Lower Extremity

Trauma, tumor and revision surgeries pose considerable risk of iatrogenic nerve injury for the lower extremity surgeon.

Checkpoint solution:

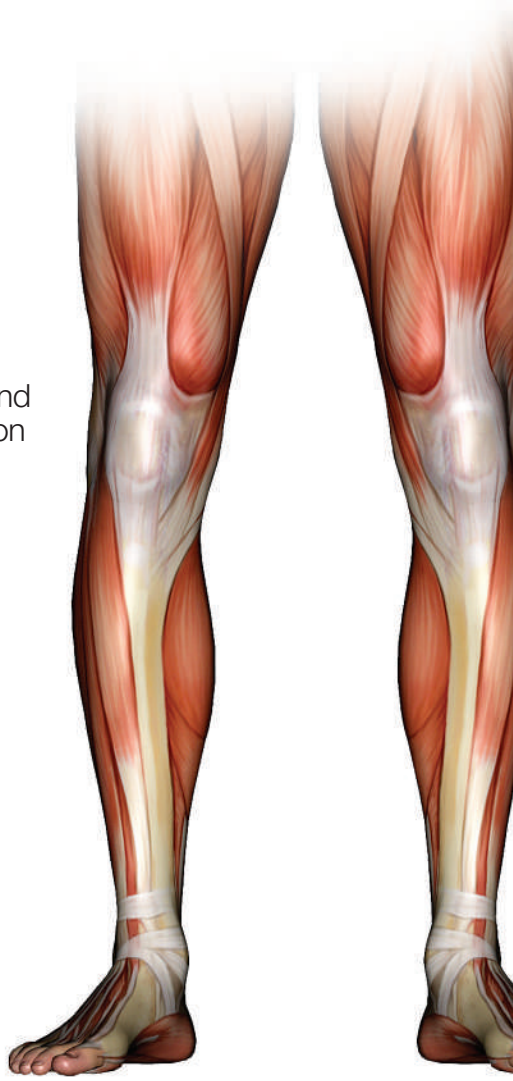
Checkpoint provides a unique intra-operative, surgeon controlled means of safely and reliably locating and identifying nerves and evaluating nerve and muscle excitability.

Successfully used on:

Posterolateral Total Hip Revision, Pelvic Reconstruction, Posterolateral Corner Injury, Peroneal Nerve Decompression, Tibial Osteotomy and Deformity Correction, Removal of Hardware, Heterotopic Ossification, Femoral Nerve Decompression, Sciatic Nerve Decompression, Hamstring Tendon Repair, Tumor Excision

Procedures:

- ✓ Posterolateral Total Hip Revision
- ✓ Pelvic Reconstruction
- ✓ Posterolateral Corner Injury
- ✓ Peroneal Nerve Decompression
- ✓ Tibial Osteotomy and Deformity Correction
- ✓ Removal of Hardware
- ✓ Heterotopic Ossification
- ✓ Femoral Nerve Decompression
- ✓ Sciatic Nerve Decompression
- ✓ Hamstring Tendon Repair
- ✓ Tumor Excision



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Checkpoint Surgical

CHECKPOINT® Stimulator/Locator

Proudly made in the USA

Dr. Scott Kozin described the Checkpoint Device as “Checkpoint is far superior to any nerve stimulator we have used in the past and is indispensible for my brachial plexus and complex nerve repair cases.” This revolutionary technology is specifically designed to meet the surgical challenges of motor nerve protection, repair and/or assessment.

Shorten time in the OR

Selective Amplitude Switch: Gives surgeon wider range of feedback to make procedural decisions. In a surgeon survey[1], 35 out of 61 respondents (57%) reported reduced OR time

Independent Use

Ergonomic, one-hand design: Surgeon controlled device. You don’t have depend on others for providing data during procedures, no need to schedule in advance when potentially needed

Accurate

Advanced Electronic Circuitry: Checkpoint can provide far more information than a simple twitch allowing for intra-operative assessment of muscle function and strength without always requiring tissue dissection and direct nerve contact.

Easy to Use

360 degree LED indicator light & built in power supply: It works right out of the box and you know it’s working

[1] Checkpoint User Survey. 9094-PMS-000-A. Data on File-June 2012.

CHECKPOINT® Features and Benefits

360° LED Indicator Light

Provides continuous visual confirmation that stimulus is being delivered

Pulse Width Slide Control

Continuously variable intensity at each amplitude to fine-tune stimulus parameters

Selective Amplitude Switch (0.5mA, 2mA, 20mA)

Adjust threshold stimulus desired for precise, highly localized individual nerve stimulation to wide and deep generalized nerve activation

Biphasic Waveform

Generation of biphasic waveform for safe and continuous nerve activation for as long as the stimulation probe is applied

Advanced Electronic Circuitry

Performs continuous circuit and software checks insuring reliable stimulus parameters are delivered and maintained

Ergonomic, one-hand design

Easy to use; puts all the controls in the surgeon’s hand

Built-in Power Supply

Self-contained batteries eliminate the need for external electrical connection; no cables in the sterile field

Sterile, Ready to Use Packaging

No advance preparation by OR staff required; allows for restocking option if not used

Videos and Other Information

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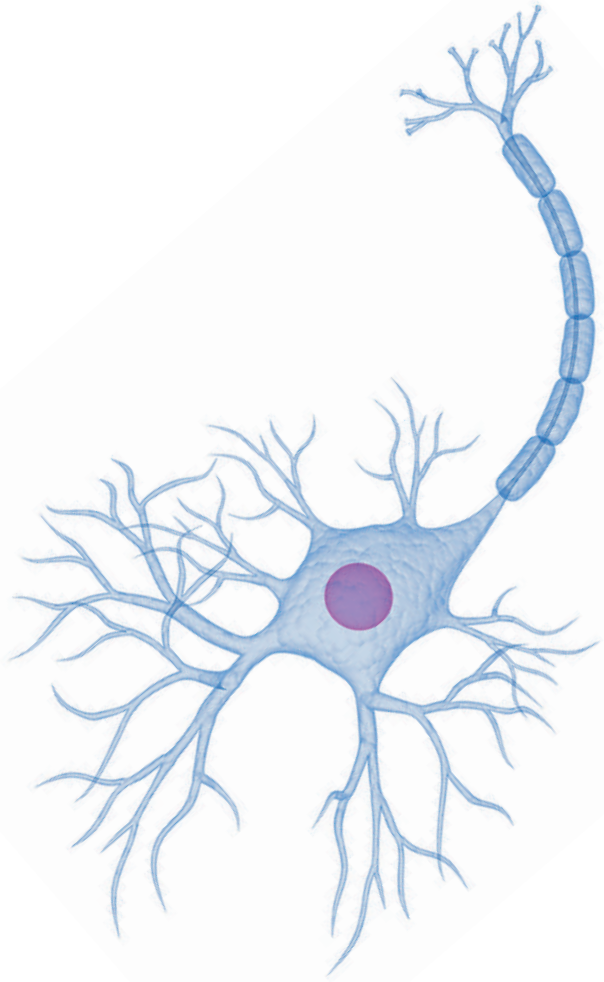
Nerve Assessment
Plastic, Neurosurgery & Orthopaedic Hand

Intraoperative motor nerve assessment is hampered by the technical constraints and limitations of currently available nerve assessment technology.

Checkpoint solution:

Checkpoint provides a unique intra-operative, surgeon controlled means of safely and reliably locating and identifying nerves and evaluating nerve and muscle excitability.



Successfully used on:

Neuroma Cases, Nerve Exploration, Revision Cubital Tunnel, Tendon Repair, Nerve Transfer, Muscle Transfer, Muscle Graft, Brachial Plexus Repair, Revision Elbow, ORIF Proximal Humerus, Trauma Reconstruction, Removal of Hardware, Schwannoma Tumor, Hemangioma

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White Paper

Checkpoint has been utilized in a variety of procedures by Nerve Assessment Plastic, Neurosurgery & Orthopaedic Hand surgeons. Here is one such example:

Case Report: Radial Nerve Donor Branch Selection and Transfer to Anterior Branch of Axillary Nerve Using the Checkpoint Stimulator

Scott Wolfe, MD is Emeritus Chief, Hand and Upper Extremity Surgery and Director, Center for Brachial Plexus and Traumatic Nerve Injury at the Hospital for Special Surgery New York, New York

Steve K. Lee, MD is Director of Research, Center for Brachial Plexus and Traumatic Nerve Injury at the Hospital for Special Surgery, New York, New York

This case involves a 16-year-old male who is 6 months status post glenohumeral dislocation and resultant axillary nerve palsy. He presented with limited ability to abduct his right shoulder. The goal of the surgery was to re-innervate the anterior and middle deltoid muscles using a branch from the radial nerve to one of the heads of the triceps muscle.

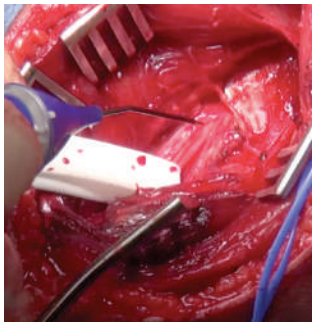
We used the Checkpoint stimulator (Checkpoint Surgical, Cleveland, Ohio) to help us confirm the location of the nerve block, and in particular the candidate motor branches of the radial nerve for transfer. In our experience intra-operative nerve stimulation enhances intra-operative decision-making.

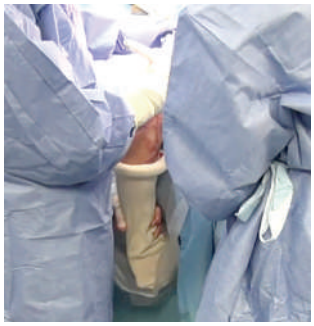
The initial posterior shoulder dissection involves identification of the radial and axillary nerves as they emerge on either side of the teres major muscle. Identification of the muscular branches ensues with the use of Checkpoint to confirm the integrity and excitability of the motor nerves and to help us assure that we protect these critical structures during surgery.

The Checkpoint device produces a fused, or tetanic, muscle contraction that varies in response to stimulus parameters—current amplitude and pulse width—the latter of which is under the surgeon's fingertip control through a slider switch. Since the Checkpoint device is biphasic, there are no concerns about prolonged tissue contact.

As the case advances, we identify and confirm the branches off the radial nerve to the long, lateral and medial heads of the triceps muscle. Nerve stimulation is used a) to select the best branch for transfer to the axillary nerve and b) to confirm that the residual triceps contraction will be vigorous and functional from the remaining branches that are protected and left intact. It is also important to assure that nerve selection and harvest will not deleteriously affect distal wrist, finger or thumb extension. The sustained muscle contraction afforded by a biphasic stimulator makes it quite easy to discern distal motion and to then select the most appropriate nerve branches for transfer.

It is important that the stimulator not be utilized when paralyzing anesthetic agents are in effect, as an absent or inconsistent response to stimulation may result in inaccurate assessment of nerve and muscle function.





After identifying an appropriate radial nerve branch for transfer, we use the Checkpoint device to stimulate each of the branches of the axillary nerve. Stimulation of the branches begins with the lowest current level (0.5mA). If no response is identified, we increase the pulse width incrementally to a maximum pulse width of 200 microseconds. In this case, the posterior branch did not stimulate at the 0.5mA level, so we re-assessed the motor response with a decreased pulse width, and an increased current of 2.0mA, gradually increasing pulse widths until a response was identified.

Read more at CheckpointSurgical.com

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Trauma

Trauma, tumor and revision surgeries pose considerable risk of iatrogenic nerve injury for the trauma surgeon.

Checkpoint solution:

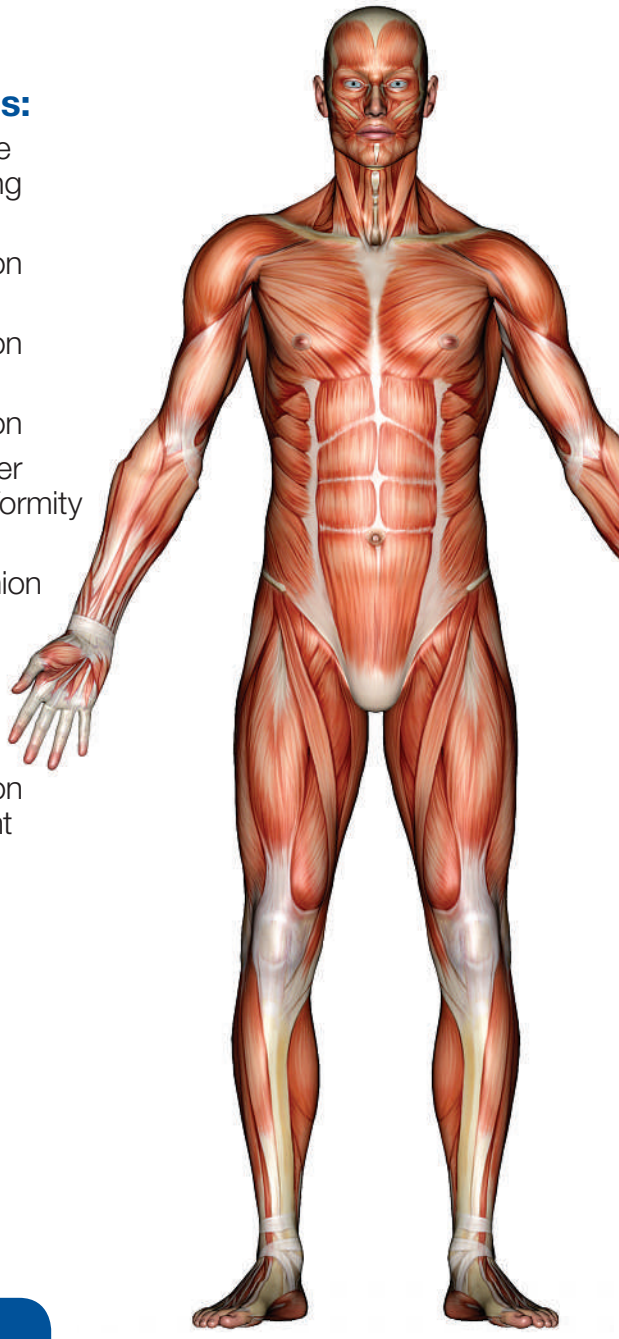
Checkpoint provides a unique intra-operative, surgeon controlled means of safely and reliably locating and identifying nerves and evaluating nerve and muscle excitability.

Successfully used on:

Muscle Tissue Viability Testing, Elbow Reconstruction, Shoulder Reconstruction, Pelvic Reconstruction, Upper & Lower Extremity Deformity Correction, ORIF Non-Union, Removal of Hardware, Revision Surgery, Nerve Location & Assessment

Trauma Procedures:

- ✓ Muscle Tissue Viability Testing
- ✓ Elbow Reconstruction
- ✓ Shoulder Reconstruction
- ✓ Pelvic Reconstruction
- ✓ Upper & Lower Extremity Deformity Correction
- ✓ ORIF Non-Union
- ✓ Removal of Hardware
- ✓ Revision Surgery
- ✓ Nerve Location & Assessment



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"Checkpoint's reliable and reproducible stimulation has helped not only to identify and protect nerves from injury, but also has proven useful in nerve reconstruction cases. I have come to rely more on Checkpoint than the electrophysiologic data."

Dr. Michael Hausman
Mt. Sinai Medical Ctr.

White Paper

Checkpoint has been utilized in a variety of procedures by trauma surgeons. Here is one such example:

Protection of Peripheral Motor Nerves in Trauma Cases using a Sterile Handheld Neurostimulator
Bradford O. Parsons MD

The recent availability of a hand-held, sterile, biphasic stimulator (Checkpoint Surgical®, Cleveland, Ohio) has provided surgeons with a reliable tool to evaluate nerve location and excitability. This provides the surgeon with information that allows intraoperative decisions to be made with greater confidence in many orthopedic procedures. The following two cases highlight examples of the use of this technology in orthopedic surgery practice to protect nerves.

CASE 1. Failed Total Elbow
Case 1 concerns a failed total elbow requiring revision. Identification and protection of the ulnar nerve is one of the more challenging aspects of revision elbow surgery, especially when there is considerable scarring yet the clinical examination shows normal nerve function.

Specific dissection and mobilization of the nerve is intended to identify and isolate the location of the nerve so that injury can be avoided. This process is laborious and, not infrequently, actually causes the very nerve deficit that we try to avoid. This dissection may be avoided if the surgeon has a reliable alternate means to locate the nerve.

The Checkpoint nerve stimulator/locator was used initially at 2mA and a pulse width of approximately 200 microseconds to locate the nerve through the surrounding tissue. Once a motor response was identified, the pulse width was decreased to more closely identify and "hone in" on the nerve location.

Using this procedure I was able to identify the course of the ulnar nerve in the tissue both proximal to and through the elbow. At that point, knowing the course of the nerve, rather than having to dissect the nerve, I could mobilize a cuff of tissue containing the nerve, without dissecting and exposing the nerve itself. This minimized manipulation of the nerve and also allowed quick dissection. In a sense, the "region" of the nerve was identified with the Checkpoint to permit a safe, "regional" dissection of the nerve with a protective margin of tissue, rather than specifically dissecting the nerve itself. This saved considerable operating time and I could confirm both during the procedure and prior to closure that the ulnar nerve was in good working order. Postoperatively, the patient had normal ulnar nerve function.

Read more at CheckpointSurgical.com

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Orthopaedic Upper Extremity

Joint reconstruction, trauma and revision surgeries pose considerable risk of iatrogenic nerve injury for the orthopaedic surgeon.

Checkpoint solution:

Checkpoint provides a unique intra-operative, surgeon controlled means of safely and reliably locating and identifying nerves and evaluating nerve and muscle excitability

Being used in a variety of Orthopaedic Upper Extremity surgeries, such as:

Shoulder Reconstruction & Trauma:

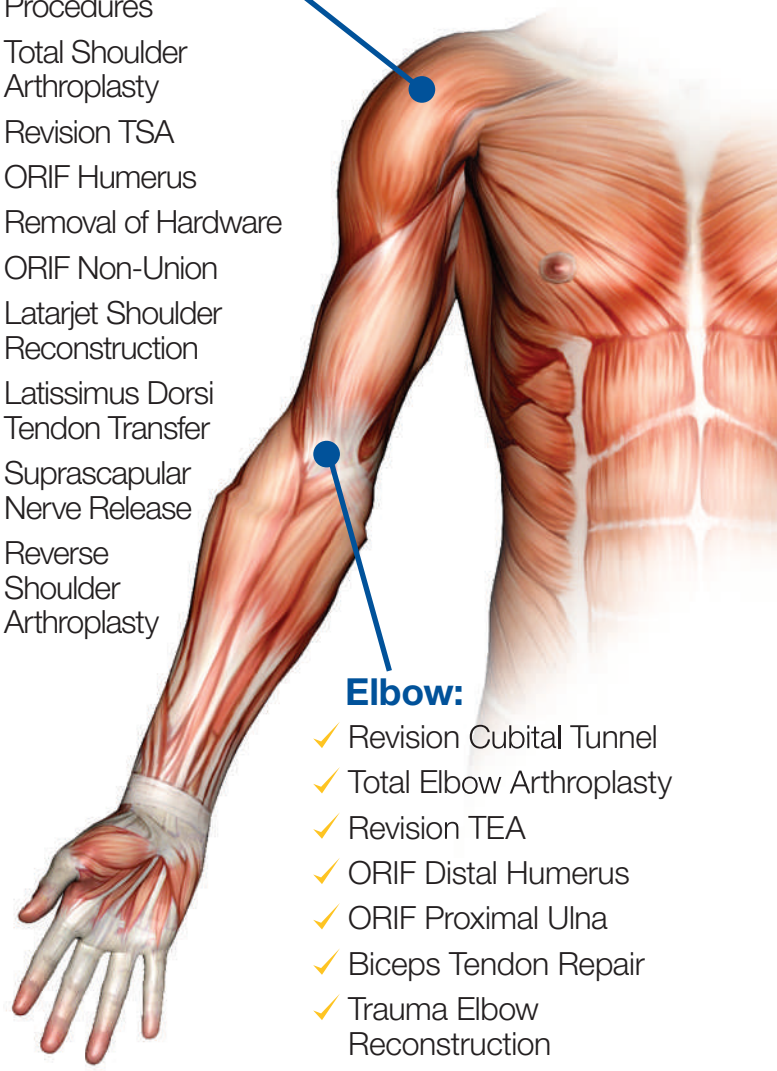
Revision Shoulder Procedures, Total Shoulder Arthroplasty, Revision TSA, ORIF Humerus, Removal of Hardware, ORIF Non-Union, Latarjet Shoulder Reconstruction, Latissimus Dorsi Tendon Transfer, Suprascapular Nerve Release & Reverse Shoulder Arthroplasty

Elbow Reconstruction & Trauma:

Revision Cubital Tunnel, Total Elbow Arthroplasty, Revision TEA, ORIF Distal Humerus, ORIF Proximal Ulna, Biceps Tendon Repair, Trauma Elbow Reconstruction & Posterior Interosseous Nerve Decompression

Shoulder:

- ✓ Revision Shoulder Procedures
- ✓ Total Shoulder Arthroplasty
- ✓ Revision TSA
- ✓ ORIF Humerus
- ✓ Removal of Hardware
- ✓ ORIF Non-Union
- ✓ Latarjet Shoulder Reconstruction
- ✓ Latissimus Dorsi Tendon Transfer
- ✓ Suprascapular Nerve Release
- ✓ Reverse Shoulder Arthroplasty



Elbow:

- ✓ Revision Cubital Tunnel
- ✓ Total Elbow Arthroplasty
- ✓ Revision TEA
- ✓ ORIF Distal Humerus
- ✓ ORIF Proximal Ulna
- ✓ Biceps Tendon Repair
- ✓ Trauma Elbow Reconstruction
- ✓ Posterior Interosseous Nerve Decompression

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White Papers

Checkpoint has been utilized in a variety of procedures by Upper Extremity Orthopaedic Surgeons. Here are two such examples.

"Checkpoint has become an essential tool for my complex shoulder surgery cases, not only to help identify and protect nerves from injury, but also to gauge how well they are functioning."

Dr. Evan Flatow
Mt. Sinai Medical Ctr.

Procedure and Role for Intraoperative Axillary Nerve Stimulation in Reverse Shoulder Arthroplasty Component Sizing using a Handheld Biphasic Motor Nerve Stimulator

Evan Flatow, MD Lasker Professor and Chair, Chief of Shoulder Surgery, Mount Sinai Medical Center, New York

BACKGROUND:

The incidence of acute nerve injury, a feared complication, in TSA is quoted between 0.6 and 4.3%. Furthermore, the recent recognition of late deltoid weakness, possibly related to chronic, unsuspected axillary nerve traction mandates careful consideration. It has been hypothesized that lengthening of the arm, and therefore of the nerve, as well, in reverse shoulder arthroplasty may play a role in the incidence of neurologic injuries in this patient group. Lengthening of the nerve is related to a reduction in its blood flow with levels of strain as low as 8%; complete arrest of blood flow may commence at 15% strain. Following reverse shoulder arthroplasty segments of the brachial plexus may see as much as 19% lengthening. Commensurate reductions in blood flow may explain the prevalence of neurologic symptoms in post-reverse shoulder arthroplasty patients. A simple means of assessing nerve health may be helpful in intra-operative decision-making and provide guidance to the surgeon during reverse shoulder arthroplasty in regards to consideration of pre-implant neurolysis and in optimal component sizing.

Read more at CheckpointSurgical.com

Protection of Peripheral Motor Nerves in Trauma Cases using a Sterile Handheld Neurostimulator

Bradford O. Parsons MD is Assistant Professor of Orthopedics at Mount Sinai Hospital in New York

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