A 38-year old man presented with progressive right hip pain and stiffness. He had previously undergone a left total hip replacement for a similar problem.

a) List the radiographic changes in the pelvis and the spine. (2 marks)
b) What is the diagnosis? (1 mark)
c) List three difficulties anticipated for total hip replacement surgery in this case? (4 marks)
d) Name three complications that may be associated with total hip replacement in this group of patients? (3 marks)

A 17-year old boy with a 2-year history of traumatic brain injury, presented with gradual right hip stiffness.

a) Describe the pathological process that has occurred. (2 marks)
b) List four possible risk factors associated with this condition. (2 marks)
c) What preventive measures can be taken in patients with high risk of developing this condition? (4 marks)
d) How can this condition be treated? (2 marks)

A 34-year old man sustained the above fracture after being involved in a motor vehicle accident.

a) Describe and classify the fracture. (2 marks)
b) Describe the surgical approach and internal fixation method for the fracture. (4 marks)
c) List two complications associated with this type of fracture. (2 marks)
d) What is the Hawkins sign and what does it signify? (2 marks)
Question 4

A 2-year old girl presented with rigid rocker-bottom deformity of both feet since birth. Lateral view radiographs of both feet are shown.

a) Describe three anomalies seen on the radiographs. (3 marks)

b) What is the most likely diagnosis? (1 mark)

c) Name two other conditions associated with this disorder. (2 marks)

d) Describe two treatment options for this problem. (4 marks)

Question 5

Shown above is a lower limb orthosis.

a) Name the orthosis. (1 mark)

b) State two conditions for which this orthosis is indicated. (2 marks)

c) List four contraindications for use of this orthosis. (4 marks)

d) How does this orthosis help during the gait cycle? (2 marks)

e) What material is this orthosis typically made of? (1 mark)

Question 6

The picture shows an upper limb orthosis.

a) Name the orthosis. (1 mark)

b) State two indications for which this orthosis is applied. (2 marks)

c) What movements in the hand does this splint allow? (2 marks)

d) List three objectives for application of this splint? (3 marks)

e) State two contraindications for use of this orthosis. (2 marks)
ANSWERS AND ADDITIONAL INFORMATION FOR ORTHOPAEDIC CLINICAL QUIZ

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Answer 1

a) Degenerative changes of the right hip with reduced joint space, and osteophytosis. Fusion of the sacroiliac joints.
b) Avascular necrosis of talar body.
c) Pre-operatively - difficult intubation due to cervical rigidity, difficult ventilation due to restrictive lung disease, failure of spinal anesthesia due to ossification of posterior spinal ligaments, risk of spine fracture during positioning after induction. Intra-operatively - flexion and external rotation contractures of the hip causing difficulty in exposure of first metatarsal bone. Pelvic obliquity causing difficulty in positioning of acubetal component, osteoporosis increasing the risk of over-reaming the acubetal component.
d) Proximal femoral fracture. Aseptic loosening.

Description 1
Hip involvement in ankylosing spondylitis is uncommon and a large number of patients have involvement bilaterally. The combination of a stiff spine and hip causes severe disability in patients, largely reducing their quality of life. Total hip replacement is necessary in patients who failed conservative management but is associated with risks of surgery and complications. Anterior hip dislocation occurs because patients have hyperextended hips and extended pelvis to compensate for thoracic kyphosis and loss of lumbar lordosis. During surgery, the cup is at risk of being inserted with an exaggerated anteversion, increasing the risk of anterior hip dislocations.

Reference:

Answer 2

a) Heterotrophic ossificans of right hip causing right hip bony ankylosis.
c) NSAIDS: indomethacin 75mg OD for 2-3 weeks. External beam radiation after heterotopic ossification has fully matured.

d) Anterior hip dislocation.

Description 2
Heterotopic ossification (HO) is defined as the presence of lamellar bone at locations where bone normally does not exist. It is a frequent complication following central nervous system disorders such as brain or spinal cord injuries, tumours, or encephalitis, multiple injuries, hip surgery, and burns. The pathophysiology of the disease is poorly understood. Three-phase bone scintigraphy is the most sensitive imaging modality for early detection of HO (as early as 2-4 weeks) and can be used to assess the maturity of HO. Definitive treatment is by surgical resection once the HO has fully matured.

References:

Answer 3

a) Congenital vertical talus. Neuromuscular and genetic disorders such as arthrogryposis, myeolomeningocele.
b) Fusion of the sacroiliac joints. Aggressive dual-incision open reduction and fixation treatment for all fractures.
c) Pelvic obliquity causing difficulty in positioning of acetabular component, aggressive dual-incision open reduction and fixation treatment for all fractures. Another common complication, subtalar joint arthritis may necessitate further subtalar joint arthrodesis in symptomatic patients.


Description 3
An uncommon and potentially devastating injury due to the high risk of osteonecrosis of the talar body. Hawkins original classic work described a rate of 0%, 42% and 86% for types I, II and III, respectively. Current rates have mildly reduced with a more aggressive dual-incision open reduction and fixation treatment for all fractures. Another common complication, subtalar joint arthritis may necessitate further subtalar joint arthrodesis in symptomatic patients.

Reference:

Answer 4

a) Vertically positioned talus with midfoot and forefoot dislocated dorsally. Line along long axis of talus passes below the first metatarsal-cuneiform axis. Tibial angle almost parallel.
b) Congenital vertical talus.
c) Neuromuscular and genetic disorders such as arthrogryposis, myelomeningocele.

d) Vertical talus with midfoot and forefoot dislocated dorsally. Line along long axis of talus passes below the first metatarsal-cuneiform axis. Tibial angle almost parallel.

e) Prevents foot slap at heel strike. Assist toe clearance during swing phase.

Description 4
Congenital vertical talus is a rare flatfoot deformity that is characterized by a fixed dorsal dislocation of the navicular on the talus with associated Achilles tendon and dorsolateral soft-tissue contractures, as well as a variant with calcaneocuboid joint subluxation or dislocation. In contrast to its sibling condition the oblique talus, the talonavicular joint does not reduce with forced plantarflexion of the foot. Traditionally, this condition was managed with extensive soft tissue release with acute correction of the deformity with resultant stiffness and poor outcome. Current evidence has moved towards a more promising minimally invasive method of serial casting followed by minimal surgery, not unlike the Ponseti method for congenital talipes equinovarus.

Reference:

Answer 5


Description 5
The posterior foot spring ankle foot orthosis is a flexible orthosis designed to assist in dorsiflexion and to correct foot drop during the swing phase of gait. The trim around the ankle is thin and present only posteriorly, providing no ankle stability during stance phase. It is suitable for use in patients with isolated motor weakness of ankle dorsiflexors with a supple ankle joint and no hip, knee, or ankle plantarflexion weakness.

Reference:
**Answer 6**

a) Dynamic dorsal wrist hand orthosis (outrigger splint).
b) Radial nerve palsy.
c) Active finger and wrist flexion with passive finger and wrist extension.
d) Prevent overstretching of denervated muscles or injured tendons
   Preserve joint mobility and prevent contractures.
   Assist weak movements and substitute for absent movements during the period of recovery.
e) Fixed finger contractures, patients who cannot comply to rehab regimes.

**Description 6**

The dynamic dorsal wrist hand orthosis, or more commonly known as the outrigger splint provides a quick means for positioning the hand and assisting wrist and MCP extension. The orthosis is made of low-temperature thermoplastics heated to the appropriate temperature and formed directly on the patient. It is typically used for patients with radial nerve injury while awaiting recovery of the nerve function.

**Reference**