The hub and spoke model in hand surgery - where are we now and where should we be?

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Now that the wheels seem to have fallen off the bike entirely, it might be as good a time as any to sit down and re-examine the manner in which we deliver care in the NHS, and the hub and spoke model in hand surgery is no exception. A world racked by supply chain failure, asymmetric healthcare shocks and community lock down might not seem like the most auspicious time for regionalised specialist care. How does the hub and spoke model bear up in these troubled times, and what kind of a future should we be aiming at?

The politics of the hub and spoke model are neither new nor unusual, and speak to the central themes of our times. The local versus the regional, autonomy versus efficiency, the desirable versus the affordable, the planned economy versus laissez faire. It is a problem widely understood, that in the hub and spoke discussion the interests of surgeons, managers and patients seem destined for collision. However, if COVID 19 prompted the birth of a new or reinvigorated hub and spoke paradigm, in which these parties discovered a new alliance, it wouldn't be the first time in history that pandemic has led inexorably to revolution.

The Current Landscape

Commissioning

The thrust of GIRFT[1] and the experience of the major trauma networks suggest that benefits accrue with the centralised organisation of specialist health services. TARN estimated in 2017 that over 1656 lives have been saved since the introduction of major trauma networks in 2012[2]. There is also abundant evidence that a significant volume-outcome relationship exists for a range of surgical procedures[3],[4],[5],[6], particularly for those which involve low volume and high complexity.

These findings have prompted both GIRFT[7], NHS England and the BSSH[8] to advocate for a more prominent role for hub care where specialised work is involved, and a trend towards centralisation of complex care has been set in motion. However, before much more progress can be made, several contentious issues need to be addressed, including the definition of specialised services, the appropriate case load threshold for optimising outcomes, and the equitable distribution of work between hub and spoke sites.

In relation to the first question, the current service specification for specialised orthopaedic services recognises several hand surgery procedures suitable for hub institutions, including complex thumb reconstruction, congenital deformity and nerve reconstruction for example[9]. This list serves as a useful starting point to identify where the boundary between hub and spoke care ought to exist, but a more comprehensive description of what constitutes tertiary hand surgery is yet to be established.

Most would agree for example that congenital deformity correction is suitable for hub surgeons, but "nerve reconstruction" describes a large spectrum of procedures, some of which do not obviously require hub infrastructure or expertise. As techniques, understanding, and implants improve, the definition of what constitutes complex care is likely to remain fluid and could evolve in either direction. Without tighter tertiary referral criteria, a certain degree of uncertainty amongst both hub and spoke surgeons is likely to remain.

If we are aiming to optimise volume-outcome relationships, we also need a clearer definition of what constitutes an appropriate volume. BESS have taken a pro-active approach in developing standards for elbow replacement[10], with a general consensus that surgeons should achieve a threshold of 10 elbow replacements per year. However, this number is in

many respects arbitrary, the arrangement has not yet been formalised, and the author recognises no currently discernible parallel discussion on wrist arthroplasty for example at the BSSH.

Currently, small but significant numbers of low volume, high complexity procedures such as total wrist and CMCJ arthroplasty are still commissioned at spoke centres by local governance committees. There is an understandable desire amongst spoke surgeons to maintain previously hard-won surgical skills, and to develop additional ones, by continuing this kind of work. However, these decisions sail against the prevailing volume-outcome evidence, and they also have undoubted cost implications. A considerable amount of NHS cash is wasted on loan kit for specialist work in low volume centres[1], and the distribution of kit between multiple centres is complicated still further by the new "just in time" logistics initiatives[11].

Despite this, it is clear that some spoke surgeons have established an enviable track record for delivering high quality specialist care at low volumes, and it is not obvious to them why these cases should be centralised to larger centres. Many spoke centres also recognise that if the best cases disappear to other sites, there is a risk that the best training grade surgeons will follow.

The flip side to this broad issue, is that whilst smaller centres are still chasing big surgical prizes, tertiary sites are still struggling with large amounts of high volume, low complexity work[12]. In this sense, what might be considered appropriate traffic is getting stuck going in both directions.

In many instances, some of this low complexity work remains attractive and even necessary from an accounting perspective, particularly where the tariff settlement on more complex work turns out, following bitter experience, to be financially unsustainable. Even where coding is carefully optimised, the nuances of the current tariff routinely leave hub centres short changed in respect to complex work, so that focusing on it becomes a funding headache for both managers and clinicians.

It doesn't have to be this way. For example, some specialised services like sarcoma care have developed into a net earner for many tertiary trusts. However, negotiation on a non-headline issue such as hand surgery has proved difficult. No surgeons currently sit on the Clinical Priorities Advisory Group which advises NHS England.[13] The recent decision on "procedures of limited benefit" in hand surgery shines a light on a tariff process over which our community of hand surgeons appears currently to have only limited influence.[14]

Communication

In addition to appropriate resource allocation, good networks also depend on efficient communication between surgeons, therapists and patients between sites and sometimes over considerable distances. Geography remains a particular challenge for hand surgery patients for whom multiple post-operative visits are required, and in which compliance is often an issue. Logistical and travel constraints are often cited as the main obstacles to care[15].

Although the countryside itself cannot be rearranged, our means of communication between centres can often be improved. Fortunately, the current situation has re-energised our interest in various digital communication tools, in particular those providing secure image transmission, encrypted clinical chat rooms, virtual case conferencing and remote patient consultations, which all have the potential to revolutionise hub and spoke care.

Pre-pandemic, none of these tools were being routinely used in any of the departments that I train in. The "clinical camera" was permanently broken, hub referrals required long switchboard waits, and video consultations were an idea for another decade. Now that COVID 19 has focused minds, we are enjoying the re-discovery of all this readily available technology. On a departmental level, we are in a state of almost permanent

"webchat MDT" working. However, there is no comparable relationship yet between our spoke department and the regional hub, which is a shame for both clinicians and patients. The radio waves are crackling continuously, but on an entirely different frequency to other local centres, including the mothership.

On a more human level, there seem to be only a handful of strong inter-hospital professional relationships in my region. Shared regional governance meetings, focusing on topics and problems common to all the hand units in the network do not take place. There is no clear route by which good local ideas and practices can travel back and forth between the hub and spokes.

Culture

We may be engaged in a battle of hearts and minds. Although an increasing number of patients are being transferred between centres, the current underlying culture can still be clumsy and parochial, and the relationship between hub and spokes can often be strained.

Hubs can become inundated with referrals both reasonable and unreasonable, and spoke centres occasionally do use referral to the hub centre as a way of divesting themselves of difficult patient related problems. Transfer delays, both for complex care and for repatriation, create frustration amongst patients and clinicians alike. Where situations require a sense of shared accountability, *diluted* accountability can sometimes prevail.

Hand therapists working in spoke institutions occasionally find themselves tasked with the day to day management of patients operated upon at distant hub sites. Despite the enthusiasm they often have for new challenges and interesting cases, they can find themselves unsupported where the relevant hub surgeon is not available to troubleshoot problems that arise.

In my experience, the rapport and communication between clinical teams is greatly enhanced where individual surgeons work across the hub and spoke divide with multi-trust contracts or service level agreements. Unfortunately, this arrangement is still unusual, and despite having the potential to offer broader professional opportunities, it can also lead to persistent personal headaches. Trusts are not generally used to dealing with surgeons who have shared obligations across sites, and discussions around the splitting of SPA time, annual leave and the validity of mandatory training for example can all be problematic. Surgeons often need to be supported by other colleagues where inpatients are spread out between geographically distant sites, which is not always popular. For these reasons, the split-contract model remains a relative oddity.

Hand Surgery 2030

So whither the revolution? Now that the discussion has been kicked back into life by COVID 19, in which direction should we be making the transformation? Certainly, we can anticipate that the demand for our services will grow exponentially[16]. How should we be re-imagining the hub and spoke model for 2030 to make sure we deliver for our patients?

Commissioning

By 2030 the BSSH will have raised the profile of hand surgery so that it becomes a national commissioning priority. Commissioning bodies will recognise the need to involve the BSSH, individual surgeons and researchers at all levels of the tariff negotiations in order to ensure that appropriate conclusions are drawn regarding the real costs of hand surgery procedures, and their value to patients so that services are prioritised and resourced in a realistic and sustainable manner.

Commissioning will be informed by prodigious amounts of dynamic outcome and case load data, collected digitally on the UK National Hand Registry. Collaboration between

the BSSH, BAPRAS and other relevant interest groups will ensure a high level of engagement with the registry across the community of hand surgeons, and will provide a constantly updated picture of clinical activity on a national level, to inform future strategic service development, to improve standards and to make comparison between regional centres and networks easier. The BSSH will be the opinion leader where questions surrounding specialist care occur, setting case load thresholds, identifying appropriate standards, and supporting communication between the UK regions.

Like all good businesses, the hub centres of 2030 will know the true cost of the care they deliver, and will have the means to code and invoice accordingly. The huge monopoly power of the NHS will have finally been cranked into life by robust national and regional industry negotiations to procure the best implants and equipment for our patients. Local funding for single complex procedures in spoke units will be minimised, whilst still recognising that some patients are profoundly disadvantaged by regional transfer, and will need locally delivered care at spoke sites, with the collaboration and support of hub centres.

Communication

The message for 2030 is clear. We cannot wait for the next global health crisis to overhaul the way in which we get in touch with each other. We should be pro-actively updating and reconfiguring our systems of communication to keep the network buzzing. The tightly interconnected web of clinicians providing hub and spoke care in 2030 will take full advantage of the possibilities of virtual platforms both for patient care and for communication between clinicians.

In 2030, these new methods of communication will work seamlessly across sites, allowing the integration of hub and spoke departments, both for the discussion of individual hand surgery cases, and for regional strategic and governance meetings. The hub will routinely reach out directly to patients remotely using virtual consultations in order to deliver specialist services in a more convenient and timely manner, so that patient compliance is maintained and outcomes improved, and hand therapists will also find it easy to access advice from hub surgeons in real time where required.

The BSSH will continue to drive the development of stronger social and professional relationships between colleagues working at different sites. This process will smooth out many of the antagonistic issues which arise occasionally between hub and spoke centres, and will allow consensus to develop, so that we are in a position to communicate a unified vision of networked hand surgery on the national political stage.

Culture

In 2030, the established hub and spoke model will be supported by a regional and national culture of networked care.

Patients will enjoy a more seamless referral service, particularly in time critical trauma care, where the process of information transfer will be rapid. On some key indicators like treatment times for instance, accountability for outcomes in specialist hand surgery will be attributed on a “network wide” basis, so that all network institutions have a stake and take an interest in the appropriate transfer and care of patients referred centrally to the hub. This will encourage both hubs and spokes to facilitate the seamless transfer of patients both to the hub centre for urgent care, but also back to the spoke from which they were referred for their convalescence in a timely manner.

The regions will take seriously the need for surgeons in all institutions to have opportunities that challenge and develop their practice. To facilitate this, surgeons will regularly carry out procedures at both hub and spoke sites using flexible contractual arrangements which will allow spoke clinicians to maintain surgical skills, continued

professional development, and for cross pollinisation of ideas from hub to spokes and vice versa. This will provide a dynamic hub workforce whilst ensuring that spoke hospitals continue to attract highly motivated, innovative and ambitious staff.

We operate in a national culture which has for several centuries enjoyed the benefits of free, fair and open competition to drive both productivity and innovation[17]. In 2030, a healthy competition will flourish between centres, informed by transparent and standardised financial and patient outcome data, which will ensure that each hub and spoke re-earns its reputation over time in the role that it occupies, and that innovation advances rapidly amongst departments and regions.

Conclusion

The BSSH has already set out the broad outline of a brave new 2030 world, in which "every person with a hand injury sees the right clinician at the right place at the right time"[18]. Only a re-energised hub and spoke model, which takes on board the lessons of these troubled times, will have the potential to deliver on this ambitious vision for the future.

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