



# Introduction

# 1

The purpose of this book is to serve as an introduction to orthopedics. It is not meant to be inclusive of all conditions, nor to give definitive treatment options but rather to give the advanced practitioner (AP) student a brief overview and insight into what orthopedic surgery can and cannot do, as well as a primer on some of the specialized language and eponyms. To that end I have tried to include the most common conditions as well as those that fall into the category of “don’t you dare miss this.”

Broadly speaking, orthopedic surgery is the specialty dealing with problems in and of the musculoskeletal system including congenital and developmental defects, degenerative disease, tumors, and trauma to both the skeletal system and the soft tissues such as tendons, nerves, ligaments, and muscles. The treatment options vary from simple reassurance that a particular condition is benign and no intervention is needed to major multistage surgery. Related to orthopedics is the field of rheumatology, and the next to the last chapter will give a brief overview of that field. Trying to learn even the bare basics of orthopedic surgery during the normal 4-week rotation is like drinking from a fire hose. There are an innumerable number of books, journals, and resources online including videos that go into enormous detail about the conditions presented. Most of the references are particular chapters in textbooks or review articles from major journals; the AP student should read those for further detail as needed or as interested. Each of the review articles will have its own set of references that the student can use for even deeper insight.

After the chapter on orthopedic history taking, physical examination, imaging, and other diagnostic studies, there is a chapter on the operating room, followed by nine chapters each addressing a different anatomic area. Each of those chapters is roughly divided into traumatic and non-traumatic conditions (e.g., ankle sprains and clubfoot, respectively). There will be a brief discussion of clinical presentation, any imaging, or other diagnostic studies (if appropriate), the underlying pertinent pathology, and important differential diagnoses, followed by a broad outline of treatment options. Any significant short- or long-term complications of either the condition or the treatment will be mentioned. Exhaustive details about the treatment

will not be discussed as that is both patient and surgeon dependent. Chapter 13 is a brief overview of rheumatology. Finally, Chap. 14 discusses compartment syndrome.

Several rules of thumb all medical professionals should follow are:

1. Treat the patient, not the radiograph. The treatment of distal radius fracture in an 88-year-old nursing home patient will be different from that of the 22-year-old college athlete.
2. Most clinicians come to a conclusion about diagnosis and treatment in the first 30 seconds, tending to ignore or downplay conflicting information obtained later. Do not be hasty. For the most part, diagnosis in orthopedics is fairly straightforward, but deciding on the best treatment is not always as easy; be sure to involve the patient in the decision-making process. If all the history and physical and diagnostic studies do not “match,” figure out why before ignoring or downplaying some of those clues. When a diagnosis is uncertain or if the best method of treatment for that particular patient is in doubt, ask a colleague or your supervising physician.
3. As hard as it is to deal with some of our more long-winded patients, let them tell their story. Not only is it part of the therapeutic process (pain shared is pain divided), many times they will answer your questions and give you clues as to what treatment options to consider. Try to wait at least a minute before interrupting with a question.
4. Ask open-ended questions. Instead of asking “does this cause numbness and tingling?” in the radial aspect of the hand when doing a carpal compression test, ask what kind of symptoms/feelings does this test cause and where.

From here onward, both physician assistants and nurse practitioners will be referred to collectively as advanced practitioners: APs.

Like other specialties and professions, orthopedics is rife with eponyms and abbreviations. As each eponym is introduced, a brief explanation of the associated condition or test will be given. There are various classification schemes for both fractures and non-traumatic conditions. It can be difficult to know which to use or memorize. For example, a literature review in 2018 showed 22 different classification schemes for tibial plateau fractures [1]. The most universal fracture classification system is the one promulgated by the AO/ASIF short for *Association for Osteosynthesis/Association for the Study of Internal Fixation* (or the in the original German *Arbeitsgemeinschaft für Osteosynthesefragen*). It is a cumbersome system mostly for academic use but helpful to be aware of when reading the orthopedic literature. Other abbreviations will be introduced in the appropriate section. Open reduction and internal fixation is ORIF; different types of appropriate ORIFs will be mentioned for each fracture type. Arthroscopy refers to looking into a joint or space with a camera that has the diameter of a pencil and using other specialized instruments of the same size to repair or excise the problem. Arthrodesis means fusing a joint. Arthroplasty refers to replacing the joint which can be with either manufactured material or soft tissue (e.g., total hip arthroplasty or carpometacarpal soft tissue arthroplasty, respectively). Hemiarthroplasty means replacing half the joint and is mostly used when discussing the treatment of femoral neck fractures. It is not

uncommon for these terms to be confusing, and the AP should remember to use plain English, not medicalese, when talking with patients.

A few of the standard orthopedic textbooks are as follows:

- Weinstein SL, Flynn JM, Lovell and Winter's Pediatric Orthopedics. 8th ed. Baltimore: Lippincott Williams & Wilkins; 2020.
- Herring JA. Tachdjian's Pediatric Orthopedics: from the Texas Scottish Rite Hospital for Children. 6th ed. Philadelphia: Elsevier; 2021.
- Tornetta P, Ricci W, Court-Brown CM, McQueen MM, McKee M. Rockwood and Green's Fractures in Adults. 9th ed. Baltimore: Lippincott Williams & Wilkins; 2019.
- Waters PM, Skaggs DL, Flynn JM. Rockwood and Wilkins Fractures in Children. 9th ed. Baltimore: Lippincott Williams & Wilkins; 2019.
- Wolfe SW, Pederson WC, Kozin SH, Cohen MS. Green's Operative Hand Surgery. 7th ed. Philadelphia: Elsevier; 2017.
- Azar FM, Beaty JH, Canale ST. Campbell's Operative Orthopedics. 13th ed. Philadelphia: Elsevier; 2017.
- Browner BD, Jupiter JB, Keddrick C, Anderson PA, editors. Skeletal Trauma: Basic Science, Management, and Reconstruction. 5th ed. Philadelphia: Elsevier Saunders; 2015.

And the number of orthopedic journals is over 200. Although each subspecialty in orthopedic surgery has one or more specific journals, the most commonly used and referenced are the following:

*Journal of the American Academy of Orthopedic Surgeons*. Commonly referred to as the yellow journal, it is published twice per month and has a combination of review, technique, and original research articles some of which are only available online.

*Journal of Bone and Joint Surgery*. There is both an American and British version and is widely considered the flagship journal of orthopedic surgery. The American edition is published twice per month.

*Journal of the Orthopedic Physician Assistant*. Published quarterly by the same company that publishes the *Journal of Bone and Joint Surgery*.

As will be mentioned frequently throughout this book, each surgeon may have different ways of handling various diagnoses, but the above references will give more details on the many different ways of caring for patients with orthopedic problems.

---

## Reference

1. Millar SC, Arnold JB, Thewlis D, Fraysse F, Solomon LB. A systematic literature review of the tibial plateau fractures: what classifications are used and how reliable and useful are they? *Injury*. 2018;49(3):473–90. Epub 31 Jan 2018.