An Introduction to Orthopaedic Surgery

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The World Journal of Medical Education and Research (WJMER) is the online publication of the Doctors Academy Group of Educational Establishments. Published on a quarterly basis, its aim is to promote academia and research amongst all members of the multi-disciplinary healthcare team including doctors, dentists, scientists, and students of these specialties from all parts of the world. The principal objective of this journal is to encourage the aforementioned from developing countries in particular to publish their work. The journal intends to promote the healthy transfer of knowledge, opinions and expertise between those who have the benefit of cutting edge technology and those who need to innovate within their resource constraints. It is our hope that this will help to develop medical knowledge and to provide optimal clinical care in different settings all over the world. We envisage an incessant stream of information will flow along the channels that WJMER will create and that a surfeit of ideas will be gleaned from this process. We look forward to sharing these experiences with our readers in our subsequent editions. We are honoured to welcome you to WJMER.
Use of CURB-65 scoring in Community Acquired Pneumonia

Pre-Operative Optimization of Surgical Patients

The Scope of Medical Education in Egypt

Issues Surrounding Childhood Stroke: A Case Report and Review of the Literature

The Use of Geometric Morphometrics as a New Method to Analyse Glenoid Bone Loss after Shoulder Dislocation

An Overview of Sutures in Surgical Practice

Operating Theatre: Essential Concepts and Procedures
About WJMER

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Orthopaedics is a surgical speciality that focuses on the treatment of injuries and abnormalities of the musculoskeletal system. This encompasses the bones, joints, muscles, tendons, nerves and ligaments, which are functionally required for a reasonable standard of life.

The term Orthopaedics is derived from the Greek language with ‘Orthos’ meaning straight/correct and ‘paidion’ meaning child. Although today Orthopaedics is not limited to paediatrics it includes people of all ages along with various sub specialties such as hand surgery, shoulder and elbow surgery, lower limb surgery, knee surgery, foot and ankle surgery, spinal surgery and trauma surgery.

It is a very rewarding speciality that provides the opportunity to address the clinical morbidity that has limited the patient’s function and restore the function. A common example is that of osteoarthritis of the hip joint, which makes gait both painful and restricted. Yet most patients who are treated surgically and have good physiotherapy follow up have excellent pain relief and mobility.

However Trauma and Orthopaedics is not a speciality for everyone. It demands sound diagnostic and surgical skills along with good spatial awareness, 3-dimensional reasoning, thinking and communicating effectively under pressure, and to work in a physically and intellectually challenging environment.

**Life as an Orthopaedic Surgeon**

Each day typically begins with an early morning ward round at about 7.30 am to examine patients who were operated the previous day and to monitor their recovery. Following this there is a Trauma meeting that involves several members of the multidisciplinary team (MDT);

- **On call team** – To discuss new patients admitted to the ward overnight.
- **Core surgical trainees (CT)** – To understand the patient’s general health and learn the general principles of management, including the surgical options.
- **Speciality Registrars (ST), Registrars, Middle Grade Doctors** – To formulate a surgical plan, construct an operating list, liaise with theatre and anaesthetist, and provide appropriate input in the various stages of the patient’s care.
- **Consultants** – To coordinate the meeting, decide on the most appropriate management and be responsible for the overall care for the patient.
- **Medical students** – To learn the fundamentals of Orthopaedics.
- **Emergency physicians (A&E doctors)** – To learn how the patients they have seen the previous day are managed by the orthopaedic team.
- **Radiologists** – To help junior doctors understand difficult X-ray and discuss/ascertain the need for any further investigation (e.g., CT scan for fracture of calcaneum or MRI scan for knee injury).

Next there is a focused ward round to see the patients on the morning list and to ensure they have been fasted, still consent to surgery, know what the procedure involves and that the correct body part/site/side is marked for surgery.

The morning theatre list then commences at around 9am and usually finishes sometime in the early afternoon. Following this patients from the afternoon list are seen and the afternoon list commences. At the end of the list a post ward round is performed to discuss with the patient the operation that has been performed and to check patient’s observations.

Elective lists include operations such as hip and knee replacements and generally finish on time. Trauma lists cover many type of injuries such as fractured femoral necks, long bone fractures, soft tissue injuries and amputations; finish times are thus less predictable.

One of the advantages of being an orthopaedic surgeon is that it is very practical, very direct, produces immediate results and there is great variety of work on different days such as;

- **Outpatient clinics (elective/trauma)**
- **Operation sessions (trauma/elective)**

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Facts and figures

The competition ratios for a selection of different deaneries are shown below.

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The fiercest competition is for ST3 (Speciality Registrar) posts with an average of 10 applicants for every post meaning commitment, understanding and a good portfolio are mandatory. However in 2012 the competition for ST3 posts dropped somewhat to 3.8 applicants per post, probably due to increased number of posts.

The Future

There is increasing emphasis on evidence-based medicine for both new and established surgical techniques and in which circumstances they should be used to maximise outcomes.

For example, there is a greater prevalence of minimally invasive surgery in Orthopaedics. In upper limb surgery, large rotator cuff tears can now be treated through laparoscopic (keyhole) surgery. This also allows greater evaluation of the shoulder during surgery. Another example is the treatment of meniscal tears of the knee. Open surgery takes several weeks to recuperate and rehabilitate the patients whereas patients can recover within 48 hours of keyhole surgery. Keyhole surgery also results in smaller scars and lower rates of infection.

Over the last decade research has been looking at tissue engineering of cartilage using different growth factors such as TGF-β, IGF-1, FGF-2, and BMP-7 aiming to replace patient’s damaged cartilage. An example would involve isolating mesenchymal stem cells and then growing and differentiating them into chondrocytes in the laboratory (Figure 1). These could then be seeded onto a biomaterial matrix and re implanted into the patient. Unfortunately this is currently far from clinical practice as most of this work is being performed on animal models, which haveseveral differences to humans. Once deemed safe on animals the work would then have to be successfully translated to humans in clinical trials before being...
approved for use on the general population. More recently research has delved into the understanding of tendon and ligament healing processes as little is known about their regenerative capabilities.

![Diagram summarising the potential clinical application of lab produced cartilage. With courtesy of Oseni A et al.](image)

**Figure 1:** Diagram summarising the potential clinical application of lab produced cartilage. With courtesy of Oseni A et al.

### Training

- **Medical Student (5-6 years) MBChB/MBBS**
- **Foundation Training F1-F2 (2 Years)**
- **Academic Foundation Training (2 years)**

#### INITIAL PHASE

- **Core Surgical Training (CT1/ST1-CT2/ST2)**
  - Usually takes 2 years. Involves learning generic surgical principles and trauma management skills. At the end of this phase you will be expected to pass the MRCS exam.

#### INTERMEDIATE PHASE

- **ST3-ST6**
  - This stage involves 6 month specialist placements in subspecialist areas, e.g., knee, hip, spine. The trainee is expected to acquire level of knowledge and skills of a consultant in those disciplines. At the end of this phase you will be expected to pass the FRCS (T&O) exam.

#### FINAL PHASE

- **ST6-STB**
  - Involves subspecialisation into the trainees selected subspecialty. This includes more senior posts and fellowships. On successful completion the trainee receives the certificate of completion of training and can apply for a consultant post.

- **Consultant Orthopaedic Surgeon**
References:


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