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A peripheral nerve is any nerve that carries messages from the brain and spinal cord to the rest of the body. There are 3 main types of peripheral nerves: Sensory nerves: nerves which carry messages about sensations such as pain and heat from the body to the brain or spinal cord. Motor nerves: nerves which carry messages about function from the brain and spinal cord to the muscles telling them to contract to move the body. Mixed nerves: nerves which have both sensory and motor components. No matter which type of nerve it is, each nerve consists of a grouping of nerve cells known as fascicles surrounded by a protective sheath. Injuries can occur from the nerve being compressed, stretched, cut, or torn. If the fascicles are damaged but the outer sheath remains intact, there is the possibility that the nerve will heal itself over time. If this does not happen or if the outer sheath is also damaged, surgery may be needed to repair or graft the nerve. What is nerve repair? Nerve repair is a surgical treatment for nerve injury in which the nerve is partially or completely severed. Damaged tissue from the end of the nerve is removed and the ends of the nerve are repaired back together using very small sutures (stitches) often placed with the assistance of a surgical microscope. What is the nerve grafting? Nerve grafting is a surgical treatment for nerve injury in which the nerve is completely torn and there is enough damage that the ends of the nerves no longer meet together to allow for direct repair. In this case a piece of nerve from another area of the body may be used to connect the two pieces and is sutured (stitched) into place between the ends of the torn nerve. This may sometimes be done with artificial grafts or with allograft (donor) nerve tissue. What is the surgical recovery? Nerves recover very slowly so the process of recovery after surgery can take up to a year. Splints may be used to protect the area and physical or occupational therapy is started and continued as long as possible. You will have regular visits to assess recovery of sensation and function and may even have a repeat EMG/NCS to evaluate progress. Nerve injuries are most common in the upper (hand and arm) and lower (leg) extremities. These can be caused by either blunt trauma, such as an impact from a fall or from traction injuries from motor vehicle accidents, or sharp trauma, such as occurs from a direct cut from a knife. In either case, significant nerve injuries require expert evaluation and treatment. In some cases, where the nerve remains partly intact, careful observation and time may be all that is required to achieve recovery. However, in many instances, these injuries will require surgical reconstruction. Diagnosis Initial evaluation of the patient's injury will focus on an assessment of the sensory and motor function in the affected nerves. Once the severity of injury is determined, the next step will be either continued observation or evaluation with nerve conduction studies and electromyography (EMG). These studies will be performed by a neurologist to evaluate the electrical function of the nerves and muscles and to determine the location and the extent of the injury. In some cases, MRI may be used to directly image the nerve as well. Serial electrical studies may be performed at bimonthly intervals to look for signs of early recovery. If recovery fails to occur at this point, surgical reconstruction is usually necessary. Surgical Repair Surgical nerve repair involves exploration of the injured nerve and removal of injured tissue or scar from the nerve endings. After that, a nerve can be directly reconnected if there is enough length on the ends to allow for a good quality repair without tension. Repairs are performed with the assistance of an operating microscope to allow for the best alignment of the fiber bundles, called fascicles, inside of the injured nerve. In some cases when a larger amount of tissue has to be removed from the nerve endings, there is too large a gap to allow for direct repair. In those cases, a non-essential nerve will be sacrificed from a separate location on the body (usually from the leg or upper arm) and used to bridge the nerve gap. This procedure is known as nerve grafting. Other approaches for repair such as a conduit, an artificial tube connecting the nerve endings, may be used in particular circumstances when grafts are not possible. Nerve graft substitutes, derived from donated nerve tissues, are also appropriate instead of nerve grafting for some patients. After a nerve is repaired, the fibers within the nerve begin to grow from the repair site toward the lost target tissues of skin and muscle to restore sensation and movement. This process occurs slowly over several weeks to months, at roughly a rate of 1mm/day (1inch/month) until the nerves reach the intended target. The progress of recovery can be followed by the location of a sensitive area within the reconstructed nerve which will tingle when tapped. These are the advancing nerve fibers within the recovering nerve. Patients will undergo periodic exams after nerve repair to follow the progress of these regenerating nerve fibers. Physical therapy will be done to maintain flexibility and motion in the joints and muscles while the nerve is recovering. When the patient shows signs of recovery with returning muscle tone and contraction, the therapist will begin exercises to strengthen those muscles and restore voluntary movement. As sensation returns, the therapy will also concentrate on retraining the patient to use their sense of touch for better function. In certain nerve injuries, the damage to the nerve occurs too far away from the affected muscles for recovery to be possible with nerve repair alone. In these cases, additional procedures are available for reconstruction to restore lost function. Tendon transfer procedures are used to take working muscles adjacent to a paralyzed muscle, and substitute the movement of one muscle for another by reconnecting the tendons from the uninjured muscle to the injured one. Therapy will be initiated after the tendons have healed to learn the new movement from the transferred muscle and maximize function. In an alternative procedure known as a nerve transfer, working nerve branches from adjacent uninjured nerves are reconnected to an injured nerve close to its connection to muscle to restore function. By moving the recovering nerve endings much closer to the target muscles, the nerve transfers are able to restore function to muscles before the damage becomes irreversible. After the nerve recovers, therapy is initiated to maximize the functional gains, as with standard nerve repairs. Sensation can also be restored with nerve transfers of working sensory nerves to nonfunctioning sensory nerves in a related procedure. Restoring premorbid function after peripheral nerve injury remains challenging, and many patients are left with incomplete motor recovery and permanent disability.1–5 Various factors may contribute to poor outcomes after nerve injury, including the slow rate of nerve regeneration and distance from the injury site to the denervated target muscle.6 To overcome the challenge of long regeneration distances, nerve transfers are performed.1–3,7–9 In a nerve transfer, a healthy, expendable donor nerve is cut and repaired end-to-end to the recipient nerve, thereby bringing regenerating axons closer to the target muscle. Recovery is dependent on successful nerve regeneration across the coaptation site. Following reinnervation of the target muscle, patients recover function by learning to recruit the reinnervated muscle. The quality of the nerve repair is dependent on both the skill and experience of the operating surgeon, with a high-quality repair yielding the best patient outcomes.10 However, although a meticulous nerve repair limits axonal escape and is acknowledged to improve recovery, little is known regarding how best to prepare the recipient and donor nerve for transfer, including the optimal technique for cutting the nerve. Scarring at the site of nerve transection and repair can limit axon regeneration across the coaptation site.11 As such, proper surgical preparation of the donor and recipient nerve ends is necessary to ensure that the coapted nerve ends are free of scar tissue and neuroma, which can impede nerve regeneration. Performing a "clean cut" of the nerve to visualize the fascicles and create matching flat surfaces is generally accepted to maximize nerve regrowth across the coaptation. Currently, there exists no research to inform surgeons as to what the best technique is to cut the nerve.12,13 Thus, it is important to investigate these surgical variables to optimize outcomes. The objective of this study was to determine the opinions of nerve surgeons regarding the importance of nerve preparation and transection before transfer, and to establish the diversity of techniques used by surgeons to perform nerve transection currently. This is a cross-sectional survey of the American Society of Peripheral Nerve (ASPN) members. This study was approved by the institutional research ethics board at Sunnybrook Health Sciences Center at University of Toronto. ASPN members were invited to participate in a study designed to understand the importance of the of nerve preparation and transection before nerve transfer. Members who were not actively practicing surgeons or who did not perform peripheral nerve transfers were excluded. Members were sent an initial email invitation to complete an online de-identified survey, and two follow-up reminder emails were sent. The survey link was embedded in the email. The survey consisted of 10 questions that included demographic data: years in practice, percentage of their practice that involves treating nerve injuries, and the average number of nerve transfer procedures performed per month. (See survey, Supplemental Digital Content 1, which displays the survey questions. Respondents were asked to rank (on a 10-point Likert scale) how much importance they place on the quality of nerve transection, and the instrument and technique they use to transect nerves before nerve transfer. These data were collected using Google Forms and transferred to a prepopulated Excel spreadsheet, including reference pictures for the instruments. (See figure, Supplemental Digital Content 2, which displays the surgical instruments. Data were analyzed with SAS Software. Categorical variables were described using frequencies and percentages. Variables collected via a numerical rating scale were reported as medians and interquartile ranges. Associations between categorical data were analyzed using Fisher exact test. Statistical significance was set a P value less than < 0.05. Of the 350 ASPN members who were invited to participate, there were 51 respondents (response rate 15%). However, respondents were excluded from data analysis if they did not perform nerve transfers (n = 2). The remaining 49 study respondents were eligible for inclusion in this study. Study respondents represented a broad range of experience, with the majority being over 10 years into practice (n = 30 of 49; 61%). Respondents varied in the percentage of their practice that involves treating nerve injuries. The majority of surgeons reported that managing nerve injuries comprised less than 50% of their practice (n = 35 of 49; 71%), most of whom commonly performed one to two nerve transfers per month (n = 21 of 49; 43%). Please refer to Table 1 for further details. Demographic Characteristics of Study Respondents Category Frequency Percentage Years in practice 0–5 y 15 30% 6–10 y 4 8% 11–20 y 16 32% 20+ y 14 29% Percentage of practice involving treatment of nerve injuries 10–20% 16 33% 30–40% 19 39% ≥50% 14 28% No. nerve transfers performed per month (on average) 10 1 2% The majority of respondents reported agreeing with the belief that crushing the donor (n = 35 of 49; 71%;) and recipient nerves (n = 40 of 49; 82%) during transection results in worse patient outcomes. Many believe that certain surgical instruments do limit nerve damage during transection (n = 41 of 49; 84%). On a scale of 1–10 (1 = no influence, 10 = high influence), respondents rated that the quality of nerve transection influences nerve regeneration and outcomes following nerve transfer as 8 of 10 (median, 8; interquartile range, 4). The most common instrument used to cut nerves was a scalpel blade (n = 26 of 49; 53%), followed by specialized nerve microscissors (n = 9 of 49; 19%), a specialized nerve cutting device (n = 7 of 49; 14%), microserrated scissors (n = 4 of 49; 8%), iris scissors (n = 2 of 49; 4%), and a razor blade (n = 1 of 49; 2%; Fig. 1). Among those who used a specialized nerve-cutting device, this included a neurotome, an assi nerve set, a guillotine-type device, and a micro blade. Instruments and techniques used to cut nerves.Both the number of years in practice (P = 0.0271) and the respondent's percentage of practice that involves treating patients with peripheral nerve injuries (P = 0.0054) were significantly associated with the belief that crushing the donor nerves during transection may result in worse outcomes following nerve transfer. Only the latter was significantly associated with this belief in recipient nerves (P = 0.0214). There was no significant association between the average number of nerve transfer procedures per month with either belief (donor, P = 0.0594; recipient, P = 0.0774). There was no significant association between the number of years in practice (P = 0.0695) or average number of nerve transfer procedures per month (P = 0.1090) with the belief that certain surgical instruments do limit nerve damage during transection. However, there was a significant association between the respondent's percentage of practice that involves treating patients with peripheral nerve injuries and the belief that certain surgical instruments do limit nerve damage during transection (P = 0.0331). Our study demonstrates that, amongst a group of surgeons with expertise in peripheral nerve surgery, the current belief is that nerve preparation and transection does influence patient outcomes following nerve transfers. Further, there is a significant association between the respondent's percentage of practice that involves treating patients with peripheral nerve injuries and the aforementioned belief as well as the belief that certain surgical instruments do limit nerve damage during transection. In highlighting the heterogeneity in the instruments and techniques used to prepare nerve ends before coaptation, we have identified the need for establishing best practice guidelines. Nerve repair with nerve transfer includes four important steps: preparation of the proximal and distal nerve ends, approximation, coaptation, and maintenance. This article focuses on the first of those four steps, with the goal of nerve preparation being limiting trauma to nerve endings during transection to limit scar tissue formation at the coaptation site. Although scar formation is necessary for repair following tissue injury, excessive scarring of the perineurium and endoneurium can impede axon regeneration14 and diminish nerve microcirculation, causing ischemia and secondary axon degeneration.15 Limiting perineurial scar tissue facilitates an appropriate environment for the donor nerve axons to first regenerate across the nerve coaptation site and then regenerate through the recipient endoneurial tubules toward the target end-organ.16 The heterogeneity in our results in nerve-cutting techniques is in keeping with the literature.17–20 Many respondents use a scalpel (53%), with the remaining 47% using iris scissors, micro-serrated scissors, a razor blade, specialized nerve microscissors, or a specialized nerve-cutting device. The utility of nerve-specific cutting devices may be limited by cost, and without sufficient evidence to support the use of a nerve-specific cutting device, the cost may not be justified at many centers. Studies comparing the use of different instruments and techniques for the preparation of nerve endings is sparse.20 The most effective method is still a subject of debate, with some advocating use of a scalpel and others use of microvascular scissors.21–23 Presently the ability of the surgeon to limit and assess damage to the nerve at the transection site is limited. Jernigan et al20 investigated the impact of several nerve transection devices on the macroscopic quality. They dissected median nerves in a cadaveric model and excised 1-cm-long segments using either a 15-blade scalpel, microvascular scissors, tenotomy scissors, iris scissors, or a circumferential nerve-cutting guide.20 Axial and sagittal photographs of each nerve segment were grouped together on a single digital file and presented to a panel of three hand fellowship–trained surgeons who were blinded to the instrument.20 The panel evaluated each photograph, with "yes" indicating an acceptable cut and "no" indicating an unacceptable cut.20 Compared with all other instruments, the majority of surgeons agreed that the specialized nerve-cutting device (the circumferential nerve-cutting guide) produced the most acceptable cuts.20 Although these results may help guide surgeons, it remains unknown whether the macroscopic appearance of the nerve is correlated with perineurial and endoneurial scarring. Rose et al24 investigated the microscopic appearance of the nerve ends following different methods of nerve transection in a cadaveric model of median and ulnar nerve transection. They likewise excised 1–2 cm of each nerve using either an 11-blade scalpel, a razor blade, or a pair of scissors.24 Using electron microscopy, a three-dimensional surface analysis of roughness was performed for each specimen using ZeeScan optical hardware and GetPhase software.24 Statistical analyses comparing the roughness measures amongst cutting techniques revealed that 11-blade scalpels and the iris scissors produced the smoothest nerve preparations; razor blades resulted in inconsistent nerve ends.24 Although nerve appearance was used as a surrogate for transection quality in both studies, it remains unknown whether this impacts nerve regeneration in vivo. What likely remains most important for axon regeneration is the maintenance of the architecture of the endoneurial tubules and scarring after transection, which has yet to be investigated directly. For instance, a smooth cut that may crush the endoneurial tubules and result in significant scarring may be less effective than a less smooth cut that leaves the endoneurial tubules less damaged. The damaging effects of using microsurgical scissors and razor blades have been described in other studies as well. Behrman and Acland25 noted that the cutting action of scissors resulted in damage to both the perineurium and axon orientation within the endoneurium. Archibald and Fisher et al. also described the damaging effects of using microsurgical scissors and razor blades.26 Although Rose et al24 found iris scissors were equal to scalpel blades at producing the smoothest nerve preparations, Archibald and Fisher26 observed that the use of a razor or microsurgical scissors resulted in an uneven section of the nerve tissue and distortion of the internal and external structure of the fasciculus due to crushing and shearing actions. Rummings et al27 compared the incidence of neuroma formation following transection of rat sciatic nerves via: a 15-blade scalpel with a tongue depressor, micro-serrated scissors, nerve-cutting guide forceps with a straight razor, and bipolar cauterization. Despite the most visual damage and disorganization found in the No. 15 scalpel blade group, there were no significant differences in the caliber or incidence of neuroma formation between the groups.27 Although these results demonstrate that the subjective appearance of the nerve after transection is not influenced by technique, it remains unknown whether the macroscopic appearance of the nerve correlates with the microfascicular architecture of the nerve, which is most likely to impact axon regeneration. Our results demonstrate that the only practice variable that is significantly associated with the belief that crushing the donor and recipient nerves leads to worse patient outcomes and that certain surgical instruments limit damage during nerve transection is the respondent's percentage of practice that involves treating patients with peripheral nerve injuries. Although length of nerve practice and number of nerve procedures performed are also surrogates of peripheral nerve surgery experience, the percentage of practice may better represent a surgeons focus on nerve surgery and potentially their understanding. This finding highlights the necessity for further investigation to establish best practice guidelines for peripheral nerve surgery. There are several limitations to our study. Although the response rate was 15%, the ASPN membership includes practicing surgeons, retired emeritus members, trainees, as well as a large number of basic scientists that do not practice clinically. The percentage of members who are not practicing surgeons is unknown, and it is therefore important to note that our response rate of 15% likely represents a much higher percentage of practicing surgeons within the ASPN. Our sample size of 49 respondents, although small, was sufficient to capture a diversity of nerve preparation techniques and establish that controversy exists regarding the preparation of recipient and donor nerve ends before nerve transfer. Of note, a third of the survey population comprised of surgeons who have recently completed their training. These individuals may still be predominantly influenced by the practices of their training mentors and might not have had sufficient time in independent practice to develop their own opinions and preferences. This underscores the possibility that their survey responses may not entirely represent their personal views, but rather the techniques they were trained in. Our survey study is also subject to volunteer bias, where respondents may feel strongly about the topic in comparison to those who did not participate in the study. As such the study results may not be representative of all nerve surgeons. Moreover, practices may be influenced by practical considerations, such as convenience, which can impact the interpretation of results regarding tool preference. For example, opting for scissors over a blade may not imply a belief in the superiority of scissors, but rather a recognition that various methods can yield comparable results, with scissors being a quicker and more straightforward choice. Conversely, respondents might favor a blade due to a scarcity of sharp scissors, yet still maintain that a sharp pair of scissors would be equally effective. Lastly, we did not explore the morphological implications of the surgical instruments used for nerve transection and coaptation with laboratory investigation. Rather, the purpose of our study was to establish the prevalent practice patterns of nerve surgeons within the ASPN and establish the clinical equipoise necessary to justify further investigation. Future studies will seek to examine the effects of various surgical instruments by comparing the structure of endoneurial tubes of the nerve end before surgical transfer. Expert opinion from our study demonstrated that the majority of respondents felt that the nerve-cutting technique influences nerve regeneration after coaptation for nerve transfer. Presently, surgeons use a variety of instruments to prepare nerve ends before coaptation. This study identified the technique most commonly used by nerve surgeons to be a scalpel blade. Although this study focused on the clinical paradigm of nerve transfers, these results are equally applicable to the much larger number of surgeons who perform nerve coaptations for repair following traumatic injury. Future studies will seek to investigate the microstructure of endoneurial tubules following different cutting techniques, and to determine whether cutting techniques impact nerve regeneration in animal models. These studies can provide the necessary evidence to guide decisions made daily in operating rooms that may impact outcomes after nerve surgery. The authors have no financial interest to declare in relation to the content of this article. blovy Published in Nerve Repair 3 mins read Dec 25, 2024 Nerves can be connected using a surgical procedure called a nerve graft. Nerve Grafting: Bridging the Gap When a nerve is damaged, often the two ends of the nerve are not touching, preventing proper signal transmission. A nerve graft is used to bridge this gap, allowing the nerve to regenerate across the injury site. Here's a breakdown of how it works: What is a Nerve Graft? A nerve graft is a segment of nerve tissue that is used to connect the two separated ends of an injured nerve. This tissue acts as a scaffold, guiding the growth of the regenerating nerve fibers. Types of Nerve Grafts There are several types of nerve grafts, each with its unique source: Autograft: This involves taking a segment of sensory nerve tissue from another area of the patient's body. For instance, a nerve from the leg might be used to repair a nerve in the arm. Allograft: This uses nerve tissue that is harvested from a cadaver, then processed and sterilized for safe use. Artificial Graft: This utilizes artificially grown nerve tissue in order to bridge nerve gaps. The Procedure The nerve grafting procedure involves: Exposure: The injured nerve and the recipient site are exposed during surgery. Graft Placement: The chosen graft is then carefully placed and sutured between the two nerve ends, creating a bridge. Regeneration: Over time, the nerve fibers from the injured nerve grow through the graft towards the other end of the injured nerve, restoring the nerve's ability to transmit signals. Practical Insights and Solutions Autografts: Provide the best results, but the creation of a secondary injury at the donor site is a disadvantage. Allografts: Remove the need for a donor site, but can sometimes be rejected by the body. Artificial Grafts: Eliminate issues with both donor site morbidity and rejection while demonstrating similar efficacy. Potential Outcomes Nerve grafts do not immediately restore nerve function, nerve recovery takes time. Complete restoration of function is not always guaranteed and may take months or years to reach a plateau. Rehabilitation and physical therapy often play a crucial role in maximizing the outcome. Summary The process of connecting nerves, specifically when they are damaged or severed, primarily involves using nerve grafting techniques to create a conduit for nerve regeneration. Different types of grafts, such as autografts, allografts, and artificially grown tissues, are used based on the situation. © 2025 blovy. All rights reserved. What is the aim of this leaflet? To provide information about therapy management following surgical repair of peripheral nerve injuries in the upper limb. What is a peripheral nerve? A nerve is a structure within your body that delivers information to and from the brain. A peripheral nerve is a network of nerves that connect the brain and spinal cord (the central nervous system) to the entire human body. Motor nerves send signals to your muscles to allow movement. Sensory nerves send signals to your brain about what you are touching or feeling. Peripheral nerves are made of fibres called axons that are insulated by surrounding tissues.Nerves can be damaged in different ways and sometimes need to be repaired with surgery.Think of them like an electricity cable. The outer layer / tube is the part that gets repaired in surgery, and it is the fibres within the tube that have to regrow from the point where they have been damaged.There are three main nerves that affect the hand: the median nerve, the ulnar nerve and the radial nerve.You have had the . . . . . nerve repaired. How long will it take to heal? The outer part of the nerve that has been repaired (the epineurium) takes 3 to 6 weeks to heal. You will need to wear a splint during that time to protect the surgical repair.The inner part of the nerve (the axon) needs to grow back within its tube, from the point of where it was damaged. It can take time for it to carry signals again. After the first 2 to 3 weeks, it starts to regrow at approximately 1mm a day. You will not regain sensation (feeling) or muscle power (movement) until the nerve axon grows back and reconnects to its destination. Usually after three months you will notice movement and feeling start to come back, but it can take up to two to five years and may never recover completely. What will happen when the nerve is recovering? You may have some loss of active movement as some of your muscles won't work immediately after surgery and when they do start to work again they may be weak. Your hand may rest in a certain position because some of the muscles are not working. You may start to notice some areas of muscle wasting after a few weeks. The exact muscles where you may have problems will depend on which nerve has been repaired and position along the nerve where the damage is.Below shows some of the common postures and functional difficulties that can occur with damage to each of the three nerves affecting the hand: Common postures and functional difficulties Wrist drop - Affects ability to straighten the wrist, fingers and thumb, making it difficult to release objects once you have hold of them, and difficulty in positioning the hand. Median nerve - Affects ability to bring the thumb round to meet the index finger for pinch or grip activities. Can also affect the muscles that bend the first and second fingers of the hand, affecting ability to grasp items. Ulnar nerve clawing - Affects ability to straighten the ring and little fingers and the ability to spread the fingers apart and bring them back together again. Can also affect the ability to bring the thumb in towards the hand eg when gripping and turning a key, and the ability to make a tight fist at the little finger side of the hand. You may have tingling or pins and needles, or a burning feeling in the affected parts of your hand. You may have no feeling at all in the affected part of your hand initially, but then start to get tingling or pins and needles as feeling starts to come back. It can also be normal to get electric shock type sensations and involuntary muscle twitches.You may not be able to feel with your hand properly so you must take care with hot, cold or sharp objects. You may cut or burn your hand without realizing and, if you do damage your hand, it will take longer to heal.Your hand may be more sensitive to temperature changes. You may feel the cold more easily so you should wear warm gloves when you are in the cold.Your hand may not sweat properly after nerve injury. This can lead to dry skin therefore you will need to wash and moisturise it regularly.Below is a chart that shows the normal areas of sensation (feeling) for each of the three nerves affecting the hand. Normal areas of sensation (feeling) for each of the three nerves affecting the hand. What can you expect immediately following surgery? You will be contacted by the hand therapy team to arrange an appointment within a week of your surgery. It may be possible to transfer your hand therapy care closer to home after the first few appointments, depending on what specialist services are available in your local area.You might experience some discomfort or pain following surgery and it is important to take regular pain relief as required.What to do in the few days before your first appointmentFollowing the surgery it is normal for the hand to be swollen. To reduce this swelling keeping the hand elevated (resting on your shoulder) or in a sling can be beneficial.Until you are seen, do not remove your post-surgery cast or attempt to use your hand at all. Don't attempt any of the exercises until seen by your hand therapist. The cast must be kept dry.What to expect at your first appointment?Your first appointment will last an hour. Your dressings and cast will be removed and replaced with a lighter weight thermoplastic splint to protect the repaired nerve as the repaired outer layer of the nerve heals. This splint needs to be worn 24 hours a day for up to six weeks as directed by your therapist. In most cases you will start your exercises at your first appointment. We would recommend you eat something and take pain relief before attending your first appointment to make your experience more comfortable.Splint care (once you have been fitted with a thermoplastic splint)Do not place the splint in hot water or near a heater or it will change shape.Check your skin regularly for red / pressure areas and when you remove the splint to do this, ensure you keep the hand in the same position it would be in if you still had the splint on. Contact your therapist if any problem occurs.If your splint becomes too loose or too tight please contact your hand therapist.Use a plastic bag over the whole arm when in the bath or shower (do not take the splint off). Why is it important to look after your wound and scar? To prevent infection it is important to look after the wound whilst it is healing. It should be kept clean and dry until the stitches have been removed and the wound is healed and dry which is approximately 10 to 14 days following surgery. If they are dissolvable stitches then they need to stay clean and dry for at least 12 to 14 days. You will be guided on this by the dressings clinic or your local GP practice nurse or hand therapist.Scar careScars are collagen fibres produced as a result of the body's normal healing process. The amount of scar tissue produced by the body varies depending on the individual and type of surgery / injury. As the wound heals there will be little scar tissue produced but over time the body may develop more.Initially scars can be firm, thick and red in colour (active phase) but over time they soften and become pale in colour (matured). This whole process may take 12 to 18 months or more.During the "active phase" you can use treatments to influence your scar. Initially as scar tissue forms it is thick and lumpy and can stick to structures around it; scar care helps to flatten the scar and make it softer as well as reducing the chance of scar tissue sticking (adhesions). When can I start my scar care? If the wound is healed and dry, 24 to 48 hours after your stitches have been removed.If you have dissolvable stitches you can start massaging your scar at approximately 12 to 14 days after your surgery, providing the wound is healed and dry.You will need a basic, un-perfumed moisturising cream, such as aqueous cream or 'E45 cream', which is ideal for massaging scars.The scar massage needs to be in circular movements, on and around the scar line, to keep the skin moving freely. In the first few days you may only tolerate gentle massage, but you should then aim to increase it to a deep and firm massage to reduce the risk of adhesions (see picture below). Please keep your splint on when doing scar massage. If this is not possible due to the location of the scar, ensure you keep the hand in the position it would be in if the splint was on.Start date: . . . . . .Repeat . . . . . times per day for approximately . . . . . minutes, ideally before your exercises. How can you help your recovery? To help your recovery you should cut down or stop smoking and drinking.Keep your hand elevated as much as practically possible to prevent swelling in your hand.Do not use your hand for anything other than your exercises until advised by your hand therapist. This includes driving. Exercise (including uninvolved joints) – why it is important Exercise is important to help your recovery. It will reduce stiffness and swelling in the hand and thumb and help to prevent complications. Your therapist will teach you specific exercises which you must complete throughout the day – normally 5 to 10 repetitions, every two hours initially.Although some of the muscles may not be working due to the nerve damage, it is important to keep the joints supple ready for when the motor nerves do start to conduct messages again. Some movements may not be allowed in the first 3 to 6 weeks post op if they put tension on the nerve repair. Your therapist will show you exactly which exercises you should be doing for your particular nerve injury. Potential signs of infection or possible rupture and what to do If you notice that your hand feels hot to the touch, is red, has an unpleasant smell or you have increased pain, this may be a sign of an infection.If you feel a popping or snapping sensation and notice any sudden pain or swelling, this may suggest the nerve repair has ruptured.In these instances, you should contact the plastic surgery unit on 01223 348507 (Monday to Friday 08:30 to 16:30), your local GP practice, 111 or your local emergency department if out of hours. If you cannot feel a part of your hand, your brain may begin to forget that part is there.Straight after your operation, some simple brain exercises can help stop you forgetting what your hand should feel like, and keep that area of your brain ready to receive sensory messages (feelings) from the hand again in the future.Examples are:Look at different objects and textures and imagine what they should feel like on your skin.Ask someone to touch an area of your hand that you cannot feel at the same time as the same area on your other hand. Notice how it feels and how it should feel on your injured hand. You can even gently touch the numb area over the top of the dressings whilst looking at it as you touch it.Exercises done while you have no feeling are phase one of sensory re-training. There is also a second phase which your therapist will go through with you when the feeling is starting to return. Be aware that you may not be able to feel hot or cold or sharp objects – so you will need to be extra careful with your hand. Check your skin condition regularly whilst wearing splints as you may not feel areas that are rubbing. If your splint is rubbing, please let your therapist know.Please take care with:Hot drinksSteam from kettles / cookingHot radiatorsSharp objects, such as tins / knivesIceActivities that cause friction / pressure, such as holding a tool / object for a long time, rubbing your hand dry. Your therapist will advise when you can stop wearing the protective splint, and after that may fabricate different splints that aim to assist you to use your hand whilst waiting for the muscle function to return. Your therapist will monitor your sensory recovery and muscle recovery and will provide additional exercises to help strengthen muscles as they start to work again, and start phase two of sensory re-education once the sensation is starting to return. Contacts / Further information The Occupational Therapy department is located in clinic 30 in the Addenbrooke's Treatment Centre (ATC). This is approximately 10 minutes walk from the main bus stop at the front of the hospital. The occupational therapy reception telephone number is 01223 216769. References / sources of evidence NICE clinical guideline No 74: Surgical site infection (October 2008); Department of Health: High Impact Intervention No 4: Care bundle to preventing surgical site infection (August 2007)Standards of Hand Therapy Practice in the management of nerve trauma' published by BAHT in 2022.Peripheral nerve injuries – patient information leaflet. St Georges Hospital NHS trust. Smoking is not allowed anywhere on the hospital campus. For advice and support in quitting, contact your GP or the free NHS stop smoking helpline on 0800 169 0 169. Other formats Help accessing this information in other formats is available. To find out more about the services we provide, please visit our patient information help page (see link below) or telephone 01223 256998. www.cuh.nhs.uk/contact-us/accessible-information/ Contact us Cambridge University Hospitals NHS Foundation Trust Hills Road, Cambridge CB2 0QQ Telephone +44 (0)1223 245151 Reddit and its partners use cookies and similar technologies to provide you with a better experience. By accepting all cookies, you agree to our use of cookies to deliver and maintain our services and site, improve the quality of Reddit, personalize Reddit content and advertising, and measure the effectiveness of advertising. By rejecting non-essential cookies, Reddit may still use certain cookies to ensure the proper functionality of our platform. For more information, please see our Cookie Notice and our Privacy Policy.