Postgraduate Orthopaedics

Viva Guide to the FRCS (Tr & Orth) Examination

Second edition

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Second edition

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Every effort has been made in preparing this book to provide accurate and up-to-date information that is in accord with accepted standards and practice at the time of publication. Although case histories are drawn from actual cases, every effort has been made to disguise the identities of the individuals involved. Nevertheless, the authors, editors, and publishers can make no warranties that the information contained herein is totally free from error, not least because clinical standards are constantly changing through research and regulation. The authors, editors, and publishers therefore disclaim all liability for direct or consequential damages resulting from the use of material contained in this book. Readers are strongly advised to pay careful attention to information provided by the manufacturer of any drugs or equipment that they plan to use.

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Preface

With the first-edition viva book we were keen to write a viva book to complement our main orthopaedic textbook.

We had a reasonable surplus of material available that we had been unable to fit into the second-edition book. We were keen to go into a more detailed, structured answer to use in the viva situation rather than just going ahead with revision bullet points. We were attempting (but perhaps not realizing at the time) to provide examples of higher-order thinking and judgement for candidates to use in their exam preparation.

We had already published two books previously and so were experienced in the 'know how' of 'how to get a book done'. Like any new book it was certainly more difficult writing from scratch, but there was no great master plan of what we wanted to achieve.

We approached a number of post FRCS (Tr & Orth) registrars who did an excellent job of taking on the task of writing the allocated book chapters. As such, the viva book came together with the minimum of fuss.

The main orthopaedic book had been the first of its kind combining all parts of the FRCS (Tr & Orth) syllabus together in one volume. The viva book was a very different challenge in that there were lots of similar viva-type books already out on the market.

When released, the complexity within some model answers in the viva book took a while to be fully appreciated by our audience. In due course there was a realization that perhaps two or three chapters didn't quite hit our own expected high standards. The book was published very close to similar competing titles that ended up muddying the waters. The book became something of a slow burner, but over time increased in popularity.

The exam format keeps changing, and as time went on the viva book started to age. A decision was needed as to whether to update the book or just let it go out of date. It wasn't a difficult decision as we wanted to improve the quality of the viva book. During the intervening years the standard of FRCS (Tr & Orth) exam books had significantly improved and we wanted to keep up with the newer titles emerging. We also realized that the vast majority of the book was well written and could be improved even further to do the book its full justice.

The two main areas that we concentrated on were basic science and trauma. Basic science is by and large by far the most difficult subject for candidates to revise and we wanted to significantly raise the bar in this section. Trauma was becoming more subspecialized with the MTC, but candidates still needed a good working knowledge of the material. Diagrams needed to be more professionally drawn.

Although the whole exam is based on the Tr & Orth curriculum, the mechanics of the viva exam are very different to that of the MCQs and clinicals. The viva exam allows for a more formal assessment of communication skills. If you are a gifted, silver-tongued candidate with inherit tactical nous in answering viva questions that's great, but most candidates need some guidance.

A standardized method of approach to answering a viva question needs to be learnt and thoroughly practised to avoid mishaps.

We hope the book realizes its aim of moving the material up a level and that it will guide you better in your exam preparation. Again, like all books of the Postgraduate Orthopaedics book series we make no claim to the originality of the material. We are distilling orthopaedic knowledge from the wider orthopaedic community specifically for exam-related subjects. We have attempted to acknowledge our sources wherever possible and our sincere apologies if we have inadvertently missed anyone out.

We thank Cambridge University Press for all their patience and advice with the project, again remembering that the grass is still not greener elsewhere.

Overall, we are generally happy with the end result. We could have continued writing material for another year and still not be finished, as the Tr & Orth curriculum is vast. Some of the chapters are very

specialized and candidates may struggle to find similar information on the internet, but this material somehow still gets asked by the ICB. If the basic science or general adult pathology answer to the question is unGoogleable but we have managed to provide for a model answer, then we have mostly succeeded in what we wanted to achieve.

This book was much more difficult to write than the first edition and didn't come together all that easily. We were surprised by this and went through a few Peroni tests to get there! Will we write a third-edition viva book? Never say never, but probably not!

Paul Banaszkiewicz

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Lastly, a special thank you to Jo McStea, who helps coordinate the Postgraduate Orthopaedics book and lecture programme. This involves a huge amount of behind-the-scenes organization skills and problem solving such that that we couldn't manage without her input.

Abbreviations

1,2-ISCRA	1,2-intercompartmental supraretinacular artery
A&E	Accident and Emergency
AAOS	American Academy of Orthopaedic Surgeons
ABC	airway, breathing, circulation
ABG	arterial blood gas
ABI	ankle–brachial index
ABPB	axillary brachial plexus block
ABPI	Ankle–Brachial Pressure Index
AC	acromioclavicular
ACDF	anterior cervical decompression and fusion
ACI	autologous chondrocyte implantation
ACJ	acromioclavicular joint
ACL	anterior cruciate ligament
ACR	American College of Rheumatology
AD	autosomal dominant
ADL	activities of daily living
AER	apical ectodermal ridge
AFO	ankle–foot orthosis
AGE	advanced glycation end product
AIDS	acquired immunodeficiency syndrome
AIIS	anterior inferior iliac spine
AIN	anterior interosseous nerve
AIS	Abbreviated Injury Scale
AIS	adolescent idiopathic scoliosis
AJCC	American Joint Committee on Cancer
AKA	above-knee amputation
ALIF	anterior lumbar interbody fusion
ALL	anterior longitudinal ligament
ALVAL	aseptic lymphocyte-dominated vasculitis-associated lesions
AM	anteromedial
AMTS	abbreviated mental test score
ANOVA	analysis of variance
AOFAS	American Orthopaedic Foot and Ankle Society
AORI	Anderson Orthopaedic Research Institute
AP	anteroposterior
APB	abductor pollicis brevis
APL	abductor pollicis longus
APT	all polyethylene tibial
AR	autosomal recessive
ARCO	Association Research Circulation Osseous
ARDS	acute respiratory distress syndrome
ARMD	adverse reactions to metal debris
AS	ankylosing spondylitis
ASIA	American Spinal Injury Association
ASIS	anterior superior iliac spine
ATFL	anterior talofibular ligament
ATL	atypical lipoma
ATLS®	Advanced Trauma Life Support®
ATP	adenosine triphosphate
AVN	avascular necrosis
BASS	British Association of Spine Surgeons
BDGF	bone-derived growth factor
bFGF	basic fibroblast growth factor
BHN	bone homeostasis, healing and non-union
BHS	British Hip Society
BKA	below-knee amputation
BMD	bone mineral density
BMES	bone marrow oedema syndrome
BMI	body mass index
BMP	bone morphogenetic protein
BMU	basic multicellular unit
BOA	British Orthopaedic Association

BOAST	British Orthopaedic Association Standards for Trauma
BP	blood pressure
BPBG	bone–patella–bone graft
BPBT	bone–patella–bone–tendon
BPI	brachial plexus injury
BPN	bisphosphonate
BPTB	bone–patella–tendon–bone
BR	brachioradialis
BSSH	British Society for Surgery of the Hand
BW	body weight
CAVE	cavus, adductus, varus, equinus
CC	costoclavicular
CCK	constrained condylar knee
CCS	central cord syndrome
CDH	congenital dislocation of the hip
CDR	cervical disc replacement
CEA	carcinoembryonic antigen
CECI	cauda equina syndrome incomplete
CES	cauda equina syndrome
CESR	cauda equine syndrome retention
CFL	calcaneofibular ligament
CFU	colony-forming units
CLPE	cross-lined polyethylene
CMAP	compound muscle action potential
CMC	carpometacarpal
CMN	cephalomedullary nail
CMT	Charcot–Marie–Tooth
CNB	central neuraxial block
CNS	central nervous system
CNS	Congress of Neurological Surgeons
CoC	ceramic on ceramic
CoP	ceramic on polyethylene
COPD	chronic obstructive pulmonary disease
CP	cerebral palsy
CPSP	central post-stroke pain
CR	cruciate retaining
CROW	Charcot restraint orthotic walker
CRP	C-reactive protein
CRPS	complex regional pain syndrome
CS	cannulated screw
CSF	cerebrospinal fluid
CSM	cervical spondylotic myelopathy
CT	computed tomography
CTEV	congenital talipes equinovarus
CTGF	connective tissue growth factor
CTS	carpal tunnel syndrome
CVA	cerebrovascular accident
CVT	congenital vertical talus
DAIR	debridement, antibiotics and implant retention
DASH	Disabilities of the Arm, Shoulder and Hand
DB	Denis Browne
DCO	damage control orthopaedics
DCP	dynamic compression plate
DCS	dynamic condylar screw
DDH	developmental dysplasia of the hip
DEXA	dual energy x-ray absorptiometry
DGH	district general hospital
DHS	dynamic hip screw
DIP	distal interphalangeal
DIPJ	distal interphalangeal joint
DISH	diffuse idiopathic skeletal hyperostosis
DMAA	distal metatarsal articular angle
DMARDs	disease modifying anti-rheumatoid drugs
DRUJ	distal radioulnar joint
DVT	deep vein thrombosis
ECA	extensor compartment artery
ECM	extracellular matrix
ECRB	extensor carpi radialis brevis
ECRL	extensor carpi radialis longus
ECU	extensor carpi ulnaris
EDB	extensor digitorum brevis
EDC	extensor digitorum communis
EDL	extensor digitorum longus
EDM	extensor digiti minimi
EF	external fixation
EGF	epidermal growth factor
EHL	extensor hallucis longus
EIP	extensor indicis proprius
EJS	effective joint space
EMA	epiphyseal–metaphyseal angle
EMG	electromyography
EMIs	extended matching items
EPB	extensor pollicis brevis
EPI	epicondylitis
EPL	extensor pollicis longus

List of Abbreviations

EPS	extracellular polymeric substance
ER	external rotation
ERAS	enhanced recovery after surgery
ERCB	extensor carpi radialis brevis
ERCL	extensor carpi radialis longus
ESR	erythrocyte sedimentation rate
ETO	extended trochanteric osteotomy
EUA	examination under anaesthesia
EULAR	European League Against Rheumatism
EWS	early warning score
FAOS	foot and ankle outcome score
FBC	full blood count
FCL	fibular collateral ligament
FCR	flexor carpi radialis
FCU	flexor carpi ulnaris
FDB	flexor digitorum brevis
FDG	fluorodeoxyglucose
FDL	flexor digitorum longus
FDP	flexor digitorum profundus
FDQ	flexor digiti quinti
FDS	flexor digitorum superficialis
FFP	fresh frozen plasma
FGF	fibroblast growth factor
FGF23	fibroblast growth factor 23
FGFR3	fibroblast growth factor receptor gene 3
FHL	flexor hallucis longus
FMDA	femoral metaphyseal–diaphyseal angle
FNB	femoral nerve block
FPL	flexor pollicis longus
FPPS	farnesyl pyrophosphate synthase
FTR	femoral tibial ratio
GA	general anaesthetic
GAGs	glycosaminoglycans
GCS	Glasgow Coma Score
GCT	giant cell tumour
GHL	glenohumeral ligaments
GI	gastrointestinal
GIRFT	get it right first time
GMC	General Medical Council
GRAFO	ground reaction ankle foot orthosis
GRF	ground reaction forces
GT	greater trochanter
HA	hyaluronic acid
HA	hydroxyapatite
HCLPE	highly cross-linked polyethylene
HIV	human immunodeficiency virus
HO	heterotopic ossification
HSMN	hereditary sensorimotor neuropathies
HTO	high tibial osteotomy
HU	Hounsfield units
HVA	hallux valgus angle
HVI	hallux valgus interphalangeus
IASP	International Association of the Study of Pain
ICB	Intercollegiate Board
ICSRA	intercompartmental supraretinacular artery
IGF	insulin-like growth factor
II	image intensifier
IL	interleukin
IM	intramedullary
IMA	intermetatarsal angle
INR	International Normalized Ratio
IP	interphalangeal
IPJ	interphalangeal joint
ISB	interscalene block
ITB	iliotibial band
ITOH	idiopathic transient osteoporosis of the hip
ITU	Intensive Care Unit
IV	intravenous
IVC	inferior vena cava
IVDU	intravenous drug user
JBJS	*Journal of Bone and Joint Surgery*
JCIE	Joint Committee on Intercollegiate Examinations
JLCA	joint line convergence angle
JRF	joint reaction force
KAFO	knee–ankle–foot orthosis
LA	local anaesthetic
LAST	local anaesthetic systemic toxicity
LAT	lateral
LBP	low back pain
LC	lateral compression
LCDCP	low-contact dynamic compression plates
LCL	lateral collateral ligament
LCP	low compression plates
LCPD	Legg Calves Perthes disease

LDFA	lateral distal femoral angle
LFA	low-friction arthroplasty
LFTs	liver function tests
LHB	long head of biceps
LLD	limb length discrepancy
LMWH	low molecular weight heparin
LP	lumbar puncture
LRTI	ligament reconstruction tendon interposition
LUCL	lateral ulnar collateral ligament
MA	metatarsus adductus
MAD	mechanical axis deviation
MCFA	medial circumflex femoral artery
MCL	medial collateral ligament
MCP	metacarpophalangeal
MCQs	multiple choice questions
MCSF	macrophage-colony stimulating factor
MDA	metaphyseal–diaphyseal angle
MDP	methylene diphosphonate
MDT	multidisciplinary team
MED	multiple epiphyseal dysplasia
MFC	medial femoral condyle
MHRA	Medicines and Healthcare products Regulatory Agency
MIPO	minimally invasive plate osteosynthesis
MMP	metalloproteinase
MoM	metal on metal
MoP	metal on polyethylene
MPC	2-methacryloyloxyethyl phosphorylcholine
MPFL	medial patellofemoral ligament
MPTA	medial proximal tibial angle
MR	magnetic resonance
MRC	Medical Research Council
MRI	magnetic resonance imaging
MS	multiple sclerosis
MSC	mesenchymal stem cell
MSCC	malignant spinal cord compression
MSK	musculoskeletal
MSTS	Musculoskeletal Tumor Society
MSU	monosodium urate
MTC	Major Trauma Centre
MTP	metatarsophalangeal
MTPJ	metatarsophalangeal joint
MUA	manipulation under anaesthetic
NAI	non-accidental injury
NCS	nerve conduction studies
NF	neurofibromatosis
NF-1	neurofibromatosis type 1
NF-2	neurofibromatosis type 2
NGAL	neutrophil gelatinase-associated lipocalin
NICE	National Institute for Health and Clinical Excellence
NIDDM	non-insulin-dependent diabetes mellitus
NJR	National Joint Registry
NMJ	neuromuscular junction
NOGG	National Osteoporosis Guideline Group
NPV	negative predictive value
NSAIDs	non-steroidal anti-inflammatory drugs
OA	osteoarthritis
OATS	osteochondral autograft transfer system
OCD	osteochondritis dissecans
OCL	osteochondral lesions
ODEP	Orthopaedic Data Evaluation Panel
OHS	Oxford hip score
OI	osteogenesis imperfecta
OKS	Oxford knee score
OLT	osteochondral lesion of the talus
ON	osteonecrosis
OPG	osteoprotegerin
OPLL	ossification of the posterior longitudinal ligament
ORIF	open reduction internal fixation
OSCAR	Orthosonics System for Cemented Arthroplasty Revision
OSCE	objective structured clinical examination
PA	posterior anterior
PACS	picture archive and communication system
PAO	periacetabular osteotomy
PCA	patient-controlled analgesia
PCL	posterior cruciate ligament
PCT	procalcitonin
PD	proximodistal
PDFA	posterior distal femoral angle
PDGF	platelet-derived growth factor
PDNP	peripheral diabetic neuropathic pain
PE	polyethylene
PE	pulmonary embolism

PET	positron emission tomography
PF	patellofemoral
PFJ	patellofemoral joint
PFO	proximal femoral osteotomy
PFR	proximal femoral replacement
PG	proteoglycan
PGE2	prostaglandin E2
PHN	postherpetic neuralgia
PI	pelvic incidence
PIN	posterior interosseous nerve
PIP	proximal interphalangeal
PIPJ	proximal interphalangeal joint
PIS	pinning-in-situ
PJI	periprosthetic joint infection
PL	posterolateral
PLC	posterior ligamentous complex
PLIF	posterior interbody lumbar fusion
PLRI	posterolateral rotatory instability
PMMA	polymethylmethacrylate
PMN	polymorphonuclear neutrophil
PPF	periprosthetic fracture
PPP	preperitoneal pelvic packing
PPTA	posterior proximal tibial angle
PPV	positive predictive value
PQ	pronator quadratus
PR	per rectum
PROM	patient-reported outcome measure
PROSTALAC	prosthesis of antibiotic-loaded acrylic cement
PRP	platelet-rich plasma
PS	posterior stabilized
PSA	posterior sloping angle
PSA	prostate-specific antigen
PSF	posterior spinal fusion
PSIS	posterior superior iliac spine
PT	pronator teres
PTFL	posterior talofibular ligament
PTH	parathyroid hormone
QAP	questions, answers and prompting
RA	rheumatoid arthritis
RANK	receptor activator of nuclear factor κβ
RANKL	receptor activator of nuclear factor kB ligand
RC	radial collateral
RCT	randomized controlled trial
RDS	respiratory distress syndrome
RF	rheumatoid factor
RHK	rotating-hinge knee
RLN	recurrent laryngeal nerve
ROM	range of movement
ROTEM	rotational thromboelastometry
RR	relative risk
RTA	road traffic accident
SACH	solid ankle cushioned heel
SAR	structures at risk
SBA	single best answer
SCA	sickle cell anaemia
SCB	supraclavicular block
SCD	sickle cell disease
SCFE	slipped capital femoral epiphysis
SCH	supracondylar fracture of the humerus
SCI	spinal cord injury
SCM	sternocleidomastoid
SD	standard deviation
SER	supination external rotation
SERMs	selective oestrogen receptor modulators
SI	sacroiliac
SIRS	systemic inflammatory response syndrome
SLAC	scapholunate advanced collapsed
SLAP	superior labrum from anterior to posterior
SLE	systemic lupus erythematosus
SLR	straight leg raise
SMA	second moment area
SMAC	Standing Medical Advisory Committee
SNAC	scaphoid non-union advanced collapsed
SNAP	sensory nerve action potential
SNB	sciatic nerve block
SOL	space occupying lesion
SPECT	single photon emission computed tomography
SPN	superficial peroneal nerve
SR	sarcoplasmic reticulum
SRN	superficial radial nerve
SRS	Scoliosis Research Society
ST3	surgical trainee year 3
STACIS	Surgical Timing in Acute Spinal Cord Injury Study

STAR	Scandinavian total ankle replacement
STC	Specialist Training Committee
STIR	short-tau inversion recovery
STT	scaphotrapeziotrapezoid
SUFE	slipped upper femoral epiphysis
TA	tibialis anterior
TB	tuberculosis
TCA	tricyclic antidepressant
TEG	thromboelastography
TENS	transcutaneous electrical nerve stimulation
TER	total elbow replacement
TFA	tibiofemoral angle
TFCC	triangular fibrocartilage complex
TFL	tensor fascia lata
TGF	transforming growth factor
TGF-β	transforming growth factor-beta
THA	total hip arthroplasty
THR	total hip replacement
TIMPs	tissue inhibitory metalloproteinases
TIVA	total intravenous anaesthesia
TKA	total knee arthroplasty
TKR	total knee replacement
TLICS	Thoracolumbar Injury Classification and Severity
TLIF	transforaminal lumbar interbody fusion
TLSO	thoracolumbar spinal orthosis
TM	trabecular metal
TMT	tarsometatarsal
TNF	tumour necrosis factor
TRAP	tartrate resistance acid phosphatase
TSF	thread shape factor
TT	tibial tubercle
TTO	tibial tubercle osteotomy
TT–TG	tibial tuberosity–trochlea groove
U&E	urea and electrolytes
UA	uric acid
UCL	ulnar collateral ligament
UCS	Unified Classification System
UHMWPE	ultra-high-molecular-weight polyethylene
UKR	unicompartmental knee replacement
UMN	upper motor neuron
URTI	upper respiratory tract infection
US	ultrasound
UTI	urinary tract infection
UTS	ultimate tensile strength
UV	ultraviolet
VACTERL	vertebral, anorectal, cardiac, tracheal, oesophageal, renal and limb
VAS	visual analogue scale
VEGF	vascular endothelial growth factor
VFG	vascularized fibular graft
VTE	venous thromboembolism
WBC	white blood cell
WCC	white blood cell count
WDL	well-differentiated lipoma
WHO	World Health Organization
WOMAC	Western Ontario and McMaster Universities Arthritis Index
ZPA	zone of polarizing activity

Interactive website

The website to accompany the book:
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This website accompanies the textbook series: Postgraduate Orthopaedics. It includes:

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