

New Horizons in Foot and Ankle Surgery Research: Are We Losing Sight of the Shore?

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The foundations of foot and ankle surgery are grounded in sound principles, yet this discipline continues to evolve rapidly. A quick search of the Scopus database reveals more than 400 publications over the last three years, across nine foot and ankle subspecialty journals. This amounts to one article published every 3 days, and this number does not account for articles published in orthopedic journals that cover all subspecialties. The rapid expansion of knowledge can be daunting for surgeons busy in their daily practice, and for residents and fellows who are expected to keep up with the latest developments. Technologies such as artificial intelligence (AI), rapid prototyping, and virtual reality, which were once considered to be “fancy tools” are slowly but steadily finding their place in the realm of foot and ankle surgery. AI has been used to classify the shape of the human foot, perform automated measurements of the intermetatarsal angle, detect ankle fractures and syndesmotic instability, and predict outcomes after surgical management of ankle fractures. Rapid prototyping, also known as 3-D printing, is being used to develop patient-specific implants and improve the accuracy of osteotomies. Virtual reality and computer vision are being increasingly used to train orthopedic surgeons and minimize complications. The future looks bright and promising, yet there remains a key question that needs to be addressed. Are we losing sight of the “shore,” which in this context, is our patient population? We must ask ourselves “who” exactly gets to benefit from these advances?

As per the International Monetary Fund, 85% of the world’s population resides in developing countries, and affordable healthcare remains the most pressing concern for a vast majority of the global population. The past few decades have seen considerable improvement in terms of access and quality of healthcare services; however, much more needs to be done. Hence, it is imperative that researchers consider the potential for their proposed solutions to have a global outreach. Keeping this in mind, the current issue of JFASAP includes a mini symposium on emerging horizons in foot and ankle research, but with a firm eye on the “shore.” In the background of ever-increasing literature on AI for orthopedic applications, Ebrahimi et al. outline the importance of “customer discovery.”¹ Stated simply, customer discovery is defining who gets to benefit from the AI application before it is developed. For instance, an AI algorithm that can diagnose hip fractures on plain radiographs may be of little use at a level I trauma center in a developed country but may prove critical in avoiding misdiagnosis in a primary healthcare facility in a developing country. Another upcoming concept that can be of immense use in developing countries is geospatial mapping, which has been used by researchers to map the spread of epidemics over defined geographical areas.

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Using geospatial techniques, Mirochnik et al. report the influence of the distance of patients’ residence to the healthcare facility on the outcomes of Achilles tendon repair.² Furthermore, keeping in mind the need for cost-effective solutions, Nakagawa et al. present an in-depth review of applications of amniotic membranes in foot and ankle surgery.³

The famous American writer William Faulkner once said, “You cannot swim for new horizons until you have the courage to lose sight of the shore.” Whereas this quote does motivate us not to be afraid of exploring newer avenues, researchers must also remember that it is ultimately our patients who should reap the benefits of such scientific endeavors. Let’s not lose sight of the shore as we explore newer horizons! Happy New Year, and happy reading!

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