the specific indications, surgical techniques and common reported outcomes to guide clinical management.

MATERIALS AND METHODS: This review was constructed in accordance with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement. A comprehensive literature review of articles indexed to PubMed was performed using the keywords “turn-over”, “reversed”, “hinged”, “open book”, “cross finger”, “transdigital”, “heterodigital”, “adipofascial”, “dermal”, “de-epithelialized” and “flap”. Two independent reviewers screened the abstracts with regards to exclusion criteria which consisted of non-digital flaps, homo-digital flaps, classical cross finger and non-adipofascial flaps. Selected manuscripts were analyzed in full text with regards to references and citations in order to expand the number of relevant articles. Independent data extraction was performed by two reviewers utilizing pre-determined study characteristics and outcomes. These characteristics included, patient demographics, defect characteristics, clinical diagnosis, surgical technique, duration of follow-up, post-operative protocol such as immobilization, time of flap division, and methods for adipofascial flap and donor site coverage. The prevalence of these characteristics was calculated to summarize indications, surgical techniques and common reported outcomes.

RESULTS: Our search in PubMed using the above-mentioned keywords resulted in 266 articles. 23 of these articles met the inclusion criteria, yielding 163 patients treated with the heterodigital adipofascial turnover flap. Traumatic injury was the most common indication for treatment (n=144). This flap was commonly used from the adjacent digit from extensor zone 2 or 4 (n=95). In 62 cases, the flap was de-epithelialized. 23 cases involved the nail bed, with 17 left to epithelialize and 6 cases covered with a toe nail bed graft. Post-operatively, digits were most commonly immobilized with a splint (n=88). The mean follow up time was 6 months. Complications included, cold intolerance (n=14), incomplete graft take (n=12), stiffness (n=8), infection (n=6), epidermal inclusion cyst (n=3), tendon adherence (n=1) and complete flap necrosis (n=1).

CONCLUSION: The Heterodigital adipofascial turnover flap is an excellent option for coverage of a variety of dorsal digital defects. The surgical technique utilizes an adipofascial turnover flap most commonly from zone 2 or 4 of adjacent finger. This method has a variety of applications for both traumatic and non-traumatic injuries. Donor site morbidity is rare and functional outcomes are promising.

The Most common complications are cold intolerance and incomplete graft take.

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Carpal Bone Osteomyelitis after IV Drug Abuse

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INTRODUCTION: Carpal bone osteomyelitis was a rare problem until the recent epidemic of intravenous drug abuse and we now frequently treat abscesses of the hand and wrist. Delayed presentation with suppurative wrist arthritis and carpal bone infections is common in our institution. There is scant guidance literature (PubMed) about human carpal osteomyelitis so we present our experience to these challenging infections.

MATERIALS AND METHODS: From 2015 to 2018, (732) patients presented to our Level 1 Trauma Center with severe infections of the hand, wrist or forearm. Lacerations, animal bites, injection of illegal substances (IVDA) led to infections severe enough to require admission and intravenous antibiotics, with or without surgical I&D. Nine (9) IVDA patients were found to have wrist joint infections that presented as or developed into osteomyelitis of one or more carpal bones. Cellulitis was initially treated with high dose antibiotics but with demonstrated osteo aggressive intraoperative I&D, and sequential irrigating wound VAC dressings were employed. Imaging including MRI and wrist CT scan were useful in diagnosing ambiguous bony involvement. Debridement of infected bone was required. Definitive IV antibiotics based on culture results was instituted for 6–10 weeks in most cases.
RESULTS: All osteomyelitis patients achieved resolution of infection and had stable wrists. The scaphoid bone was most often infected (4), lunate (2), trapezium (2) and multiple bones (1). All osteomyelitis patients at last follow-up had stiffness but comparable to comminuted carpal fracture patients. Four patients had pain requiring management by the pain clinic, two patient were completely asymptomatic and three were lost to follow-up. Two patients with lunate resections underwent late proximal row carpectomy.

CONCLUSION: 1) Carpal bone osteomyelitis infection of hand is becoming a significant problem with rising IV drug abuse. 2) Carpal bone infections can be treated with a high degree of antimicrobial success using, aggressive ostectomy, irrigating NPWT, coupled with stabilization. Lunate resection often requires proximal row carpectomy. 3) Carpal osteomyelitis treatment can salvage the wrist and hand, but pain and stiffness is a usual outcome in this challenging population.

The Landscape of Hand Surgery Research in Global Health: A Unified Approach to Better Care

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PURPOSE: Since the inception of the Lancet Commission for Global Surgery and the Touching Hands Project, there is escalating interest in international outreach in hand surgery.1,2 Linking evidence-based research with international outreach in resource-limited settings can optimize outcomes in hand surgery.1,3 To date there has been no literature review of hand surgery and global health. This study aims to summarize common themes and gaps in global health-focused hand surgery research so volunteers worldwide can build into the research priorities of local centres.

METHODS/MATERIALS: A PRISMA guided scoping review was conducted using PubMed, Embase, African Journal Online (AJOL), the Indian Journal of Plastic Surgery (IJPS), Scholar’s Portal, and the American Journal of Hand Surgery. Search terms included: hand injury, congenital, trauma, burn, infection; “AND” global health, international outreach, poverty, low-middle income country, socioeconomic, and poverty. All peer-reviewed studies conducted until January 1, 2018 were included. A grounded theory approach was then applied, by which themes were updated as the study progressed. Common themes and gaps were summarized. Publications were plotted on an online world map using the platform BatchGeo.

RESULTS: Two independent investigators reviewed 853 articles, with 37 articles included. Hand trauma (n=9, 24%), and emphasis on physiotherapy (n=7, 18%), were the most common themes. Congenital anomalies, infections, tumours and socioeconomic pre-disposition followed after (n=4, 11%). Common sources of hand trauma were occupation, followed by road accidents and injuries at home. All four hand infection articles focused on tropical diabetic hand syndrome. Targeting prevention (n=7, 18%), developing a hand injury registry (n=4, 11%), and cultivating opportunities for hand surgery education (n=4, 11%) were needs commonly identified in research. The majority of the literature was retrospective (n=8), case report/series or opinion pieces (n=7, 18%). Four papers had international collaborators, of which three were prospective and one was qualitative. India published the most (n=11, 30%) followed by Nigeria (n=5, 14%). Publications from higher-income countries (n=11, 30%) produced literature reviews or reports from personal experience. Limitations include specific focus on North American databases, AJOL and IJPS, as well as exclusion of non-English speaking studies (n=2) and or studies inaccessible due to cost (n=9).

CONCLUSION: Research is scattered across multiple databases, inaccessible by additional cost, or non-English speaking regions. There is a need to implement and evaluate trauma prevention strategies in the workplace and to develop a hand injury registry. International research collaboration can lead to higher level evidence. Research plotted on a multi-lingual online world map offers a unified approach for worldwide research collaboration to meet the research priorities of low-resource areas.

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