Chapter 1

Introduction

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The exam format

The written component of the FRCS (Tr & Orth) examination (referred to as Section 1) comprises of multiple choice questions (MCQs; also known as single best answer) and extended matching questions (EMQs; also known as extended matching items). There are usually three sittings of this examination each year.

There are two papers held on the same day:

Paper 1 –	110 MCQs
	2 hours 15 minutes
	First 12 questions relate to a paper
	First 15 minutes is for reading the paper only (questions cannot be read)
Paper 2 –	135 EMQs (i.e. 3 × 45)
	2 hours 30 minutes*

* The time limit was initially 2 hours, but was increased after a few sittings.

Traditionally, candidates filled out standard computer-read MCQ answer sheets, but more recently, the intercollegiate specialty board (ISB) has introduced computer-based testing for the written examination. Full details are available on the ISB website (http://www.intercollegiate.org.uk) and are provided to all candidates.

The MCQs

The first 12 questions are based on an orthopaedic article. From experience, it seems that this is usually a short article, with straightforward methodology and statistics. The questions relating to the article are concerned with the study design, methods, results and statistics, but also the core knowledge relating to the article's subject. The first question is usually related to the type of study (e.g. randomized controlled trail, prospective cohort study, case–control study, retrospective cohort study or case series) so it is worth learning these well to guarantee one mark.

A few examples of articles used in previous examinations are:

Ohly NE, Murray IR, Keating JF. Revision anterior cruciate ligament reconstruction: timing of surgery and the incidence of meniscal tears and degenerative change. *J Bone Joint Surg Br* 2007; **89**(8): 1051–4.

Postgraduate Orthopaedics, ed. Kesavan Sri-Ram. Published by Cambridge University Press.

Shetty AA, Tindall AJ, James KD, Relwani J, Fernando KW. Accuracy of hand-held ultrasound scanning in detecting meniscal tears. *J Bone Joint Surg Br* 2008; **90**(8): 1045–8.
Tang WC, Henderson IJ. High tibial osteotomy: long term survival analysis and patients' perspective. *Knee* 2005; **12**(6): 410–13.
Wraighte PJ, Howard PW. Femoral impaction bone allografting with an Exeter cemented collarless, polished, tapered stem in revision hip replacement: a mean follow-up of 10.5 years. *J Bone Joint Surg Br* 2008; **90**(8): 1000–4.

The remaining MCQs test core knowledge. There are many questions relating to anatomy and exposures. There are many clinical questions and generally, controversial topics are avoided. It should be noted that the style of questions are very different to those used for United States examinations (although many of the topics are common) and this should be borne in mind when using such questions for practice.

The EMQs

Each set of three EMQs will refer to a particular topic, and there may be up to 15 options. Each question will have the instruction similar to:

'Which of the options above is best described in each of the following statements? Each option may be used once, more than once or not at all.'

The questions are often clinical scenarios and there are usually one or two key words which will direct you to the answer.

General advice

Unfortunately, the examination is a stressful experience. However, the following advice may be helpful during the process:

- Both papers are long, and time really is constrained; therefore go fast.
- The first 12 questions in the MCQ paper can take a long time as you need to refer back to the article; it is worth setting a time limit for these and moving on if delayed.
- There is no negative marking, and so an answer must be offered for each question.
- If an answer is not known, do not leave a gap, in case there is no time to come back to that question.
- Read the MCQs carefully; in particular watch out for requests for the incorrect statement (i.e. which of the following is incorrect regarding . . .)
- Do not read through all of the options for the EMQs; instead, read the question and find the answer (i.e. you should ideally know the answer before seeing it in the options provided).

Preparation

Like many things in life, preparation is the key to success. Although most of the knowledge would have been acquired during training, the syllabus is very extensive, and so, for the examination, needs to be learned, and needs plenty of time.

Unlike the old examination, which took place over a few days, the new format has the written component often a few months before the clinical and vivas. As a result, one can focus one's revision accordingly. It is probably best to start revising at least six months before the examination, and have a revision plan.

There are several good texts which help the process. Many candidates rely, rightly, on Miller's *Review of Orthopaedics*. In addition, one should possess good texts for basic science, anatomy and surgical exposures.

Practising MCQs is very important, not only to reinforce the knowledge, but also to get a feel for the time restriction. More recently, UKITE (UK in Training Exams) is being used by trainees and adopted by some regions as part of annual assessment. This process would provide very good preparation for the written paper.

Finally, as with the clinical component of the examination, a study group is incredibly helpful for the written paper and this was certainly the case for many of the authors!

Chapter 2

Hand and wrist: Questions

Maxim Horwitz and Elliot Sorene

MCQs

1. **Which of the following is not a cause of a swan neck deformity?**
   a. Mallet deformity.
   b. Flexor tendon tenosynovitis.
   c. Volar plate rupture.
   d. Central slip rupture.
   e. Lateral band subluxation.

2. **When performing a replant of an amputated finger, which of the following is the correct order of surgery?**
   a. Bone, Artery, Extensor, Flexor, Nerve, Vein.
   b. Artery, Bone, Vein, Extensor, Flexor, Nerve.
   c. Artery, Bone, Extensor, Flexor, Vein, Nerve.
   d. Bone, Extensor, Flexor, Artery, Nerve, Vein.
   e. Bone, Extensor, Flexor, Artery, Vein, Nerve.

3. **When performing flexor tendon repair, which of the following pulleys must be preserved?**
   a. A2 and A4.
   b. A2 only.
   c. A2 and C2.
   d. A2 and A3.
   e. A3 only.

4. **A Stener lesion is significant because?**
   a. Adductor aponeurosis interposition between the proximally based avulsed ligament impairs ligament healing.
   b. Adductor aponeurosis interposition between the distally based avulsed ligament impairs ligament healing.
   c. Skiing is an increasingly popular sport.
   d. It involves partial and complete ulnar collateral ligament rupture.
   e. It is associated with a fleck sign on the X-ray.

Postgraduate Orthopaedics, ed. Kesavan Sri-Ram. Published by Cambridge University Press.

5. **Which of the following regarding metacarpal neck fractures is true?**
   a. Up to 35° of angulation of the index and middle finger can be accepted.
   b. Up to 40° of angulation of the little and ring finger can be accepted.
   c. Metacarpal neck fractures should never be operated upon unless it is an open injury.
   d. The Jahss position is the correct position to immobilize a manipulated metacarpal neck fracture.
   e. Up to 15° of angulation of the index and middle finger can be accepted.

6. **When reducing a Smith's or volar Barton's fracture, the reduction manoeuvre should include?**
   a. Supination only.
   b. Extension only.
   c. Extension and supination.
   d. Extension and pronation.
   e. Flexion and supination.

7. **A 22-year-old medical student was slightly intoxicated and fell onto his extended wrist while his forearm was pronated. He has pain and a clicking sensation on the ulnar side of his wrist. X-rays and nerve conduction studies are normal. The most likely diagnosis is?**
   a. Scapholunate dissociation.
   b. Hook of hamate fracture.
   c. Triangular fibrocartilage complex (TFCC) tear.
   d. Piso-triquetral subluxation.
   e. Extensor carpi ulnaris (ECU) subluxation.

8. **If a 28-year-old male motorbiker had a complex distal radius fracture (volar fixation required) and acute severe carpal tunnel syndrome, which of the following surgical approaches would be correct?**
   a. Perform a Henry's approach and a separate, very ulnar carpal tunnel incision.
   b. Observe the carpal tunnel syndrome for 48 hours after surgery.
   c. Perform a Henry's approach and a separate carpal tunnel incision.
   d. Continue Henry's approach across the wrist with an S curve and decompress the carpal tunnel.
   e. Continue Henry's approach across the wrist and decompress the carpal tunnel.

9. **Which of the following is not a sign of an unstable scaphoid fracture?**
   a. Vertical oblique fracture.
   b. Comminuted fracture.
   c. >1 mm displacement.
   d. Associated perilunate injury.
   e. Scapholunate angle <60°.

10. **In Wartenburg syndrome the compression takes place between?**
    a. Brachioradialis and extensor carpi radialis longus (ECRL) in pronation.
    b. Brachioradialis and ECRL in supination.
    c. ECRL and extensor carpi radialis brevis (ECRB).

d. Abductor pollicis longus (APL), extensor pollicis brevis (EPB) and ECRL, ECRB.
e. Brachioradialis and flexor carpi radialis (FCR).

11. **A patient presents with pain and cold insensitivity at the fingertip. There is a bluish discolouration under the nail. The most likely diagnosis is?**
a. Neurofibroma.
b. Glomus tumour.
c. Turret tumour.
d. Epithelioid sarcoma.
e. Raynaud's disease.

12. **The following are all good prognosis after nerve injury except?**
a. Young age.
b. Low velocity injury.
c. Sharp (knife) injury.
d. Proximal injury.
e. Early exploration.

13. **All of the following make up the spiral cord except?**
a. Grayson's ligaments.
b. Spiral band.
c. Lateral sheet.
d. Natatory ligament.
e. Pretendinous band.

14. **Which of the following is not a poor prognostic indicator in traumatic brachial plexus injury?**
a. Horner's sign.
b. Transverse process fracture.
c. Empty sheaths on MRI scan.
d. Diaphragmatic flattening on inspiration/expiration X-rays.
e. No sensation from tip of acromion to tip of fingers.

15. **Which of the following is a rule of tendon transfer?**
a. The donor muscle must be at least MRC grade 3.
b. Joints can have 50% maximum contracture.
c. Tendon pull must be synergistic.
d. Line of pull should be orthogonal.
e. Tendon excursions of the finger extensors is longer than the flexors.

16. **A 56-year-old obese man presents with a painless deterioration in bilateral hand function. Initially it was the metacarpophalangeal (MCP) and proximal interphalangeal (PIP) joints that were involved and now it is the distal interphalangeal (DIP) joints. He has thick tight skin and a positive prayer sign. The most likely disease is?**
a. Gout.
b. Osteoarthritis.
c. Rheumatoid arthritis.

d. Scleroderma.
e. Diabetic cheirarthropathy.

17. **A 38-year-old man presents with dorsal wrist pain. He has a stiff wrist with very limited range of motion and can't work as a mechanic. Plain films reveal Grade IV Kienbock's disease. He should be treated with?**
a. Proximal row carpectomy.
b. Wrist replacement.
c. Curettage and vascularized pronator quadratus graft.
d. Radial shortening.
e. Wrist arthrodesis.

18. **A 41-year-old woman sustained a distal radius fracture whilst hiking in the Andes. It was treated in plaster by a local missionary doctor and went on to malunion. She presents with ulnar-sided pain and on examination she impacts on the ulnar side, with a negative grind test at the distal radioulnar joint (DRUJ). The best treatment would be?**
a. Ulnar shortening osteotomy.
b. Darrach procedure.
c. Sauve–Kapandji procedure.
d. Arthroscopic debridement of DRUJ.
e. Distal ulnar head implant arthroplasty.

19. **Which of the following is not true of Dupuytren's disease?**
a. The long-term recurrence rate is 50%.
b. Painful nodules are an indication for surgery.
c. Metacarpophalangeal joint (MCPJ) contracture of greater than 30° is an indication for surgery.
d. Myofibroblasts are the offending cells in the aetiology of the disease.
e. Concomitant carpal tunnel release increases incidence of post-operative flare.

20. **A 17-year-old snowboarder fell onto his outstretched pronated hand. He presents with ongoing ulnar-sided wrist pain. He is tender over the ulnar fovea and has no click. The distal radioulnar joint (DRUJ) is stable. Plain films are normal and a MR arthrogram show a triangular fibrocartilage complex (TFCC) defect adjacent to the ulna. How is this classified according to the Palmer classification?**
a. Class 2A lesion.
b. Class 1A lesion.
c. Class 2B lesion.
d. Class 1B lesion.
e. Class 1C lesion.

21. **A 16-year-old girl had multiple fractures in her forearm and hand. One year later after fracture healing she presents with trouble gripping things. When the metacarpophalangeal (MCP) joint is extended you cannot passively flex the proximal interphalangeal (PIP) joint. When the MCP joint is flexed it is possible to passively flex the PIP joint. Her extensors are at a good length. Which of the following is incorrect?**

a. She has an intrinsic plus hand.
b. She has a claw hand.
c. She has a positive Bunnell test.
d. She has a likely positive Bouviere effect.
e. There is an imbalance between the intrinsic and extrinsic muscles.

22. **A 23-year-old cricketer had an avulsion of the flexor digitorum profundus (FDP) tendon of his ring finger. This was diagnosed early and despite proximal migration he had it reinserted with a button technique. Six months later he complains that he can't close his fingers tightly over a cricket ball. This problem is?**
a. Lumbrical plus effect.
b. Swan neck deformity.
c. Quadrigia effect.
d. Intrinsic tightness.
e. Chronic mallet finger.

23. **Which of the following is true regarding a Mayfield Stage I injury?**
a. There is not always a scaphoid fracture.
b. There is a lunotriquetral ligament injury.
c. The lunate is extruded.
d. There is a radio-scapho-capitate ligament detachment.
e. There is a perilunate dislocation.

24. **A 23-year-old was intoxicated at a wedding and fell through a glass window. He presents to the emergency department with a radial wrist laceration with arterial bleeding. With regards to the timing of surgery the major blood supply to the hand is provided by which of the following?**
a. Deep branch of the radial artery.
b. Radial artery.
c. Deep palmar arch.
d. Superficial palmar arch.
e. Interosseous artery.

25. **A 41-year-old man presents with a swelling at the level of his distal interphalangeal (DIP) joint on his right middle finger. What is the most likely diagnosis?**
a. Epidermoid cyst.
b. Keratoacanthoma.
c. Mucoid cyst.
d. Epithelioid tumour.
e. Sebaceous cyst.

26. **Which of the following is not a recognized treatment for carpal tunnel syndrome?**
a. Nerve stimulation therapy.
b. Steroid injection.
c. One-portal endoscopic surgical release.
d. Two-portal endoscopic surgical release.
e. Yoga.

27. **All of the following contribute to the wrist and hand deformity in rheumatoid arthritis except?**
    a. Volar subluxation of the extensor carpi ulnaris (ECU).
    b. Radio-scapho-capitate ligament failure.
    c. Scaphoid extension.
    d. Supination of the carpus on the forearm.
    e. Distal radioulnar joint (DRUJ) destruction.

28. **A 13-year-old boy is referred to you after a trivial fall onto his elbow. Radiographs reveal a dislocated radial head. He does not have much pain. His mother says she has always had joint pains with abnormal knee caps. She keeps pointing to her knees in an excited manner with long fake nails. The most likely diagnosis is?**
    a. Marfan syndrome.
    b. Monteggia Bado injury.
    c. Generalized ligamentous laxity.
    d. Ehlers–Danlos syndrome.
    e. Nail patella syndrome.

29. **A 43-year-old woman presents with decreased digital flexion and an injury in Zone 2 of her left hand. On exploration what percentage laceration of the flexor tendon would you repair?**
    a. 40%.
    b. 25%.
    c. 45%.
    d. 50%.
    e. 35%.

30. **With regards to radioulnar limb formation and the zone of polarizing activity, defects in which protein will result in duplication of digits?**
    a. Fibroblast growth factor.
    b. Sonic hedgehog protein.
    c. LMX1.
    d. Transforming growth factor.
    e. Cartilage-derived morphogenetic protein.

EMQs

1. **Causes of wrist pain**
   a. De Quervain's disease
   b. Chronic triangular fibrocartilage complex (TFCC) lesion with sigmoid notch detachment
   c. Extensor carpi ulnaris (ECU) subluxation and tenosynovitis
   d. Intersection syndrome
   e. Late tendon rupture after distal radius fracture
   f. Vaughn-Jackson syndrome
   g. Extensor digitorum communis (EDC) to ring finger subluxation
   h. Wartenburg syndrome

Which of the options above is best described in each of the following statements? Each option may be used once, more than once or not at all.

1. A male 27-year-old university rower who plays the drums complains of wrist pain.
2. A 43-year-old woman on anti-tumour necrosis factor (anti-TNF) medication reports that her hand function has deteriorated dramatically.
3. A 23-year-old woman presents with radial-sided wrist pain. Her full-time job is caring for her 6-month-old baby and 2-year-old toddler.

2. **Infections in the hand**
   a. Orf virus
   b. *Staphylococcus aureus*
   c. Clostridia and Group A β-streptococci
   d. Herpes simplex virus type 1
   e. *Candida albicans*
   f. *Mycobacterium marinum*
   g. *Eikenella corrodens*
   h. *Pasteurella multocida*

Which of the options above is best described in each of the following statements? Each option may be used once, more than once or not at all.

1. A 26-year-old presents to the emergency department with a small laceration over his index metacarpal of his right hand. It is swollen with pus draining. History relates to a punching incident.
2. A dentist presents with recurrent vesicles on the fingers and pain.
3. A 65-year-old woman was bitten by a cat on the dorsum of the left wrist and now can't move the hand and has severe swelling and pain.

3. **Wound management**
   a. Cross finger flap
   b. Heterodigital island flap
   c. Terminalization
   d. Haematoma evacuation
   e. Nail bed repair and splint
   f. V-Y plasty (advancement)