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EDITORIAL

Integrated care systems in trauma to elective care: Can we emulate the integration of services in orthopaedic trauma care within elective practice?

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As we evolve into an era of integrated care services, we have seen more frequent collaboration between trusts, community teams, allied health workers, and key stakeholders responsible for providing increasing levels of integrated care to our population. The integration of services delivering regionalized trauma care over the last decade within the UK has provided us with opportunities to learn from this process, and reasonably evaluate how this model could be emulated for elective orthopaedic surgery.

A national system of regional trauma networks was launched in England in 2012, designating one or more hospitals as major trauma centres (MTCs) in each region, establishing a 'hub and spoke' model.[1] This reconfiguration has led to alterations to hospitals' case mix, workloads, clinical processes, and orthopaedic training.[1-4] The regionalization of services has improved quality of care (e.g. greater consultant-led care, faster imaging, improved compliance with guidelines), patient flow (reduced secondary hospital transfers), patient recovery outcome scores, and was associated with an increase in the odds of survival following major trauma.[1,5]

Despite significant improvement in primary and revision total hip arthroplasty and total knee arthroplasty patient outcomes (reduced length of stay, pain, complications, and improved functional outcomes) over the last decade,[6] there are still substantial variations in patient outcomes after adjusting for patient case mix and surgical factors across regions within the NHS.[7] There is a national and international impetus for change, supported by the literature reporting superior care quality and efficiency by consolidating and ring-fencing high-volume orthopaedic elective care, with appropriate multidisciplinary expertise and suitably experienced surgeons, in particular for complex cases.[8-13]

Centralization of complex orthopaedic elective services within the UK was piloted in 2015,[14] with more recent studies from the British Association for Surgery of the Knee (BASK) providing an exploratory analysis and hypothetical models of case redistribution in a network reconfiguration.[15] Despite these early steps, or perhaps, in part, because of some of the methods employed, this arthroplasty network is yet to come to fruition. Evidence of the need for change is strong; there has been exponential growth in waiting lists without resolution,[9] and there is potential for improvement in patient outcomes, collaborative research opportunities, and dissemination of best practice.

Yapp et al's[9] recent publication within *The Bone & Joint Journal* demonstrated a linear relationship between increased hospital case volume of revision total knee arthroplasty and relative risk reduction of re-revision at ten years follow-up. Furthermore, this association was independent of age, sex, comorbid health, socio-economic deprivation, individual surgeon volume, and infection status. The authors elaborated upon the many immeasurable system factors, which intuitively appear to be fundamental, including the value of multidisciplinary input for complex cases and experienced theatre teams.[15]

The NHS-England Trauma Networks have already facilitated the regular production of pragmatic, multicentre, randomized control trials through collaboration, including the

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WOLFF, WHIST, and WHITE collaboratives, among many others.[16-21] While we eagerly await the current trauma networks' collaborative trials,[22,23] we should investigate how we can replicate this collaborative research strategy for our elective service.

We are beginning to see elective care transformation with the introduction of dedicated elective orthopaedic centres (EOCs) assimilating multiple trusts. None of these are more recent than the North Central London EOCs, or larger than the South West London EOC (SWLEOC), the highest volume joint arthroplasty centre in the UK.[24,25] The genesis of elective orthopaedic networks, with or without designated EOCs, could bring the collective research elements together in the development of a robust research and education framework. This would strengthen research capabilities, increase participant numbers, while mirroring intercollegiate collaboration to further improve our orthopaedic elective care with patient benefits accruing. For example, collaborative data from the UK major trauma network has recently validated a new objective and patient-outcome-correlated Orthopaedic Trauma Society open fracture classification.[26,27]

There are, however, potential limitations to elective orthopaedic networks, which it would be remiss not to recognize or address. Preservation of co-existing/codependent services is paramount for any elective reconfiguration involving the integration of services. Fundamental to the success of the introduction of MTCs was the retention of non-specialist delivery of care, best demonstrated by equivocal quality of care for elderly hip fracture patients prior to and following the introduction of MTCs.[28] We should continue to embrace each facet of musculoskeletal care while we look to encompass these new approaches.

With the increased burden of periprosthetic fractures and prosthetic infections,[29,30] specialist hubs have been introduced in some regions across the UK, but not as a national entity. Although similar to experiences following the introduction of MTCs, remuneration concerns pose a threat to elective networks. Financial implications and net losses have been demonstrated for both specific trauma[31,32] and elective[33,34] work within the NHS over the last decade, heightening the importance of appropriate funding and incentives for receiving units. In addition, synonymous with the trauma reconfiguration, there is a challenge in initially determining the specialist units and surgeons. Collaborative EOCs may, however, provide resolution to this debate, providing the benefits of reduced procurement, experienced theatre staff, and ring-fenced pathways, while facilitating surgical access to more consultants and maintaining relative surgical autonomy.

While we must embrace this change, for orthopaedic surgeons there should be an impetus to clinically lead this transformation, where the clinicians' knowledge and experience of the patient flows specific to each integrated care system are invaluable to the process. A clinically-agreed and clinically-led model would facilitate multidisciplinary working and clear network communication.[35] In some geographical areas, such as London, UK, integrated care systems will require multiple network hubs for complex orthopaedic workload historically associated with specific units and their reputation for "surpraregional" referrals. There will be with little doubt faults and oversights throughout the process. However, it is integral to the introduction of each elective orthopaedic network that they are clinically led and bespoke to the individual integrated care system, as "no one-size-fits-all".

Surgeons and providers have a responsibility to recognize the need for change. Healthcare commissioners must develop and adequately fund high-quality local to regional orthopaedic services for common major elective procedures, and stimulate innovative models of service delivery that drive-up proficiency and productivity through collaboration. We would encourage the warranted change in these processes to establish clear and integrated patient pathways, and allow network changes where they are appropriately based upon the literature and safe practice. It is time to evolve, and we must learn from and aspire to meet the successes of our colleagues who delivered the UK trauma networks.

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