Case 1

Chest wall reconstruction

A 43-year-old woman who previously had left breast cancer, and had undergone chemotherapy and radiation therapy. She underwent delayed reconstruction with tissue expansion. Unfortunately, her tissue expander extruded and required removal. She has been treating this wound with dressing changes for six months.

Objective 1: The candidate can formulate a differential diagnosis for a chronic radiated wound

Question 1: What is your differential diagnosis?

Key Answers 1:

Osteoradionecrosis
Osteomyelitis
Recurrence breast cancer involving chest wall
Underlying bony metastases
Noninfected chronic nonhealing wound

Objective 2: The candidate can order and interpret appropriate investigations

Question 2: What investigations would you order?

Key Answers 2:

Wound culture
Biopsy
CT Scan
Bone Scan
WBC Scan

Objective 3: The candidate can develop a management plan

Question 3:

CT and bone scan reveal potential osteomyelitis of the 4th and 5th ribs underlying this defect. Biopsy is negative for malignancy. How would you manage this patient?

Key Answers 3:

Six-week course of IV antibiotics
Consult thoracic surgery, infectious diseases, wound care
Pro-operative anaesthesia consult
Operative management to include:
- Wide debridement in OR with removal of all devitalized tissue, including rib
- Chest wall reconstruction
- Soft tissue coverage

Question 4:

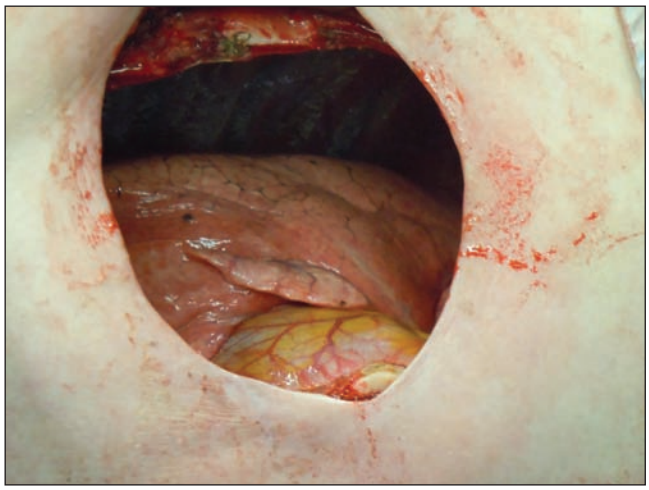
The patient is taken to the OR in conjunction with thoracic surgery for debridement of this wound. You plan to perform a pedicled latissimus dorsi flap for soft tissue coverage. As part of the debridement, a 10 cm × 10 cm portion of the left anterior chest wall is removed including segmental 4th and 5th rib resections (see additional photo). What are your options for restoring structural support?

Key Answer 4:

Alloplastic reconstruction:
- Mesh
  - Polypropylene meshes (Marlex, Prolene)
  - Polyester mesh (Mersilene, Dacron)
  - Polytetrafluoroethylene (Gore-tex)
- Composite implants
  - Polypropylene mesh and poly(methyl methacrylate) construct
- Bioprosthetic materials:
  - Human acellular dermal matrixes (AlloDerm, AlloMax, Flex HD)
  - Xenografts (Strattice)

Autologous reconstruction:
- Bone grafts/vascularized bone (split ribs/fibula)
- Fascial grafts (TFL)

Additional photo



Correspondence: Dr Kirsty U Boyd, Dr Daniel A Peters, University of Ottawa, Box 213, 1053 Carling Avenue, Ottawa, Ontario K1Y 4E9. E-mail kuboyd@gmail.com

Case 2

Phalanx fractures

A 37-year-old right hand dominant woman presents to your office with an injury to her nondominant ring finger sustained the previous day.

Objective 1: The candidate can interpret imaging appropriately.

Question 1: Please describe the x-ray findings (see additional photo).

Key Answers 1:
Comminuted, intra-articular, displaced fracture of the ring finger proximal phalanx visible on PA and lateral films.The intra-articular segment involves approximately 50% of the joint space. The distal fragment is displaced proximally and volarly contributing to shortening of the finger and there is associated ulnar deviation. Remainder of the x-ray appears normal.

Objective 2: The candidate can demonstrate options for treating this fracture pattern.

Question 2: Please describe the options for treatment of this fracture.

Key Answers 2:
Traction pin
Open reduction internal fixation with K-wires
Open reduction internal fixation with lag screw
Open reduction internal fixation with intra-osseous wire or suture

Objective 3: The candidate demonstrates an understanding of the potential complications of phalanx fractures.

Question 3: What are the possible complications associated with treatment of this fracture?

Key Answers 3:
Pin-site infection
Mal-Union
Non-Union
PIPJ osteoarthritis
Decreased range of motion
Pain
PIPJ instability

Objective 4: The candidate demonstrates knowledge of the role of hand therapy in the treatment of phalanx fractures.

Question 4: You decide to proceed with a transverse traction pin through the proximal portion of the middle phalanx. What instructions will you give to your hand therapist regarding the management of this fracture?

Key Answers:
Appropriate traction – guided by serial x-ray – 3 to 6 weeks
Early limited range of motion within splint
Strategies to reduce swelling
A/PROM when traction pin is discontinued
Aggressive movement of joint above/joint below

Additional photo