

Guideline for Therapy Intervention for Radial Nerve Lesions and Neuropraxia

This guidance does not override the individual responsibility of health professionals to make appropriate decision according to the circumstances of the individual patient in consultation with the patient and /or carer. Health care professionals must be prepared to justify any deviation from this guidance.

Introduction

This guideline covers both the conservative and post-operative care of patients with a radial nerve lesion or neuropraxia of the radial nerve at forearm level, elbow level and proximal to elbow attending therapy departments in Worcestershire and Herefordshire.

This guideline is for use by the following staff groups:

Therapists who have undertaken a period of supervised practice in this field within the previous 2 years. Supervising/senior therapists to work towards British Association of Hand Therapists (BAHT accredited training at Level II in Elective, Trauma and Hand Therapy).

Lead Clinician(s)

An Van Hyfte

OT Clinical Specialist

Approved by Hand Therapy Clinical Governance : 28th February 2019

Review Date:

28th February 2021

This is the most current document and is to be used until a revised version is available

Key amendments to this guideline

Date	Amendment	By:
15.07.10	Approved by the Hands Clinical Governance Group	
April 2012	No amendments made to guideline following review.	A Van Hyfte
July 2014	Document reviewed with no amendments made to content	A Van Hyfte
November 2016	Documents extended for 12 months as per TMC paper approved on 22 nd July 2015	TMC
July 3 rd 2017	Documents reviewed. Minor amendments to specify conservative and post-operative management	A Hinton
December 2017	Sentence added in at the request of the Coroner	
Feb 2019	Document approved with no content changes	Hand Therapy Governance

Guideline for Therapy Intervention for Radial Nerve Lesions

Introduction

This guideline covers the conservative management and post-operative care of patients presenting with a radial nerve lesion or neuropraxia of the radial nerve at forearm level, elbow level and proximal to elbow, attending therapy departments in Worcestershire and Herefordshire.

The radial nerve is most frequently damaged by fracture of the shaft of the humerus involving it in its spiral groove. It can also be affected by pressure in the axilla, which may affect triceps function. Injury at wrist level can cause damage to the posterior interosseus nerve and also to the sensory nerve where it passes superficially over the shaft of the radius, making it rather vulnerable.

When associated with extensor tendon repairs, the guideline for extensor tendon repairs should be followed.

Competencies required

- Therapists who have undertaken a period of supervised practice in this field within the previous 2 years.
- Supervising/senior therapists to work towards British Association of Hand Therapists (BAHT accredited training at Level II in Elective, Trauma and Hand Therapy).

Patients covered

- Patients with damage to the radial nerve that will be managed conservatively
- The acute stage of this guideline covers patients with a radial nerve lesion not associated with extensor tendon repair.
- Any patient able to comply with the therapy regime following a repair to the radial nerve.

Details of guideline

For patients being treated conservatively or for those with a neuropraxia splinting and treatment suggestions include:

- A wrist extension splint
- A volar forearm-based night resting splint in the position of safe immobilisation
- A low profile dynamic MCP extension splint (forearm-based if proximal to wrist and hand-based if only the posterior interosseus nerve is affected)
- Gradually reduce the wearing time of the splint or consider discarding sections of the dynamic splint as recovery occurs e.g. as wrist extension improves, discard wrist section
- For exercises and sensory re-education see week 3 onwards.

Time	
Acute stage (week 1 to 3):	<ul style="list-style-type: none"> • <u>Splinting:</u> <ul style="list-style-type: none"> ○ The patient can be immobilised in the surgical backslab

	<p>(position of safe immobilisation) for three weeks.</p> <ul style="list-style-type: none"> ○ If required by the surgeon, this can be replaced by a forearm based, static, wrist extension splint (wrist in 0°-30° extension) leaving the digits free in the day time. If the repair is tight, the wrist may need to be immobilised in more extension. This should be discussed with the referring consultant. ○ In the latter case, a volar forearm-based resting splint should be fabricated to protect the repair in the position of safe immobilisation at night. ○ For high radial nerve injuries (proximal to elbow), also immobilise the elbow in mid position for 3 weeks <ul style="list-style-type: none"> • <u>Exercises:</u> <p>Hourly active flexion and active-assisted extension of digits only</p> <ul style="list-style-type: none"> • <u>Oedema management:</u> <p>Patient is advised to position the forearm in elevation when sitting/sleeping using pillows.</p> <ul style="list-style-type: none"> • <u>Advice:</u> <p>The patient is advised not to use the affected hand for any activity i.e. work/ driving/lifting/housework. The patient is advised to maintain range of movement of elbow/shoulder regularly. Sutures should be removed 10-14 days post surgery. This can be done in the orthopaedic out-patient clinic or GP practice.</p>	
<p>Week 3:</p>	<p><u>Carry out a functional and sensory assessment of the upper limb:</u> The following deficits can be expected with injury:</p>	
	<p>At forearm level ECU EDM, EI & EDC AbdPL, EPB & EPL</p>	<p>Results in Loss of ulnar wrist extension Loss of MCP joint extension Loss of thumb radial abduction & extension</p>
	<p>At elbow level (see above plus) Supinator ECRL & ECRB</p>	<p>Results in Weakened supination Loss of ulnar and radial wrist extension</p>
	<p>Proximal to elbow (see above plus) Brachioradialis</p>	<p>Results in Weakened elbow flexion</p>
	<p><u>Splinting suggestions:</u></p> <ul style="list-style-type: none"> ○ At night → continue volar forearm-based night resting splint in position of safe immobilisation ○ In day → fabricate low profile dynamic MCP 	

	<p>extension splint (forearm-based if proximal to wrist and hand-based if posterior interosseus only)</p> <ul style="list-style-type: none"> ○ Light function within dynamic splint up to 6-8 weeks ○ Gradually reduce wearing time of the splint or consider discarding sections of the dynamic splint as recovery occurs e.g. as wrist extension improves, discard wrist section <p><u>Start gentle exercises out of splint:</u></p> <ul style="list-style-type: none"> ○ Maintain passive extension of long flexors (isolated and composite extension of fingers/wrist) ○ Active flexion of isolated joints (refrain from composite wrist and finger flexion till 8 weeks post op) ○ Active/passive thumb palmar & radial thumb abduction and thumb extension to maintain thumb web space ○ Monitor IP/MCP joint ROM and intrinsic muscle function which might be affected due to disuse ○ Commence nerve gliding exercises <p><u>Scar management:</u> To commence once the wound is closed (with no signs of infection). Scar massage is introduced using a non perfumed moisturiser. Patients are taught to use circular motions along the scar working distal to proximal to help the reduction of oedema.</p> <p><u>Desensitisation/ sensory re-education:</u> Begin with localisation of moving touch using light and deep pressures over the involved area. When moving touch is perceived, upgrade to recognizing of shapes (starting with large objects and moving on to smaller objects) and discriminative sensation of different textures. Issue patient with Desensitising Programme information leaflet</p>
<p>Week 6 - onwards</p>	<p><u>Splinting suggestions:</u> Continue dynamic extension splint or wrist extension splint/wrist brace to promote function. In case of a low lesion, where there is involvement of the posterior interosseus branch, a hand-based dynamic splint to assist digit extension is the preferred option. Each case must be assessed to determine the type of splint, depending on the level of injury and clinical signs.</p> <p><u>Exercises:</u></p> <ul style="list-style-type: none"> ○ Include gentle passive ROM of wrist and digits can be introduced. If extensor tendons are associated, passive flexion should be delayed until 10 weeks post surgery! Important to maintain joint range by passive ROM and encourage active range within the splint.

	<ul style="list-style-type: none"> o Commence resisted exercises e.g. thera-putty strengthening programme. Need activities requiring a stable wrist /digit extension e.g. elevated activities
	<p>Considerations</p> <p>Monitor for recovery and alter exercises and splint wear as necessary. Corrective procedures such as tendon transfer should be considered when there are no signs of nerve recovery after 12 months.</p>

Monitoring Tool

Standards	%	Clinical Exceptions
All patients who have had radial nerve lesion.	100	Patients who are unable to safely follow the regime instructions e.g. those with cognitive impairment. Their treatment will be discussed on an individual basis with their consultant.

How will monitoring be carried out?	Continuous
When will monitoring be carried out?	As treatment occurs
Who will monitor compliance with the guideline?	Clinical Specialist Physiotherapist/ OT in Rheumatology/Hand trauma

References

- Salter M & Cheshire L (2000) Hand Therapy, Principles and Practice. Butterworth-Heinemann. Oxford
- Boscheinen-Morrin, J & Conolly, W.B (2001) The Hand. Fundamentals of Therapy 3rd edition. Butterworth-Heinemann. Oxford
- The Welsh Regional Centre for Burns & Plastic Surgery, Hand Therapy Guidelines (2008), Occupational & Physiotherapy Department. Swansea
- British Association of Hand Therapist Level 1 Course notes (2006) Therapeutic Management of Peripheral Nerves Lecture. Cardiff

Contribution List

Key individuals involved in developing the document

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Supporting Document 1 - Equality Impact Assessment Tool

To be completed by the key document author and attached to key document when submitted to the appropriate committee for consideration and approval.

		Yes/No	Comments
1.	Does the policy/guidance affect one group less or more favourably than another on the basis of:		
	Race	No	
	Ethnic origins (including gypsies and travellers)	No	
	Nationality	No	
	Gender	No	
	Culture	No	
	Religion or belief	No	
	Sexual orientation including lesbian, gay and bisexual people	No	
	Age	No	
2.	Is there any evidence that some groups are affected differently?	No	
3.	If you have identified potential discrimination, are any exceptions valid, legal and/or justifiable?	n/a	
4.	Is the impact of the policy/guidance likely to be negative?	no	
5.	If so can the impact be avoided?	n/a	
6.	What alternatives are there to achieving the policy/guidance without the impact?	n/a	
7.	Can we reduce the impact by taking different action?	N/a	

If you have identified a potential discriminatory impact of this key document, please refer it to Human Resources, together with any suggestions as to the action required to avoid/reduce this impact.

For advice in respect of answering the above questions, please contact Human Resources.

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Supporting Document 2 – Financial Impact Assessment

To be completed by the key document author and attached to key document when submitted to the appropriate committee for consideration and approval.

	Title of document:	Yes/No
1.	Does the implementation of this document require any additional Capital resources	No
2.	Does the implementation of this document require additional revenue	No
3.	Does the implementation of this document require additional manpower	No
4.	Does the implementation of this document release any manpower costs through a change in practice	No
5.	Are there additional staff training costs associated with implementing this document which cannot be delivered through current training programmes or allocated training times for staff	No
	Other comments:	n/a

If the response to any of the above is yes, please complete a business case and which is signed by your Finance Manager and Directorate Manager for consideration by the Accountable Director before progressing to the relevant committee for approval