Editorial

Orthopaedic Surgeon and Engineer Research Collaboration

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Orthopaedic surgeon treats various pathology of musculoskeletal tissue. Not only bone, muscle, tendon, cartilage, ligament, meniscus, etc. Furthermore, the orthopedic field has various subspecialties with their special conditions and diseases. Several reasons for always needing research collaboration with an engineer are identified. Orthopaedic cases could be different and unique in every cases. Sometimes it needs a special instrument, implant, surgical technique, and rehabilitation. All surgery needs to be highly accurate. Orthopaedic surgeons commonly face difficulties intraoperatively. The ideas that come to mind in developing a special device/ implant/software by a surgeon need to be discussed with an engineer to convert to real solutions.

Another problem is related to the implants. Most of the available implants recently, especially arthroplasty, most commonly comes from a western country. Those implants are developed based on the anthropometry/ anatomy of western populations. Mismatches in size and design are commonly encountered intraoperatively by the performing surgeon [1]. The mismatched condition will affect the long-term clinical outcome and implant durability [2]. Another issue is that the available implant sometimes could not allow special conditions, such as some extreme movement needed by some particular populations [3]. Orthopaedic surgeons need to put some advice or develop the desired implants/devices based on the local population's anatomy and needs [4,5]. The relations between orthopaedic surgeons and engineer are mutualism. Orthopaedic surgeons need help from the engineer in designing and developing implants/devices in terms of material and all technical aspects. In other conditions, the developed implant/device to be used in clinical practice need to be tested in several research steps from laboratory study, animal study and clinical study where the orthopaedic surgeon have more knowledge [6]. The final goals are the results of the research can be used by another orthopaedic surgeon to have ideal surgery with improved clinical outcomes and patient satisfaction.

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