneration at two weeks, and hypertrophy at six weeks
- E. degeneration at two weeks, regeneration at two weeks, and hyperplasia at six weeks

**Huard J, Li Y, Fu FH.** Current concepts review. Muscle injuries and repair: current trends in research. *J Bone Joint Surg Am.* 2002;84:822-32.

**8. A twenty-five-year-old man had a fracture of the midpart of the tibial shaft that united after sixteen weeks in a cast. Which of the following factors is most likely to be associated with medial compartment osteoarthritis of the knee thirty-five years later?**

- A. coronal plane malunion in 7° of varus
- B. lower-limb alignment (hip-knee-ankle angle) in 7° of varus**

- C. sagittal plane malunion in 7° of recurvatum
- D. rotational malunion in 14° of external rotation
- E. fracture shortening of 1.5 cm

**Milner SA, Davis TRC, Muir KR, Greenwood DC, Doherty M.** Long-term outcome after tibial shaft fracture: is malunion important? *J Bone Joint Surg Am.* 2002;84:971-80.

**9. Which of the following factors makes the most significant contribution to increased angular deformity of the ulnar collateral ligament?**

- A. medial shift of the proximal part of the ulna
- B. lateral shift of the ulna**
- C. widening of the medial joint space
- D. osteophyte formation medially
- E. joint-space narrowing in the radiocapitellar joint

**Sasaki J, Takahara M, Ogino T, Kashiwa H, Ishigaki D, Kanauchi Y.** Ultrasonographic assessment of the ulnar collateral ligament and medial elbow laxity in college baseball players. *J Bone Joint Surg Am.* 2002;84:525-31.

**10. Activity-related pain and a joint effusion are clinical findings associated with accelerated polyethylene wear of implants sterilized by gamma irradiation in air. Which practice best alerts the surgeon to the likelihood of accelerated polyethylene wear?**

- A. comparison of serial plain radiographs
- B. serial fluoroscopically controlled radiographs
- C. determination, by contacting the implant manufacturer, of the duration of shelf storage prior to the arthroplasty**
- D. joint aspiration and analysis of the joint fluid
- E. arthroscopy

**McGovern TF, Ammeen DJ, Collier JP, Currier BH, Engh GA.** Rapid polyethylene failure of unicondylar tibial components sterilized with gamma irradiation in air and implanted after a long shelf life. *J Bone Joint Surg Am.* 2002;84:901-6.

**11. When harvesting anterior iliac-crest bone grafts, the most important contributing factor associated with injury of the lateral femoral cutaneous nerve is:**

- A. patient obesity
- B. subperiosteal dissection of the iliac crest
- C. postoperative hematoma
- D. anatomic variation in the position of the lateral femoral cutaneous nerve**
- E. constricting postoperative dressing

**Ahlmann E, Patzakis M, Roidis N, Shepherd L, Holtom P.** Comparison of anterior and posterior iliac crest bone grafts in terms of harvest site morbidity and functional outcomes. *J Bone Joint Surg Am.* 2002;84:716-20.

**12. Removal at home of a plaster splint three weeks after a buckle fracture of the radius in children**

- A. increases parental anxiety
- B. results in a 20% rate of wrist deformity
- C. causes increased swelling at six weeks postfracture
- D. leads to improved hand function at six weeks postfracture
- E. is as safe and effective as removal at a**

**fracture clinic**

Evidence-based orthopaedics. Home removal of a backslab three weeks after buckle fracture of the distal radius was as safe as removal at a fracture clinic. *J Bone Joint Surg Am.* 2002;84:883.

**13. The cement strains in a cemented femoral component of a total hip replacement during simulated stair-climbing are higher for smaller stems assuming that all other conditions are the same. What factor is more important in generating the highest peak strains in the cement?**

- A. the length of the neck of the femoral component
- B. the amount of offset of the neck of the femoral component
- C. the amount of contact of the collar of the prosthesis with the calcar of the femur
- D. the degree of valgus or varus in which the femoral prosthesis is set
- E. the patient's weight**

**Harrington MA Jr, O'Connor DO, Lozynsky AJ, Kovach I, Harris WH.** Effects of femoral neck length, stem size, and body weight on strains in the proximal cement mantle. *J Bone Joint Surg Am.* 2002;84:573-9.

**14. Concerning the surgical treatment of unicameral bone cysts, which statement is true?**

- A. percutaneous corticosteroid injection is associated with the lowest risk of cyst recurrence
- B. percutaneous injection of demineralized bone matrix and autogenous bone marrow is associated with the fastest rate of cyst healing**
- C. percutaneous injection of demineralized bone matrix and autogenous bone marrow is associated with a high risk of cyst recurrence
- D. open curettage with placement of autogenous iliac-crest bone graft is associated with the lowest risk of cyst recurrence
- E. open curettage with placement of bone-graft substitute is associated with the lowest risk of additional surgery

**Rougraff BT, Kling TJ.** Treatment of active unicameral bone cysts with percutaneous injection of demineralized bone matrix and autogenous bone marrow. *J Bone Joint Surg Am.* 2002;84:921-9.

**15. Most pathological insufficiency fractures of the pelvis unite after a few months of non-operative treatment. Which of the following clinical scenarios is least likely to be associated with a risk of a persistent painful nonunion?**

- A. prior pelvic irradiation therapy
- B. prior harvesting of a posterior iliac-crest bone graft
- C. a simple fall from a standing height**
- D. steroid-induced osteoporosis
- E. senile osteopenia

**Mears DC, Velyvis JH.** In situ fixation of pelvic nonunions following pathologic and insufficiency fractures. *J Bone Joint Surg Am.* 2002;84:721-8.

**16. Which critical risk factor for mortality after orthopaedic surgery is associated with the**

**highest mortality rate?**

- A. **chronic renal failure**
- B. congestive heart failure
- C. chronic obstructive pulmonary disease
- D. diabetes mellitus
- E. age of more than seventy years

**Bhattacharyya T, Iorio R, Healy WL.** Rate of and risk factors for acute inpatient mortality after orthopaedic surgery. *J Bone Joint Surg Am.* 2002;84:562-72.

**17. Which form of treatment of patellar fracture after total knee arthroplasty is associated with the highest rate of complications?**

- A. nonoperative treatment
- B. **open reduction and internal fixation**
- C. component resection and patelloplasty
- D. partial patellectomy
- E. complete patellectomy

**Ortiguera CJ, Berry DJ.** Patellar fracture after total knee arthroplasty. *J Bone Joint Surg Am.* 2002;84:532-40.

**18. When performing femoral lengthening over an intramedullary humeral nail in preadolescent children, which of the following is true?**

- A. the anticipated femoral length will be 30% greater than the preoperative femoral length
- B. proximal valgus secondary to injury to the greater trochanter physis is common
- C. osteonecrosis of the femoral head is common
- D. **infection and fracture are the most frequent complications**
- E. hip and knee subluxation are frequently seen postoperatively

**Gordon JE, Goldfarb CA, Luhmann SJ, Lyons D, Schoencker PL.** Femoral lengthening over a humeral intramedullary nail in preadolescent children. *J Bone Joint Surg Am.* 2002;84:930-7.

**19. The best indication for proximal segmental resection of the radius for treatment of proximal radioulnar synostosis is:**

- A. duration of the synostosis exceeding two years
- B. synostosis involving the greater tuberosity of the radius
- C. complete osseous synostosis
- D. **anatomic deformity of the proximal radioulnar articulation**
- E. concomitant distal radioulnar abnormality

**Kamineni S, Maritz NG, Morrey BF.** Proximal radial resection for posttraumatic radioulnar synostosis: a new technique to improve forearm rotation. *J Bone Joint Surg Am.* 2002;84:745-51.

**20. Directors of residency programs in internal medicine were requested to evaluate, establish relevance for, and set a passing score for a written examination of basic competency in musculoskeletal medicine for graduating medical students. Their collective responses suggested that:**

- A. education in musculoskeletal medicine is not relevant to the practice of the average internist
- B. recent medical school graduates are well educated in musculoskeletal medicine
- C. **the majority of graduating medical school**

**students fail to demonstrate competency in musculoskeletal medicine**

- D. musculoskeletal medicine occupies the appropriate portion of the average medical school curriculum
- E. medical school education in musculoskeletal medicine prepares graduates well for a career in internal medicine but inadequately for a career in orthopaedic surgery

**Freedman KB, Bernstein J.** Educational deficiencies in musculoskeletal medicine. *J Bone Joint Surg Am.* 2002;84:604-8.

**21. Transcalcaneal talonavicular dislocation is a severe foot injury that includes dorsal dislocation of the navicular from the talus associated with a comminuted fracture of the calcaneus. After reduction of the talonavicular joint, initial management should include:**

- A. **percutaneous fixation of the unstable joints and careful management of the soft tissues**
- B. open reduction and internal fixation of the calcaneus
- C. open reduction and internal fixation of the calcaneus combined with subtalar fusion
- D. open reduction and internal fixation of the calcaneus combined with triple arthrodesis
- E. Boyd amputation of the foot

**Ricci WM, Bellabarba C, Sanders R.** Transcalcaneal talonavicular dislocation. *J Bone Joint Surg Am.* 2002;84:557-61.

**22. A forty-year-old man was involved in a motor-vehicle accident in which he sustained a fracture of the posterior wall of the acetabulum and a posterior dislocation of the hip, which was reduced fourteen hours after injury. The most important risk factor associated with an unsatisfactory clinical outcome is:**

- A. the patient's age
- B. a twenty-five-year history of smoking
- C. **the duration of unreduced hip dislocation**
- D. the size of the posterior wall fracture fragment
- E. an associated head injury

**Moed BR, Willson Carr SE, Watson TJ.** Results of operative treatment of fractures of the posterior wall of the acetabulum. *J Bone Joint Surg Am.* 2002;84:752-8.

**23. When treating a periprosthetic femoral fracture around a well-fixed prosthesis:**

- A. revision of the prosthesis is necessary in order to obtain stable fixation
- B. **cortical onlay allograft struts alone provide mechanical stability and improve bone stock**
- C. use of a cortical strut and a plate is superior to use of two cortical allografts alone
- D. union of allograft to host bone is usually seen by two years postoperatively
- E. late femoral component loosening is a frequent complication

**Haddad FS, Duncan CP, Berry DJ, Lewallen DG, Gross AE, Chandler HP.** Periprosthetic femoral fractures around well-fixed implants: use of cortical onlay allografts with or without a plate. *J Bone Joint Surg Am.* 2002;84:945-50.

**24. Growth factors enhance the healing of musculoskeletal tissues by binding to cells and inducing which of the following responses:**

- A. increased alkaline phosphatase and decreased adenylate cyclase activity
- B. expression of new genes or sets of genes**
- C. acceleration of mitotic activity
- D. increased sensitivity to growth hormone
- E. enhanced mitochondrial activity

**Lieberman JR, Daluiski A, Einhorn TA.** Current concepts review. The role of growth factors in the repair of bone: biology and clinical applications. *J Bone Joint Surg Am.* 2002;84:1032-44.

**25. The addition of epinephrine to irrigation fluid during arthroscopy of the shoulder:**

- A. increases heart rate
- B. increases blood pressure
- C. decreases the amount of irrigation fluid required
- D. decreases intra-articular bleeding**
- E. increases operative time

Evidence-based orthopaedics. The addition of epinephrine to irrigation fluid during arthroscopic shoulder surgery reduced bleeding and increased visualization. *J Bone Joint Surg Am.* 2002;84:885.

**26. Glenoid deficiency in osteoarthritis secondary to glenoid dysplasia is typically seen in what portion of the glenoid?**

- A. superior and medial
- B. anterior and inferior
- C. posterior and superior
- D. inferior and lateral
- E. posterior and inferior**

**Sperling JW, Cofield RH, Steinmann SP.** Shoulder arthroplasty for osteoarthritis secondary to glenoid dysplasia. *J Bone Joint Surg Am.* 2002;84:541-6.

**27. At ten years postoperatively, radiographic evaluation of uncemented acetabular components in patients younger than fifty years old is most likely to demonstrate a high prevalence of:**

- A. complete radiolucent lines
- B. component migration
- C. pelvic osteolysis**
- D. liner dissociation
- E. screw breakage

**Crowther JD, Lachiewicz PF.** Survival and polyethylene wear of porous-coated acetabular components in patients less than fifty years old. Results at nine to fourteen years. *J Bone Joint Surg Am.* 2002;84:729-35.

**28. With a patient in the prone position, to ensure minimal risk to the posteromedial neurovascular bundle the posteromedial arthroscopic portal should be kept:**

- A. medial to the flexor hallucis longus tendon
- B. lateral to the peroneal tendon
- C. lateral to the flexor hallucis longus tendon**
- D. medial to the Achilles tendon
- E. lateral to the sural nerve

**Sitler DF, Amendola A, Bailey CS, Thain LMF, Spouge A.** Posterior ankle arthroplasty. An anatomic study. *J Bone Joint*

*Surg Am.* 2002;84:763-9.

**29. Which of the following is most likely to enhance the ability of a growth factor to induce a desired effect?**

- A. increased production by recombinant gene technology
- B. progress in the purification technique
- C. delivery in the appropriate carrier system**
- D. sterilization techniques that maintain biologic activity
- E. enhancement of the intracellular transduction response

**Lieberman JR, Daluiski A, Einhorn TA.** Current concepts review. The role of growth factors in the repair of bone: biology and clinical applications. *J Bone Joint Surg Am.* 2002;84:1032-44.

**30. The presence and extent of periacetabular osseous lysis secondary to polyethylene wear often must be determined in patients with total hip implants. Which method provides the most information on the extent and location of these lesions?**

- A. four-view plain radiographs
- B. magnetic resonance imaging
- C. helical computed tomography**
- D. ultrasound
- E. scintigraphy with technetium-methylene diphosphonate

**Puri L, Wixson RL, Stern SH, Kohli J, Hendrix TW, Stulberg SD.** Use of helical computed tomography for the assessment of acetabular osteolysis after total hip arthroplasty. *J Bone Joint Surg Am.* 2002;84:609-14.

**31. Aseptic loosening of cemented femoral components and subsequent bone lysis is a major cause of revision of total hip replacements. The surface finish of the femoral stem is thought to be a possible contributing factor. Which of the following statements is true?**

- A. polished and rough-surfaced stems have a similar incidence of loosening and need for revision
- B. stems with polished surfaces loosen and require revision more frequently than do rough-surfaced stems
- C. surface finish of cemented stems is not related to the incidence of stem loosening
- D. polished stems, when loose, cause less lysis of bone than do rough stems**
- E. polished stems loosen less often than do rough stems but have a much higher incidence of fracture

**Collis DK, Mohler CG.** Comparison of clinical outcomes in total hip arthroplasty using rough and polished cemented stems with essentially the same geometry. *J Bone Joint Surg Am.* 2002;84:586-92.

**32. During the rehabilitation of a patient who has just undergone a single-bundle posterior cruciate ligament reconstruction, which of the following activities should be avoided in the early postoperative period?**

- A. straight-leg quadriceps-strengthening exercises
- B. active-assisted extension to terminal extension
- C. full weight-bearing with the knee locked in full extension
- D. active range-of-motion exercises between 0° and 90° of flexion

**E. loading of the knee in flexion greater than 90°**

**Oakes DA, Markolf KL, McWilliams J, Young CR, McAllister DR.** Biomechanical comparison of tibial inlay and tibial tunnel techniques for reconstruction of the posterior cruciate ligament. Analysis of graft forces. *J Bone Joint Surg Am.* 2002;84:938-44.

**33. For cerebral palsy patients with diplegia, spastic contracture of the gastrocnemius-soleus muscle-tendon complex is associated with ankle and knee coupling during walking. This coupled motion is characterized by:**

- A. progressive crouch with excessive ankle dorsiflexion in stance
- B. simultaneous ankle plantar flexion and knee extension during midstance**
- C. progressive ankle dorsiflexion with knee extension in stance
- D. progressive crouch and equinus through midstance
- E. ankle plantar flexion during loading

**Baddar A, Granata K, Damiano DL, Carmines DV, Blanco JS, Abel MF.** Ankle and knee coupling in patients with spastic diplegia: effects of gastrocnemius-soleus lengthening. *J Bone Joint Surg Am.* 2002;84:736-44.

**34. Which of the following treatment options is most likely to result in an unsatisfactory result in patients with osteoarthritis secondary to glenoid dysplasia?**

- A. hemiarthroplasty alone**
- B. hemiarthroplasty with glenoid bone-grafting or osteotomy
- C. total shoulder arthroplasty with glenoid bone-grafting
- D. total shoulder arthroplasty with an augmented glenoid component
- E. fully constrained total shoulder arthroplasty

**Sperling JW, Cofield RH, Steinmann SP.** Shoulder arthroplasty for osteoarthritis secondary to glenoid dysplasia. *J Bone Joint Surg Am.* 2002;84:541-6.

**35. Which of the following symptoms or signs is seen most frequently in a patient with a long-standing fracture nonunion of the lateral humeral condyle?**

- A. elbow pain
- B. ulnar nerve dysfunction**
- C. valgus deformity
- D. severe restriction of range of motion
- E. loss of grip strength

**Toh S, Tsubo K, Nishikawa S, Inoue S, Nakamura R, Harata S.** Long-standing nonunion of fractures of the lateral humeral condyle. *J Bone Joint Surg Am.* 2002;84:593-8.

**36. A fifty-year-old man presents with right groin pain and is suspected of having early-stage osteonecrosis of the hip. Which entity pre-**

**sents with radiographic and magnetic resonance imaging findings most similar to osteonecrosis:**

- A. osteoarthritis
- B. pigmented villonodular synovitis
- C. transient osteoporosis**
- D. Lyme arthritis
- E. sickle cell disease

**Lieberman JR, Berry DJ, Mont MA, Aaron RK, Callaghan JJ, Rayadhyaksha A, Urbaniak JR.** Instructional Course Lecture, American Academy of Orthopaedic Surgeons. Osteonecrosis of the hip: management in the twenty-first century. *J Bone Joint Surg Am.* 2002;84:833-53.

**37. Which of the following factors is the most important in determining outcomes of arthroscopic repair of superior labral lesions?**

- A. age of the patient
- B. dominance of the involved arm
- C. gender of the patient
- D. type of sports activity**
- E. duration of symptoms

**Kim S-H, Ha K-I, Kim S-H, Choi H-J.** Results of arthroscopic treatment of superior labral lesions. *J Bone Joint Surg Am.* 2002;84:981-5.

**38. The most appropriate means of diagnosing isolated gastrocnemius contracture during physical examination of a neutrally aligned foot includes which of the following criteria:**

- A. maximal ankle dorsiflexion of 15° with the knee fully extended**
- B. maximal ankle dorsiflexion of ≤10° with the knee fully extended
- C. maximal ankle dorsiflexion of >0° with the knee in 90° of flexion
- D. maximal ankle dorsiflexion of ≤10° with the knee in 90° of flexion
- E. maximal ankle dorsiflexion of >5° with the knee fully extended

**DiGiovanni CW, Kuo R, Tejwani N, Price R, Hansen ST Jr, Cziemecki J, Sangeorzan BJ.** Isolated gastrocnemius tightness. *J Bone Joint Surg Am.* 2002;84:962-70.

**39. Which of the following statements is most likely true of abstracts presented at international meetings?**

- A. more than two-thirds will be subsequently published in peer-reviewed journals
- B. the majority are prospective cohort studies
- C. almost 20% of the final publications will be inconsistent with the results of the original abstract**
- D. inconsistencies between abstracts and final full-text publications are most commonly due to a decrease in sample size from the abstract to the final publication
- E. key methodological issues are reported in the majority of abstracts

**Bhandari M, Deveraux PJ, Guyatt GH, Cook DJ, Swionkowski MF, Sprague S, Schemitsch EH.** An observational study of orthopaedic abstracts and subsequent full-text publications. *J Bone Joint Surg Am.* 2002;84:615-21.

**40. An improved prognosis following core decompression is most likely to be associated with:**

- A. steroid use
- B. idiopathic osteonecrosis
- C. a sclerotic rim around a necrotic lesion**
- D. a younger patient
- E. a female patient

**Lieberman JR, Berry DJ, Mont MA, Aaron RK, Callaghan JJ, Rayadhyaksha A, Urbaniak JR.** Instructional Course Lecture, American Academy of Orthopaedic Surgeons. Osteonecrosis of the hip: management in the twenty-first century. *J Bone Joint Surg Am.* 2002;84:833-53.

**41. Which of the following is true concerning the potential change in pelvic dimensions, documented by magnetic resonance pelvimetry, in young women who have had a reconstructive periacetabular osteotomy?**

- A. the bispinous diameter will be significantly decreased
- B. the bispinous diameter will be significantly increased
- C. the bispinous diameter will not be significantly altered**
- D. the anterior-posterior inlet measurement will be significantly decreased
- E. both the bispinous diameter and the anterior-posterior inlet measurement will be significantly decreased

**Trousdale RT, Cabanela ME, Berry DJ, Wenger DE.** Magnetic resonance imaging pelvimetry before and after a periacetabular osteotomy. *J Bone Joint Surg Am.* 2002;84:552-6.

**42. The best outcomes after traumatic posterior dislocation of the elbow associated with fractures of the radial head and coronoid process are associated with which of the following treatments in addition to closed reduction of the elbow:**

- A. immobilization in a posterior splint with the elbow flexed to 90° and the wrist in neutral supination for ten days followed by early supervised range-of-motion exercises
- B. immobilization in a posterior splint with the elbow flexed to 90° and the wrist fully supinated for six weeks
- C. repair or replacement of the radial head and repair of the lateral collateral ligament**
- D. excision of the radial head, repair of the lateral collateral ligament, and internal fixation of the coronoid process fracture
- E. application of external fixation across the elbow that incorporates distraction and permits early joint motion

**Ring D, Jupiter JB, Zilberfarb J.** Posterior dislocation of the elbow with fractures of the radial head and coronoid. *J Bone Joint Surg Am.* 2002;84:547-51.

**43. In an evaluation of the ten-year results of total hip arthroplasty in patients younger than fifty years old, which of the following is least likely to be associated with aseptic loosening:**

- A. a history of osteonecrosis
- B. a 32-mm femoral head

- C. a femoral component with a surface RA of 90

**D. a cementless porous-coated acetabular component**

- E. polyethylene gamma irradiation in air

**Kim Y-H, Kook H-K, Kim J-S.** Total hip replacement with a cementless acetabular component and a cemented femoral component in patients younger than fifty years of age. *J Bone Joint Surg Am.* 2002;84:770-4.

**44. Which of the following factors is most responsible for a nonunion after reconstruction with an allograft?**

- A. use of chemotherapy
- B. use of fixation that is not sufficiently rigid**
- C. not applying autograft at the host bone-allograft junction
- D. use of plate and screw fixation instead of an intramedullary nail
- E. use of unicondylar rather than full articular allografts

**Dion N, Sim FH.** Instructional course lecture. The use of allografts in orthopaedic surgery. Part I: the use of allografts in musculoskeletal oncology. *J Bone Joint Surg Am.* 2002;84:643-54.

**45. The main beneficial effect of antibiotic-impregnated cement in total knee arthroplasty is:**

- A. faster polymerization of polymethylmethacrylate
- B. improved mechanical strength of cement
- C. local elution of antibiotic into the joint fluid**
- D. ability to avoid systemic antibiotic prophylaxis
- E. hemostatic effect

**Chiu F-Y, Chen C-M, Lin C-FJ, Lo W-H.** Cefuroxime-impregnated cement in total knee arthroplasty. A prospective randomized study of three hundred and forty knees. *J Bone Joint Surg Am.* 2002;84:759-62.

**46. In revision total hip arthroplasty, segmental bone loss of <5 cm in length on the femoral side is best managed by:**

- A. a proximal femoral allograft
- B. a calcar-replacing implant**
- C. a standard-length uncemented implant
- D. a proximally porous-coated implant

**Gross AE, Blackley H, Wong P, Saleh K, Woodgate I.** Instructional course lecture. The use of allografts in orthopaedic surgery. Part II: the role of allografts in revision arthroplasty of the hip. *J Bone Joint Surg Am.* 2002;84:655-67.

**47. In revision total hip arthroplasty, contained bone loss on the acetabular side can be managed by an uncemented cup:**

- A. if contact of the cup can be made with 50% of the area of the host bone**
- B. if a large structural graft involving >50% of the acetabulum is used
- C. if >50% of the acetabulum is filled with morselized allograft bone
- D. if the cup is placed in a protruded position

**Gross AE, Blackley H, Wong P, Saleh K, Woodgate I.** Instructional course lecture. The use of allografts in orthopaedic surgery. Part II: the role of allografts in revision arthroplasty of the hip. *J Bone Joint Surg Am.* 2002;84:655-67.

**48. Which of the following factors is the most important for improving hand function in Müller type-D symbrachydactyly?**

- A. depth of the web space
- B. length of the fingers
- C. length of the metacarpals**
- D. abductor function of the thumb
- E. stability of the wrist

**Miyawaki T, Masuzawa G, Hirakawa M, Kurihara K.**

Bone-lengthening for symbrachydactyly of the hand with the technique of callus distraction. *J Bone Joint Surg Am.* 2002;84:986-91.

**49. Which of the following complications is the leading cause of failure of an allograft used for reconstruction after resection of a bone tumor?**

- A. fracture
- B. nonunion
- C. infection**
- D. joint collapse
- E. rejection

**Dion N, Sim FH.** Instructional course lecture. The use of allografts in orthopaedic surgery. Part I: the use of allografts in musculoskeletal oncology. *J Bone Joint Surg Am.* 2002;84:643-54.

**50. The use of scalene regional anesthesia is least likely to be associated with:**

- A. a need for adjunctive general anesthesia
- B. a need for adjunctive intravenous pain medication
- C. a need for respiratory monitoring
- D. neurologic deficits for up to six weeks
- E. decreased cost compared with that of general anesthesia**

**Weber SC, Jain R.** Scalene regional anesthesia for shoulder surgery in a community setting: an assessment of risk. *J Bone Joint Surg Am.* 2002;84:775-9.

**ANSWER KEY**

The correct answers are blacked out.

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

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**QUESTIONS?**

Please contact the CME Division of *The Journal of Bone and Joint Surgery* at 781 449 9780 137.