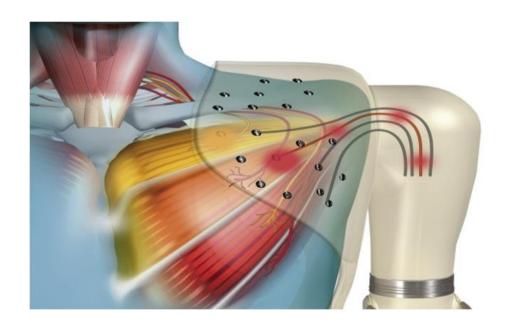


Targeted Muscle Reinnervation: Rehabilitation, Expectation Setting, and Outcome Potential



Matthew Hughes and Moose Baxter

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STRIVE FOR BETTER.

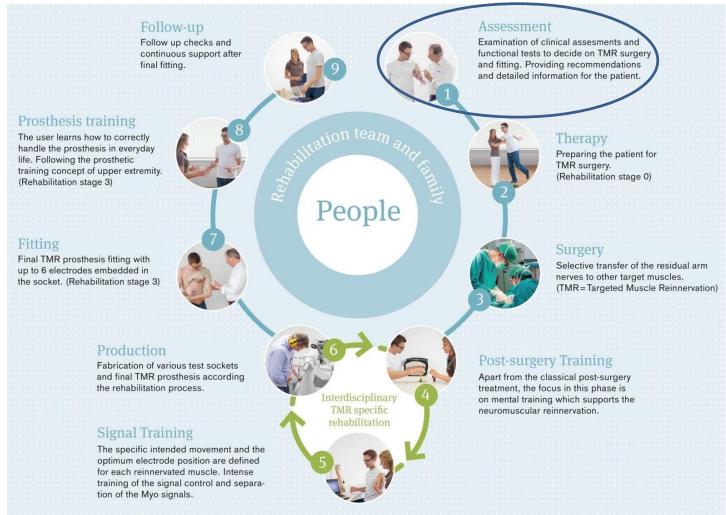
























Follow-up Follow up checks and continuous support after final fitting. Prosthesis training The user learns how to correctly handle the prosthesis in everyday

Assessment

Examination of clinical assesments and functional tests to decide on TMR surgery and fitting. Providing recommendations and detailed information for the patient.

life. Following the prosthetic training concept of upper extremity. (Rehabilitation stage 3)



People



Therapy

Preparing the patient for TMR surgery. (Rehabilitation stage 0)



Final TMR prosthesis fitting with up to 6 electrodes embedded in the socket. (Rehabilitation stage 3)



Surgery

Selective transfer of the residual arm nerves to other target muscles. (TMR=Targeted Muscle Reinnervation)

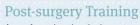


Fabrication of various test sockets and final TMR prosthesis according the rehabilitation process.





The specific intended movement and the optimum electrode position are defined for each reinnervated muscle. Intense training of the signal control and separation of the Myo signals.

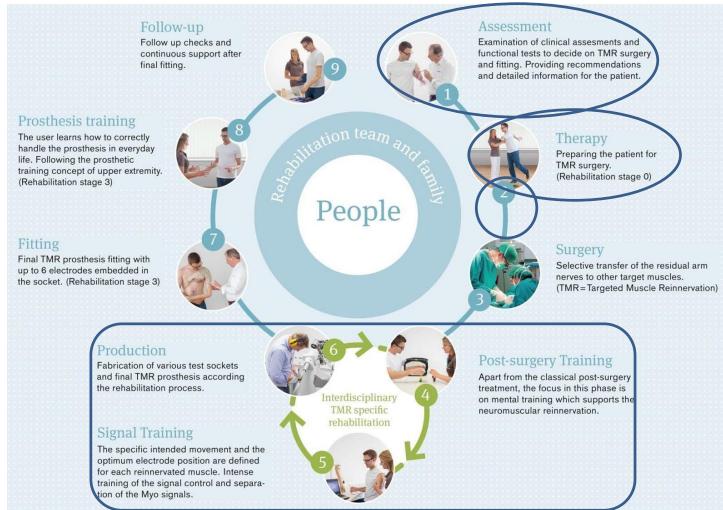


Apart from the classical post-surgery treatment, the focus in this phase is on mental training which supports the neuromuscular reinnervation.













Follow-up

Follow up checks and continuous support after final fitting.



Assessment

Examination of clinical assesments and functional tests to decide on TMR surgery and fitting. Providing recommendations and detailed information for the patient.

Prosthesis training

The user learns how to correctly handle the prosthesis in everyday life. Following the prosthetic training concept of upper extremity. (Rehabilitation stage 3)



itation team

People



Therapy

Preparing the patient for TMR surgery. (Rehabilitation stage 0)

Fitting

Final TMR prosthesis fitting with up to 6 electrodes embedded in the socket. (Rehabilitation stage 3)



Surgery

Selective transfer of the residual arm nerves to other target muscles. (TMR=Targeted Muscle Reinnervation)

Production

Fabrication of various test sockets and final TMR prosthesis according the rehabilitation process.



The specific intended movement and the optimum electrode position are defined for each reinnervated muscle. Intense training of the signal control and separation of the Myo signals.



Post-surgery Training

Apart from the classical post-surgery treatment, the focus in this phase is on mental training which supports the neuromuscular reinnervation.





Assessment and Patient Selection

- Level of amputation, time since injury, method of injury, suitability for surgery (weight/smoking)
- Willingness/ability to engage in rehab process
- Number of existing EMG sites
- Musculature present
- Phantom pain



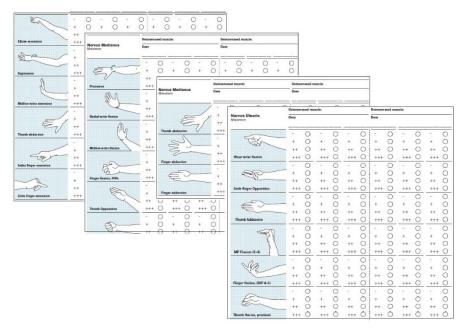


Therapy

- Preparation for surgery;
 - Coordination
 - Strength
 - Balance

Post-surgical:

- oedema and pain management
- visualisation and mental training
- Active bilateral movement patterns of large muscle chains.





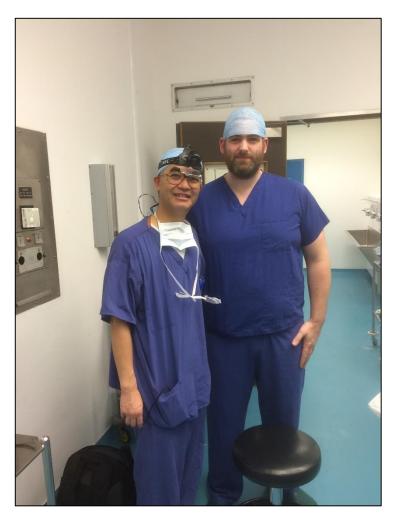


Referral for Surgery

Referral by the patient's GP for NHS surgery:

 Advice from Prosthetist to GP (details of the procedure, potential benefits and where to refer them to)

Discuss the value of a referral with the surgeon ahead of contacting the patient's GP.







Post-surgical, Pre-prosthetic Rehabilitation

- Regular visits
- Myo testing
- Tolerance to weight
- Individual electrodes and pattern recognition







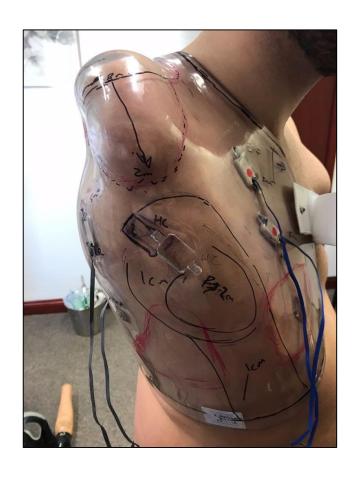
TMR Prosthesis fitting

Socket design considerations

- Shape and comfort of the socket
- Electrode location and orientation
- Developing/changing with time

Component selection

- Control system
- Number of EMG sites
- Funds available
- Tolerance to weight/movement







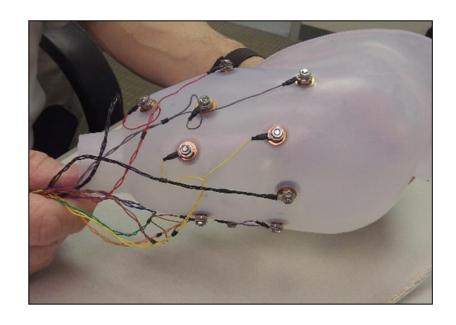
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Expectation Setting

- In close coordination with the surgical team
- Best and worst case scenarios of
 - Pain reduction
 - Prosthesis control
- Prosthetic component and rehabilitation
- Outcome potential





Expectation Setting







Thanks for listening! Any Questions?

