

## Update Hand transplantation UK for Multi-visceral Advisory Group meeting - Weds 16 November 2022: UK Hand Transplant Service based at Leeds Teaching Hospitals NHS Trust

### International perspective

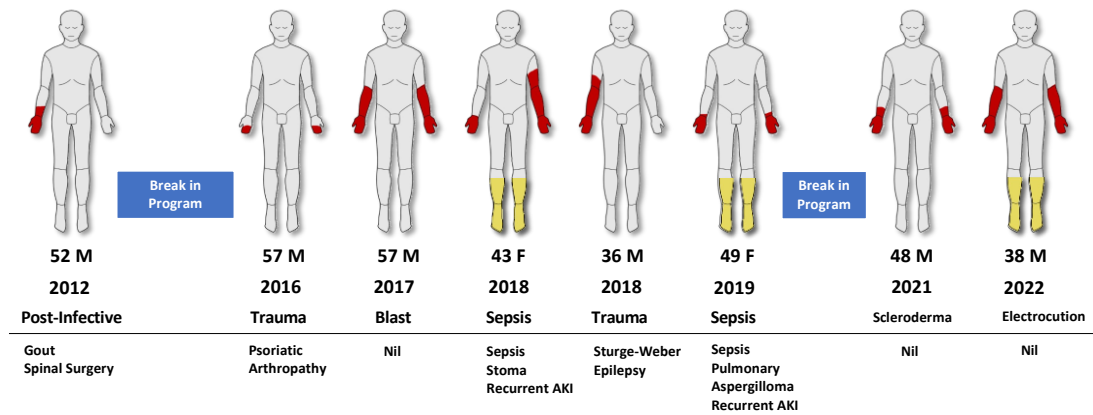
Whilst reports out of India and the east suggest that significant volumes of upper limb transplantation are being undertaken, the outcomes of which are not yet detailed, our unit is now amongst the three most productive in the western hemisphere and despite coming late to the discipline we have demonstrated a high volume of candidate patients, one of the highest numbers treated, and amongst the best results to date. We continue to address our original brief to treat a cohort of patients over 20 years in a single institution under defined protocols (which may of course react to emerging knowledge) in order to define the place and value of such endeavour. We are beyond the proof-of-concept stage internationally, and for some subsets of upper limb amputees bilateral transplant may now be considered a standard of care.

### Current status

The service reopened following the Covid pandemic at the end of 2021. Subsequently 2 patients have received bilateral upper limb transplants in the last 11 months, one for the treatment of complete loss of hand function following scleroderma, one for bilateral limb loss following High Tension electrical injury several years earlier.

Currently 8 patients have received 14 transplants over the last ten years (but note that during those ten years there were five years of service interruption due firstly to commissioning changes, latterly to Covid). The following diagram summarized this cohort.

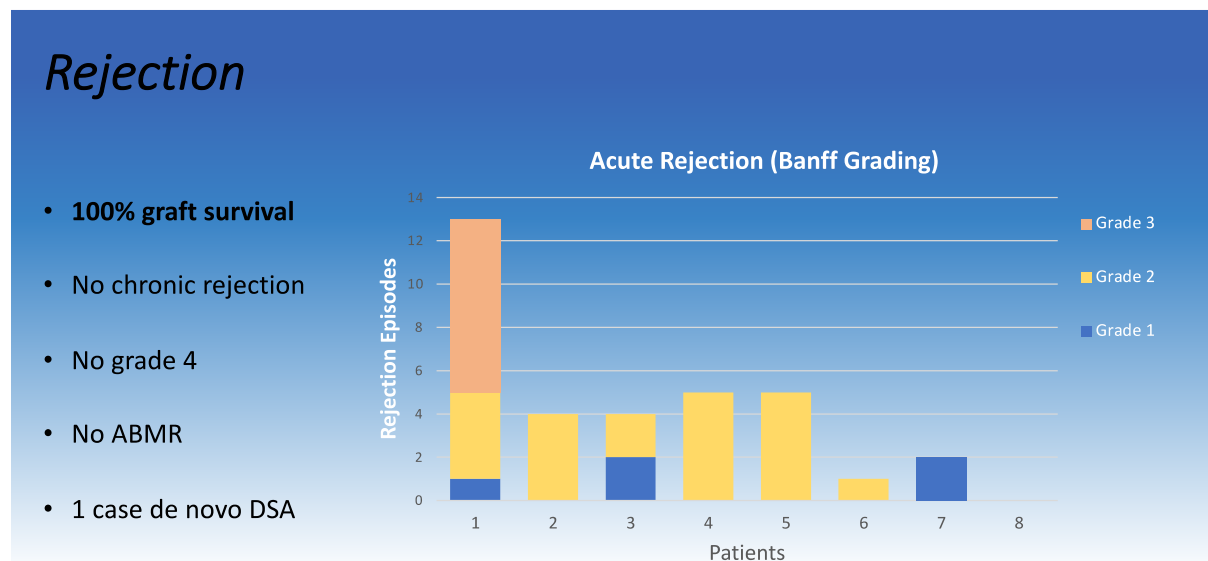
## Leeds, UK: 14 Hand Transplants in 8 Patients



**NHS**

**Leeds Hand  
Transplant UK**

Recently the results have been presented at the ASRT in Chicago (November 2022). Notably the rate of acute rejection is shown



**NHS**

**Leeds Hand  
Transplant UK**

As are infective complications and metabolic complications

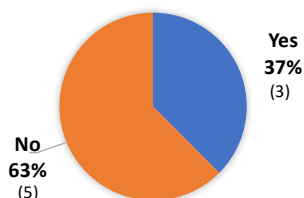
## Infective Complications

Patient 1	Patient 2	Patient 3	Patient 4	Patient 5	Patient 6	Patient 7	Patient 8
Reactivation CMV	Mucormycosis right wrist	Alternaria infectoria right forearm	Severe CAP	HAP	E. Coli Urosepsis	CAP	Infected seroma left forearm
Suppurative folliculitis RRF	Suppurative folliculitis left flank	Alternaria infectoria right thigh		Influenza	Gram neg sepsis	Tinea Pedis and Corporis	Deep Bone Infection left radius/ulna
	CAP	Recurrence Alternaria right forearm		CMV reactivation	Pseudomonas sepsis	Bacillus cereus line infection	
	CAP	Recurrence Alternaria right forearm		CAP	Resistant UTI	CMV Disease	
				CMV and EBV reactivation		Sepsis Unknown Source + AKI	
				AKI + Sepsis			

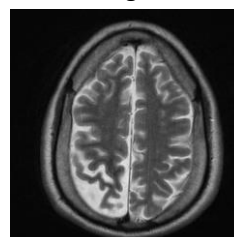


## Metabolic / Other Complications

Post-Transplant Diabetes Mellitus

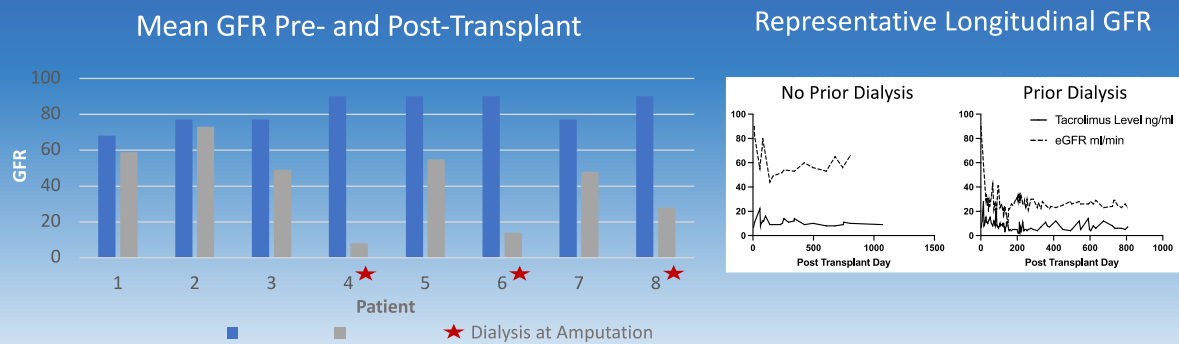


Tacrolimus induced seizures on background of Sturge-Weber Syndrome



Of most recent concern is the finding of declining renal function in one part of our cohort, namely those who required renal dialysis at the time of limb loss (septicemia or rhabdomyolysis)

# Renal Impairment



*Renal injury patients now receive enhanced screening & consent includes renal replacement therapy / transplant*



The pre transplant GFR (however calculated ) appears to be a poor prognosticator for this complication. One of our patients is now on dialysis and seeking renal transplant, whilst another is starting to explore living donor pathways.

We are in the process of devising a protocol to address this problem and looking at synchronous kidney transplant (versus metachronous), and at options for reducing the nephrotoxicity of the immunosuppressive regimen. We have also changed our consent information in the light of this finding.

Currently five adult patients are accepted and listed for transplantation, four of whom required dialysis at the time of limb loss. We also have a young patient with four limb loss, and blind in one eye, who has recently received a renal transplant (post sepsis limb loss). We seek agreement from NHS England to vary our protocols which originally excluded patients under the age of 16 years. A similar child has been successfully treated in Philadelphia ( where I visited this year to review results) and accepting the complex issues of consent which we have addressed, we believe this child is suitable for transplantation.

The fifth adult has very proximal limb loss bilaterally (from HT injury as a child) but did not require dialysis at the time of limb loss and has apparently normal renal function. We have previously reported concerns about the sheer volume of tissue to transplant and the risk of a fatal level of reperfusion injury (accepted by this very disabled patient). Our partners in Lyon have now undertaken an almost identical case (save- significantly - that their patient already had a liver transplant), and we have shared experience and learning and conducted a full-team careful rehearsal in a cadaver lab of this surgery.

Continuing challenges

Donor retrieval areas.

Paucity of donor offers continues to be the greatest cause of long waits for our patients hoping for transplants. We have noticed that the areas from which we receive offers via SNODs vary greatly in the volume of those offers. We have tried to identify why this is, and it appears that a very small number of very enthusiastic SNODs make a great difference. Prior to Covid we had set in motion to extend the NE retrieval zone but this got overlooked in the pandemic and we are now urgently reactivating that extension, hoping by the middle of this coming year to extend our potential donor population by a third.

ODR

We continue to seek support for including VCA on the ODR list. Why not?

Staffing

I doubt we are the only Trust that has found staffing in critical care and theatres a problem with scheduling surgery, but the perceived non-life-saving nature of our work and the very great skills mix required make us continue to be vulnerable to this risk which has not yet forestalled a viable transplant but may well do in the next year.

Succession planning

We continue to prepare for succession in our team at the lead level and have been encouraged by the calibre, ability and knowledge of younger surgeons expressing eagerness to join our team and guide it forward. Any one, especially trainees, known to members of this committee and who is curious about the service and its future is encouraged to contact me at the address below

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November 2022

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