

VEHICLE EXTRACTION TECHNIQUES



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IMPORTANCE NOTICE

**This manual is a basic guide to
Vehicle Extraction Techniques**

**If this manual conflicts with your
organisations protocols, you should
follow those protocols in preference to the
guidelines stated in this manual.**

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INTRODUCTION

INTRODUCTION

The management of the trauma patient in a vehicle requires a range of skills including scene management, safe work practices, hazard control, patient assessment and treatment.

This booklet - used in conjunction with a one day Vehicle Extraction Course is designed to develop a systematic approach to patient extraction from vehicles.

TERMINOLOGY

Prehospital personnel including Paramedics, First-aiders, Rescue Officers and other persons performing activities at the accident scene, will for standardisation, all be referred to as '**Officers**' in this manual.

The terms '**Extraction**' and '**Egress**' refer to removing the patient from the vehicle.

TRAINING

Officers should realise that there is no substitute for training and experience in vehicle extraction techniques. Each person must be thoroughly trained in all areas of the accident scene.

The ideal situation is to have all members of the team qualified to manage all the steps presented in this manual. If unqualified members are present at a scene, they must perform under strict supervision of a qualified team member.

Frequent exercises need to be held to ensure that training levels are maintained. Practice will lead to high levels of competence and safety.

It is recommended that initial training of Officers in the vehicle extraction techniques is to include:

1. Review of this manual under direct supervision of an appropriately trained supervisor.
2. Practical hands-on applications of procedures presented in this manual in a training environment under direct supervision of an appropriately trained supervisor before use on actual patients.

It is recommended that ongoing training of Officers is to include:

1. Three monthly practical review in the use of the vehicle extraction techniques in its intended environment,.
2. Twelve monthly theoretical & practical review .

Persons using these techniques without proper initial & ongoing training may place the patient at risk of injury, including permanent spinal cord damage.

EQUIPMENT

Officers must be familiar with all items of equipment, the way they operate and their limitations. Every Officer should be competent to check and maintain equipment in the field.

USING THE MANUAL

This manual is designed to be used in conjunction with a proper vehicle extraction course, and should not be used in isolation. It is written for Officers who have previous first aid knowledge with a minimum Level Two - Workplace First Aid course.

ADDITIONAL COPIES OF THIS MANUAL

This manual is freely downloadable as a 4.9 mg PDF file from the Emergency Technologies website at www.emergencytechnologies.com.au/vet.htm.

It is best printed in colour.

There is no limit to the number of copies a person and organisation can make, nor to the distribution of the PDF file. The copyright does prohibit photocopies of the manual being made. This is to ensure only high quality copies are available.



**FIELD APPLICATION
OF THE
VEHICLE EXTRACTION
TECHNIQUES**

INTRODUCTION

The following manual provides the recommended guidelines for a range of vehicle extraction techniques to meet varying situations. Before extracting the patient, Officers should undertake the following steps of when appropriate.

APPLICATION

1. **Officers** undertake 5-10 m outer circle check, followed by 2-5 m inner circle check.¹⁻²
2. **Officers** establish scene staging areas including:
 - **Ambulance Equipment Staging Area** - placed in the direction the patient is to be extracted, and positioned on the outer edge of the 2-5 m inner circle.²
 - **Rescue Tool Staging Area** - placed in the opposite direction the patient is to be extracted, and positioned on the outer edge of the 2-5 m inner circle.²
 - **Fire Protection Staging Area** - placed towards front of vehicle, but away from and not interfering with the rescue tool staging area, and positioned on the outer edge of the 5-10 m outer circle.²
 - **Rubbish Dump Area** - placed in isolation to the above areas, and positioned on the outer edge of the 5-10 m outer circle.²

3. **Officers** make an opening to gain access to the patient.

Rescue Officers stabilise the vehicle, disconnect batteries, neutralise other hazards, and begin to undertake only the necessary vehicle cuts to allow for accessing and removal of the patient.¹⁻² Vehicle cutting must be considered as part of patient care in regards to the Golden Hour.³⁻⁶ It should not be stopped unless it directly affects the patient care. Cutting to allow for accessing and the removal of the patient should be done simultaneously with the assessment and treatment of the patient to reduce scene times.⁵⁻⁶ Unnecessary cuts which increase scene times and delay transport of the patient to definitive care, must be avoided as they have the potential to directly affect patient care by reducing survival of the patient.³⁻⁶

5. **Medical Officer** undertakes a full assessment of the patient before extraction of the patient (unless rapid extraction is required for the actual time critical patient). This includes:
 - Check safety, scene, and situation.
 - A **Second Officer** brings the head into neutral in-line position (unless contra-indicated) and performs manual in-line stabilisation.

- Perform Basic Care:
 - i. **Rest**,
 - ii **Reassure**
 - iii. **Oxygen**
 - iv. **Position**
 - v. **Pulse Oximeter**
 - v. **ECG Monitor**

- Perform A Vital Signs Survey:
 - i. **Conscious Status Assessment (GSC - Eye, Verbal, Motor)**
 - ii. **Perfusion Status Assessment (Pulse, Blood Pressure, Skin)**
 - iii. **Respiratory Status Assessment (Rate, Effort, Sounds, Speech)**

- Perform A Secondary Survey:
 - i. Motor/Sensory x 4
 - ii. Head
 - iii. Spine
 - iv. Chest
 - v. Abdomen
 - vi. Pelvis
 - vii. Legs
 - viii. Arms

- Check AMPLE:
 - i. **Allergies**
 - ii **Medications**
 - iii. **Past medical history**
 - iv. **Last oral intake**
 - v. **Events leading up to injury**

- Apply:
 - i. Cervical Collar
 - ii. IV Access
 - iii. Pain Relief
 - iv. Splints to stabilise fractures
 - v Cervical Extraction Device (if indicated)
 - vi. Long Spine Board (using procedures provided in this manual)
 - vii. Immobilise patient for transport⁹

Note: Vehicle cutting to allow for accessing and the removal of the patient is part of the overall patient care and should be done simultaneously with the assessment and treatment of the patient. Medical Officers should not stop vehicle cutting unless it directly affects patient care, as unnecessary halting of cutting will increase on scene times and affect the golden hour concept. Unnecessary cuts which increase scene times and delay transport of the patient to definitive care must be avoided, as they have the potential to directly affect patient care by reducing survival of the patient.³⁻⁶

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VEHICLE EXTRACTION TECHNIQUES

VEHICLE EXTRACTION

INTRODUCTION

The introduction of the Cervical Extrication Device (**CED**) and the Long Spine Board (**LSB**) in prehospital spinal care allows vast improvements into the standard of spinal care, and greatly eases patient removal from motor vehicles.

Following extensive field trialing, the use of a curved LSB was shown to provide significant advantages over flat LSB designs currently available. The shape of the curved LSB allows it to slide easily into bucket seats, and when sliding the patient out of the vehicle, and patients tend to better stay on the curved LSB due to the side support. Much greater care and skill was shown to be required when using the flat LSB. It was also shown that the thinner the LSB, the easier it was to use, with the best being only a few mm's thick.

Extraction of the patient onto a LSB was in many cases found to also be eased if a patient was placed into a jacket style CED. Not only will the CED provide extremely effective cervical and partial thoracic / lumbar spine immobilisation, it will also ease the extraction by "placing handles on the patient". If the patient does not meet the definition of an 'Actual Time Critical' patient; **OR** the patient is trapped & is classed as Actual Time Critical, but the CED will not delay on-scene time, then a CED should be applied when indicated.

PRINCIPLES OF EXTRACTION

In determining the method of patient removal (extraction) from a vehicle, the two basic principles should be applied:¹⁻²

1. MAINTAIN SPINAL ALIGNMENT

- to minimise spinal cord injury and paralysis

2 MINIMAL BODY TWISTING

- to reduce further injuries and reduce fracture movement & pain

By adopting these two principles, all Officers at the scene of an accident (RESCUE, FIRE and AMBULANCE Officers) are able to rapidly establish the method and direction of patient removal. This reduces confusion between organisations at scene of how the patient is to be extracted, allowing organisations to quickly determine set-up areas, and assists Rescue Officers making rapid decisions relating to vehicle stabilisation & correct cutting techniques to be implemented, ultimately reducing scene times. This reduced scene and transport time of the patient to definitive care directly improves patient care by increasing potential survival of the patient.³⁻⁶

SCENE SETUP

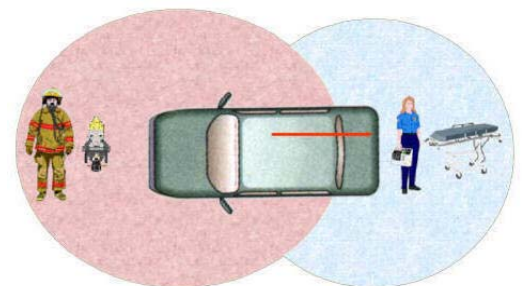
Overcrowding and poor placement of equipment at the scene of an accident by Rescue and Ambulance Officers (causing scene cluttering & trip hazards requiring multiple movements of equipment) can result in delays in the extraction to the detriment of the patient.³⁻⁶ By following the basic principles below, these problems can be reduced by limiting crossover work areas, as well as making a safer and more efficient working environment.

Basic principles of equipment placement is to position Ambulance equipment and Officers in the direction the patient will be extracted, whilst placing the rescue equipment staging area at the 180 degree opposite position on the scene circle.

Some basic examples include:

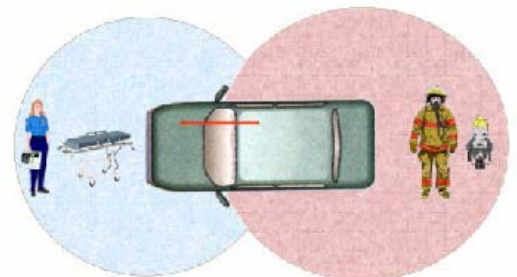
Rear Extraction

- Ambulance equipment & Officers set-up are placed at the rear of the vehicle.
- Rescue staging area & Officers are placed at the front of the vehicle.



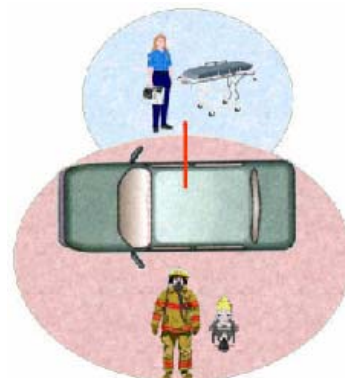
Front Extraction

- Ambulance equipment & Officers set-up are placed at the front of the vehicle.
- Rescue staging area & Officers are placed at the rear of the vehicle.



Side Extraction

- Ambulance equipment & Officers set-up are placed at the side of the vehicle the patient will be extracted from.
- Rescue staging area & Officers are placed on the opposite side of the vehicle.



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Am J Emerg Med 1995;13:133—5.
Does out-of hospital EMS time affect trauma survival?

REAR WINDOW EXTRACTION FRONT SEAT

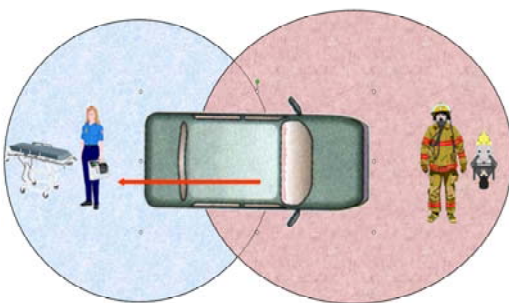
The following technique has been found, through extensive trials, to be the preferred method for patient extraction when the patient is found sitting normally in the front seat of a vehicle. The advantages of this method are spinal alignment (to protect the spinal cord) is maintained, and body twisting (which can further aggravate fractures and other injuries) is minimised as compared to other techniques available.

Training Requirements:

6 x Staff
1 x Patient
1 x Cervical Collar
1 x Cervical Extrication Device (CED)
1 x Long Spine Board (LSB)
1 x Rope
2 x Blanket
1 x Stretcher
Vehicle Cutting Equipment

Scene Setup

With the patient in this scenario being extracted out through the rear window, the following general principles should be applied whenever practical:



- Ambulance equipment staging area should be setup at the rear of the vehicle on the 5 m outer circle.
- Rescue equipment staging area should be setup at the front of the vehicle on the 5 m outer circle.
- Fire protection with a live hose is again placed on the 5 m outer circle, but at 45° to the front of the vehicle so as not to interfere with the Rescue staging area.

REAR WINDOW EXTRACTION - FRONT SEAT

**Step 1**

Perform Manual In-Line Stabilisation of the patient's head and apply a Cervical Collar.

**Step 2**

Apply a CED if the patient is not time-critical, or the patient is time critical but the application of the CED will not delay the extraction. The CED will immobilise the cervical spine, as well as provide handles to ease the lifting and sliding of the patient.¹⁻⁷

If the patient is time critical and the CED will delay extraction, consider application of the CED as a lifting device (application of the chest and groin straps only) which takes less than 2 minutes to apply, if the benefit of preventing gross twisting of the spine, and the prevention of back injury to the Officers undertaking the extraction is justified.

If a CED is not applied, manual in-line stabilisation needs to be maintained until the patient is properly immobilised onto a LSB.¹⁻⁹

Tie the patient's legs together as outward rotation of the legs will cause pelvic girdle movement and therefore movement of the spinal column.

Step 3a

Removal of the lower section of the steering wheel is an option that will create additional space for the removal of the driver, and prevents the common problem of feet getting caught during the extraction.

REAR WINDOW EXTRACTION - FRONT SEAT

**Step 3b**

To allow for the removal of a patient through a rear window, an opening needs to be made. Generally removal of, or the faster process of breaking the rear window will be adequate.

**Step 3c**

If the rear window removal provides insufficient space for the patient to be extracted through, spreading of the back window with the hydraulic spreaders, ram or high-lift jack will crush the rear seat down and push the roof up, making significant space for patient removal.

**Step 3d**

Alternatively a forward roof flap will provide additional space when access to the patient from the sides is limited.

Rear roof flaps should be avoided as they will block the exit for the patient.

The current practice of door removal, will in many cases, not provide any assistance in the extraction of the patient unless the legs are trapped, but will simply increase scene time and should be avoided if there is no clear benefit.¹⁰⁻¹¹

**Step 3e**

If the patients legs are trapped under the dash, additional cutting including the door removal and a dash roll may be necessary to free the patient.

REAR WINDOW EXTRACTION - FRONT SEAT

**Step 3f**

If the seat back will not rotate downward, cutting the seat's back support will allow the seat back to lay fully down

**Step 4**

Place a blanket over the window edge and boot to allow the LSB to easily slide in and out of the vehicle. Failure to do this may result in severe LSB vibration during extraction.

Place the LSB on top of the blanket in readiness for insertion behind the patient once the patient's seat is rotated back.

The option of pre-strapping the LSB with each strap attached at one end will speed up and ease securing patient to the LSB once the patient has been extracted.

**Step 5**

Place a rope through the back upper handle of the CED. This will be used to pull the patient up the LSB.

**Step 6**

Keep the patient sitting upright and lay the seat back fully. Do not allow the patient to rotate downward with the seat as the seat winding downward will cause jerking to the patient.

Slide the LSB into the seat.

REAR WINDOW EXTRACTION - FRONT SEAT

**Step 7**

Slide the patient up the LSB in slow 30 cm movements using the rope, as well as Officers on each side of the patient to assist the slide, and to ensure the pelvis and legs stay aligned with the patient's torso.

**Step 8**

Slide the patient up the LSB until the patient's shoulders are level with shoulder markings on the LSB.

**Step 9**

Raise the foot of the LSB to a horizontal position and slide the LSB out of the vehicle until it is sitting in a stable position on the boot of the vehicle.

**Step 10**

Now immobilise the patient to the LSB.⁹

If a CED has been applied correctly, it is considered that further head immobilisation will generally not be necessary as the CED is currently considered to have splinted the cervical spine adequately.¹⁻⁷ However body immobilisation for protection of the thoracic and lumbar spinal cord will still be necessary.⁹

REAR WINDOW EXTRACTION - FRONT SEAT**Step 11**

The patient can now be safely carried away from the vehicle to the Ambulance stretcher.

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Impact of on-site care, prehospital time, and level of in hospital care on survival in severely injured patients.

REAR SIDE WINDOW EXTRACTION

FRONT SEAT

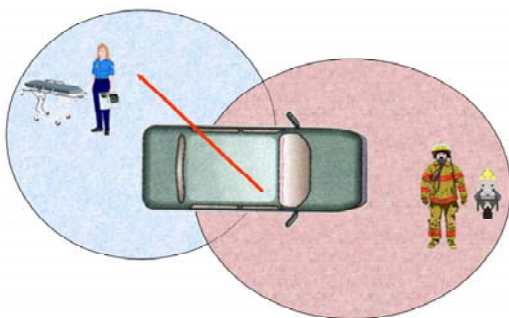
The following technique offers an alternative extraction method when the patient is found sitting normally in the front seat of a vehicle, but cannot be extracted out the rear window of a vehicle.

Training Requirements:

6 x Staff
1 x Patient
1 x Cervical Collar
1 x Cervical Extrication Device (CED)
1 x Long Spine Board (LSB)
1 x Rope
2 x Blankets
1 x Stretcher
Vehicle Cutting Equipment

Scene Setup

With the patient in this scenario being extracted out a rear side window the following general principles should be applied whenever practical:



- Ambulance equipment staging area should be setup at the rear of the vehicle on the 5 m outer circle.
- Rescue equipment staging area should be setup at the front of the vehicle on the 5 m outer circle.
- Fire protection with a live hose is again placed on the 5 m outer circle, but at 45° to the front of the vehicle so as not to interfere with the Rescue staging area.

REAR SIDE WINDOW EXTRACTION - FRONT SEAT

**Step 1**

Perform Manual In-Line Stabilisation of the patient's head and apply a Cervical Collar.

**Step 2**

Apply a CED if the patient is not time critical, or the patient is time critical but the application of the CED will not delay the extraction. The CED will immobilise the cervical spine, as well as provide handles to ease the lifting and sliding of the patient.¹⁻⁷

If the patient is time critical and the CED will delay extraction, consider application of the CED as a lifting device (application of the chest and groin straps only) which takes less than 2 minutes to apply, if the benefit of preventing gross twisting of the spine, and the prevention of back injury to the Officers undertaking the extraction is justified.

If a CED is not applied, manual in-line stabilisation needs to be maintained until the patient is properly immobilised onto a LSB.¹⁻⁹

Tie the patient's legs together as outward rotation of the legs will cause pelvic girdle movement and therefore movement of the spinal column.

**Step 3**

Place a rope through the back upper handle of the CED, which will be used to pull patient up the LSB.

REAR SIDE WINDOW EXTRACTION - FRONT SEAT

**Step 4a**

Removal of the lower section of the steering wheel is an option that will create additional space for the removal of the driver, and prevents the common problem of the feet getting caught during the extraction.

**Step 4b**

To allow for the removal of a patient through a rear side window, some additional space often needs to be made. Generally removal of the back 1/4 window will be required.

**Step 5**

Keep the patient sitting upright and rotate the back of the drivers seat fully down.

The front passenger seat should be slid forward and then the back of the seat rotated forward as much as possible to create additional space for LSB insertion.

REAR SIDE WINDOW EXTRACTION - FRONT SEAT

**Step 6**

Place a blanket over the rear passenger side window ledge to allow the LSB to easily slide in and out of the vehicle. Failure to do this may result in severe LSB vibration during extraction of the patient. Place the LSB on top of the blanket and slide the LSB through the closed door and into the seat.

The option of pre-strapping the LSB with each strap attached at one end will speed up and ease securing the patient to LSB once the patient has been extracted.

**Step 7**

Begin the slide out of the vehicle by positioning Officers at:

Officer 1 on the outside of the vehicle - drivers side, assists in the rotation of the patient's pelvis & legs during the extraction.

Officer 2 from behind supports the patient's head in the initial movement, and also assists in the rotation of the patient during the extraction.

Officer 3 from inside the vehicle passenger side assists in the rotation of the patient during the extraction.

Officers 4, 5 & 6 are positioned on the outside of the vehicle in the direction the patient will be extracted and will assist in the sliding of the patient out of the vehicle.

**Step 8**

Rotate the patient onto their side and onto the LSB.

It is essential the patient's pelvis and legs be rotated sideways as well during the side roll to prevent lateral bending of the spinal column.

REAR SIDE WINDOW EXTRACTION - FRONT SEAT

**Step 9**

Slowly slide the patient up the LSB in 30 cm movements using the rope to assist. Officers should be placed on either side of the patient if possible to assist the slide, and to ensure the patient's pelvis and legs stay aligned with their torso.

**Step 10**

Slide the patient up the LSB until the patient's shoulders are level with shoulder marking on the LSB.

**Step 11**

Raise the foot end of the LSB and slide the LSB out of the vehicle until it is sitting in a stable horizontal position on the window ledge of the vehicle.

REAR SIDE WINDOW EXTRACTION - FRONT SEAT

**Step 12**

Now immobilise the patient to the LSB.⁹

If a CED has been applied correctly, it is considered that further head immobilisation will generally not be necessary as the CED is currently considered to have splinted the cervical spine adequately¹⁻⁷. However body immobilisation for protection of the thoracic and lumbar spinal cord will still be necessary.

The patient can now be safely carried away from the vehicle to the Ambulance stretcher.

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8. Chandler
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9. Victorian Ministerial Task Force on Trauma
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REAR WINDOW EXTRACTION

BACK SEAT

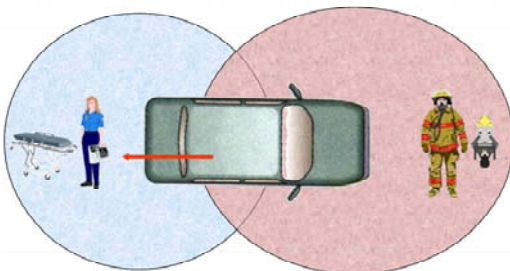
The following technique has been found through extensive trials, to be the best method for patient extraction when the patient is found sitting normally in the back seat of a vehicle. The advantages of this method are spinal alignment (to protect the spinal cord) is maintained, and body twisting (which can further aggravate fractures and other injuries) is minimised as compared to extraction through a side near door.

Training Requirements:

5 x Staff
1 x Patient
1 x Cervical Collar
2 x Triangular Bandages
1 x Long Spine Board (LSB)
1 x Rope
1 x Blanket
1 x Stretchers
Vehicle Rescue Equipment

Scene Setup

With the patient in this scenario being extracted out through the rear window the following general principles should be applied whenever practical:



- Ambulance equipment staging area should be setup at the rear of the vehicle on the 5 m outer circle.
- Rescue equipment staging area should be setup at the front of the vehicle on the 5 m outer circle.
- Fire protection with a live hose is again placed on the 5 m outer circle, but at 45° to the front of the vehicle so as not to interfere with the Rescue staging area.



REAR WINDOW EXTRACTION - BACK SEAT

**Step 1**

Perform Manual In-Line Stabilisation of the patient's head and apply a Cervical Collar.

**Step 2**

Apply groin straps on each leg of the patient using triangular bandages.

The groin straps must be placed in the gluteal fold to obtain proper stability for the extraction.

**Step 3a**

To allow for the removal of a patient through a rear window, an opening needs to be made. Generally removal of, or the faster process of breaking the rear window will be adequate.

**Step 3b**

Alternatively a forward roof flap will provide additional space when access to the patient from the sides is limited. A clear benefit needs to be demonstrated for time required to perform this manoeuvre.²⁻³

Rear roof flaps should be avoided as they will block the exit for the patient.

REAR WINDOW EXTRACTION - BACK SEAT

**Step 4**

Place a blanket over the window edge and boot to allow the LSB to easily slide in and out of the vehicle. Failure to do this may result in severe LSB vibration during extraction.

Lean the patient forward and insert the LSB behind the patients back.



The option of pre-strapping the LSB with each strap attached at one end only will speed up and ease securing the patient to LSB once they have been extracted.

**Step 5**

Officers should be positioned in the following way:

Officer 1 stands at the back of the vehicle, places one foot on the boot of the vehicle and the other foot on the bumper of the vehicle. Officer 1 hands should hold the top handles of the LSB.

Officers 2 & 3 are positioned either side of the patient, kneeling on the boot of the vehicle, and with the arms closest to the LSB holding the groin straps. Officers 2 & 3's outer arms cross over and hold the LSB, locking their inner arm to the LSB so that during the extraction, the patient's position is maintained on the LSB.



Officers 4 & 5 are positioned inside the vehicle on either side of the patient. Officers 4 & 5 place one hand under the patient's knees to control the knees during the LSBs backward rotation to ensure the patients knees remain in the bent position. Officers 4 & 5 each place their other hand on the patient's ankles to prevent the patient's feet getting caught under the front seats.

REAR WINDOW EXTRACTION - BACK SEAT

**Step 6**

Begin the slide out of the vehicle by:

Officer 1 pushes himself off the vehicle's boot and whilst doing this, lifts the LSB 30 cm upwards (to allow the patient's feet to clear the front seat) and then pivots the head of the LSB down until the LSB is horizontal and resting on the boot of the vehicle.



Officers 2 & 3 ensure they continue locking their arms to the LSB during the LSB's movement so the patient does not slip down the LSB.

Officers 4 & 5 ensure the patient's knees remain in the bent position during the manoeuvre so as no pressure is placed on the spine. Once the LSB is in the horizontal position, the patient's knees should almost be touching the roof.

**Step 7**

Slowly slide the patient up the LSB in 30 cm movements with Officers on each side of the patient to assist the slide, and to ensure the pelvis and legs stay aligned with the torso. Officers 4 & 5 slowly straighten the legs as the patient is slid up the LSB.

REAR WINDOW EXTRACTION - BACK SEAT

**Step 8**

Now immobilise the patient to the LSB for transport.¹

**Step 9**

The patient can now be safely carried away from the vehicle to the Ambulance stretcher.

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3. Sampalis JS,
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Impact of on-site care, prehospital time, and level of in hospital care on survival in severely injured patients.

VERTICAL LIFT FROM A SEAT

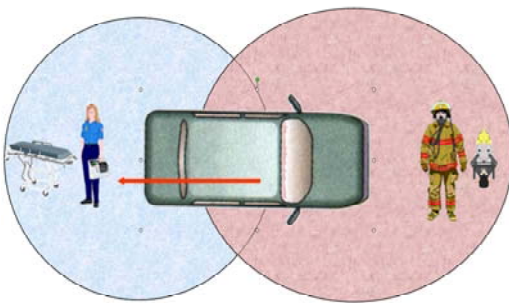
The following technique is an option when the doors are jammed and will be difficult to open, the seat won't recline backwards (such as in a utility vehicle), and roof removal provides the easiest egress for the patient. It is adaptable to both front and rear seat patients. This technique is however the most difficult of all the extraction techniques taught in this manual, and is easier to achieve if the patient is placed in a jacket-style Cervical Extrication Device (CED) with handles. The advantages of this method are spinal alignment (to protect the spinal cord) is maintained, and body twisting (which can further aggravate fractures and other injuries) is minimised as compared to a side door extraction.

Training Requirements:

4 x Staff
1 x Patient
1 x Cervical Collar
1 x Cervical Extrication Device (CED)
1 x Long Spine Board (LSB)
1 x Blanket
1 x Stretcher
Vehicle Cutting Equipment

Scene Setup

With the patient in this scenario being extracted out the rear of the vehicle, the following general principles should be applied whenever practical:



- Ambulance equipment staging area should be setup at the rear of the vehicle on the 5 m outer circle.
- Rescue equipment staging area should be setup at the front of the vehicle on the 5 m outer circle.
- Fire protection with a live hose is again placed on the 5 m outer circle, but at 45° to the front of the vehicle so as not to interfere with the Rescue staging area.



VERTICAL LIFT FROM A SEAT

**Step 1**

Perform Manual In-Line Stabilisation of the patient's head and apply a Cervical Collar.

**Step 2**

Apply a CED if the patient is not time-critical, or the patient is time critical but the application of the CED will not delay the extraction. The CED will immobilise the cervical spine, as well as provide handles to ease the lifting and sliding of the patient.¹⁻⁷

If the patient is time critical and the CED will delay extraction, consider application of the CED as a lifting device (application of the chest and groin straps only) which takes less than 2 minutes to apply, if the benefit of preventing gross twisting of the spine, and the prevention of back injury to the Officers undertaking the extraction is justified.

If a CED is not applied, Manual In-Line Stabilisation of the patient's head needs to be maintained until the patient is properly immobilised onto a LSB.¹⁻⁹

**Step 3a**

Removal of the lower section of the steering wheel is an option that will create additional space for the removal of the driver and prevents the common problem of their feet getting caught during the vertical lift.

VERTICAL LIFT FROM A SEAT

**Step 3b**

If access to the patient's lower legs is difficult, side door removal can be undertaken.

Door removal however is not essential for the manoeuvre to be successful. Therefore Officers must consider time vs. benefit.¹⁰⁻¹¹

**Step 3c**

Folding the roof forward, or the less preferred option of complete roof removal will be required for the extraction of the patient from the vehicle.

Cutting of the front window for complete roof removal (required in new vehicles) creates significant amounts of glass dust and sharp hazards to the patient and Officers.

**Step 4**

Officers lean the patient slightly forward and slide the LSB into the seat from behind.

**Step 5**

Once the LSB is inserted, lean the patient back onto the LSB.

VERTICAL LIFT FROM A SEAT

**Step 6**

Begin the slide out of the vehicle on a LSB by positioning Officers at:

Officers 1 & 2 at the patient's head end hold the top half of the LSB with one hand, and hold the side handles of the CED with their other hand.

Officer 3 & 4 at the patient's pelvic end grab the bottom edge of the CED with one hand, and support under the patient's knees with their other hand.

**Step 7**

The patient is slid up the LSB in one quick action.

When the patient is 3/4 of the way up the LSB, the LSB is rotated backwards to a horizontal position.



Continue sliding the patient up the LSB 30 cm movements until the patient's shoulders are level with shoulder markings on the LSB.

**Step 8**

Now immobilise the patient to the LSB.⁹ If a CED has been applied correctly, it is considered that further head immobilisation will generally not be necessary as the CED is currently considered to have splinted the cervical spine adequately.¹⁻⁷ However body immobilisation for protection of the thoracic and lumbar spinal cord will still be necessary.



VERTICAL LIFT FROM A SEAT

**Step 9**

The patient can now be safely carried away from the vehicle to the Ambulance stretcher.

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Impact of on-site care, prehospital time, and level of in hospital care on survival in severely injured patients.

OPPOSITE WINDOW EXTRACTION FROM A SEAT

The following technique offers an alternative for when the patient is found sitting normally in the front or back seat of a vehicle, but the patient cannot be extracted out the rear window.

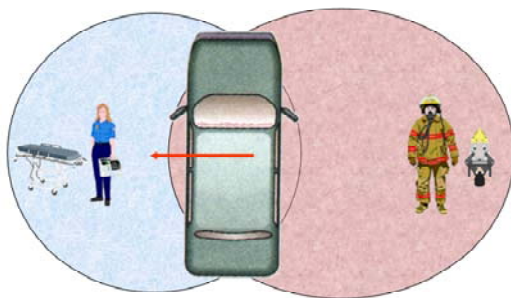
The procedure is also excellent as a rapid extraction technique when no cutting tools are available, and a rear window extraction is not an option (such as in a utility vehicle).

Training Requirements:

6 x Staff
1 x Patient
1 x Cervical Collar
1 x Cervical Extrication Device (CED)
1 x Long Spine Board (LSB)
1 x Rope
2 x Blankets
1 x Stretcher
Vehicle Cutting Equipment

Scene Setup

With the patient in this scenario being extracted out the side window, the following general principles should be applied whenever practical:



- Ambulance equipment staging area should be setup at the extraction side of the vehicle on the 5 m outer circle.
- Rescue equipment staging area should be setup at the side opposite to the extraction of the vehicle on the 5 m outer circle..
- Fire protection with a live hose is again placed on the 5 m outer circle, but at the front of the vehicle so as not to interfere with the Ambulance or Rescue staging area.

OPPOSITE WINDOW EXTRACTION FROM A SEAT**Step 1**

Perform Manual In-Line Stabilisation of the patient's head and apply a Cervical Collar.

**Step 2**

Apply a CED if the patient is not time-critical, or the patient is time critical but the application of the CED will not delay the extraction. The CED will immobilise the cervical spine, as well as provide handles to ease the lifting and sliding of the patient.¹⁻⁷

If the patient is time critical and the CED will delay extraction, consider application of the CED as a lifting device (application of the chest and groin straps only) which takes less than 2 minutes to apply, if the benefit of preventing gross twisting of the spine, and the prevention of back injury to the Officers undertaking the extraction is justified.

If a CED is not applied, manual in-line stabilisation of the patient's head needs to be maintained until the patient is properly immobilised onto a LSB.¹⁻⁹ Tie the patient's legs together as outward rotation of the legs will cause pelvic girdle movement and therefore movement of the spinal column.

**Step 3a**

If Rescue is available, removal of the steering wheel will create additional space for the extraction of the driver, and prevents the patient's legs & feet getting caught during the roll out.

OPPOSITE WINDOW EXTRACTION FROM A SEAT

**Step 3b**

To allow for the removal of a patient through a side window, additional space can be made by performing a vertical spread in the window, although this is often not required.

Opening the door, whilst creating additional space, will however cause the angle of the LSB to be lowered and increase lateral bending of the spine.

**Step 3c**

A forward roof flap or full roof removal will also provide additional head space, when access to the patient from the sides is limited, or the dash has been crushed in on the patient.

Again if there is no clear benefit, a forward roof flap or full roof removal should be avoided due to added scene time.¹⁰⁻¹¹

**Step 4**

Place a blanket over the side window ledge to allow the LSB to easily slide in and out of the vehicle. Failure to do this may result in severe LSB vibration during extraction of the patient.

Place the LSB on top of the blanket and slide the LSB through the window opening and onto the seat the patient is sitting on.



The option of pre-strapping the LSB with each strap attached at one end only will speed up and ease securing the patient to LSB once the patient has been extracted.

OPPOSITE WINDOW EXTRACTION FROM A SEAT

**Step 5**

Place a rope through the back upper handle of the CED, which will be used to pull patient up the LSB.

**Step 6**

Begin the slide out of the vehicle on the LSB by positioning Officers at:

Officer 1 on the outside of the vehicle - drivers side, assists in the rotation of the patient's pelvis & legs during the extraction.

Officer 2 from behind supports the patient's head in the initial movement, and also assists in the rotation of the patient during the extraction.

Officers 3, 4 & 5 are positioned on the outside of the vehicle in the direction the patient will be extracted and will assist in sliding the patient out of the vehicle.

**Step 7**

Rotate the patient onto their side onto the LSB.

It is essential the patient's pelvis and legs be rotated sideways as well during the side roll to prevent lateral bending of the patient's spinal column.

**Step 8**

Slide the patient up the LSB in 30 cm movements using the rope. Officer 1 should remain at the patient's feet if possible to assist the slide, and to ensure the patient's pelvis and legs stay aligned with the torso.

OPPOSITE WINDOW EXTRACTION FROM A SEAT

**Step 9**

As the patient is being slid up the LSB, slowly rotate the patient onto their back.

**Step 10**

The patient is slid up the LSB until the patient's shoulders are level with the shoulder markings on LSB in preparation for immobilisation.

Raise the foot end of the LSB until the LSB is horizontal.

**Step 11**

Now immobilise the patient to the LSB.⁹

If a CED has been applied correctly, it is considered that further head immobilisation will generally not be necessary as the CED is currently considered to have splinted the cervical spine adequately.¹⁻⁷ However body immobilisation for protection of the thoracic and lumbar spinal cord will still be necessary.

**Step 12**

The patient can now be safely carried away from the vehicle to the Ambulance stretcher.

OPPOSITE WINDOW EXTRACTION FROM A SEAT**Bibliography**

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Impact of on-site care, prehospital time, and level of in hospital care on survival in severely injured patients.

SIDE EXTRACTION **LEANING ON A DOOR**

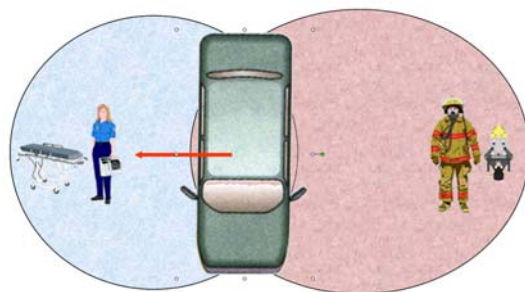
The following technique offers an option when the patient is sitting with their back leaning against a door. The advantages of this method are spinal alignment (to protect the spinal cord) is maintained, and body twisting (which can further aggravate fractures and other injuries) is minimised.

Training Requirements:

4 x Staff
1 x Patient
1 x Cervical Collar
1 x Long Spine Board (LSB)
1 x Stretcher
Vehicle Cutting Equipment

Scene Setup

With the patient in this scenario being extracted out a side door, the following general principles should be applied whenever practical:



- Ambulance equipment staging area should be setup at the extraction side of the vehicle on the 5 m outer circle.
- Rescue equipment staging area should be setup at the side opposite to the extraction of the vehicle on the 5 m outer circle.
- Fire protection with a live hose is again placed on the 5 m outer circle at the front of the vehicle so as not to interfere with the Ambulance or Rescue staging area.

SIDE EXTRACTION - LEANING ON A DOOR

**Step 1**

Perform Manual In-Line Stabilisation of the patient's head and apply a Cervical Collar.

**Step 2a**

Lean patient forward off the door and fully open beyond the normal hinge position if possible. Place the LSB in behind the patient and rest the LSB on the seat. Lean the patient back onto the LSB.

Push the door forward out of the way for improved access for the extraction.

**Step 2b**

If the door is jammed closed, lean patient forward off the door, cut the doors window frame, slide the LSB through the open window and rest the LSB on the seat.

Lean the patient back onto LSB, but ensure the LSB is not resting on the door.

Forcefully open the door.

Consider undertaking full door removal only if there is a time vs benefit of the additional space for the extraction of the patient.²⁻³



SIDE EXTRACTION - LEANING ON A DOOR

**Step 3**

Begin the slide out of the vehicle by positioning Officers by:

Officer 1 remains on the inside of the vehicle and will assist in the movement of the patient's legs during the extraction.

Officer 2 remains on the outside of the vehicle and will insert the LSB, and will assist Officers 3 & 4 in the extraction of the patient.

Officers 3 & 4 place themselves on the outside of the vehicle, assisting in the slide and extraction of the patient onto the LSB.

**Step 4**

Rotate the LSB downwards into a horizontal position.

Once the LSB is in the horizontal position, slide the patient along the LSB in 30 cm movements until the patient's shoulders are level with shoulder markings on the LSB.

**Step 5**

Now immobilise the patient to the LSB.¹

The patient can now be safely carried away from the vehicle to the Ambulance stretcher.

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1. Victorian Ministerial Task Force on Trauma
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2. Trunkey
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J Trauma 1993;34:252—61.
Impact of on-site care, prehospital time, and level of in hospital care on survival in severely injured patients.

SIDE DOOR EXTRACTION FROM A SEAT

The following technique should be used as a last resort for when the patient is found sitting normally in the front or back seats of a vehicle, but the patient cannot be extracted out the rear window.

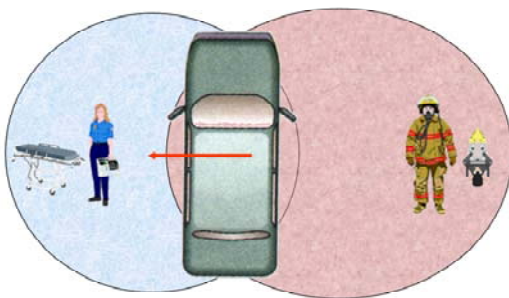
This method causes significant spinal and body twisting (which can further aggravate spinal cord function, fractures and other injuries), and is an increased OH&S risk to Officers undertaking the extraction as compared to other techniques offered.

Training Requirements:

6 x Staff
1 x Patient
1 x Cervical Collar
1 x Cervical Extrication Device (CED)
1 x Long Spine Board (LSB)
1 x Stretcher
Vehicle Cutting Equipment

Scene Setup

With the patient in this scenario being extracted out the side door, the following general principles should be applied whenever feasible:



- Ambulance equipment staging area should be setup at the extraction side of the vehicle on the 5 m outer circle.
- Rescue equipment staging area should be setup at the side opposite to the extraction of the vehicle on the 5 m outer circle.
- Fire protection with a live hose is again placed on the 5 m outer circle, but at the front of the vehicle so as not to interfere with the Ambulance or Rescue staging area.

SIDE DOOR EXTRACTION FROM A SEAT

**Step 1**

Perform Manual In-Line Stabilisation of the patient's head and apply a Cervical Collar.

**Step 2**

Apply a CED if the patient is not time critical, or the patient is time critical but the application of the CED will not delay the extraction. The CED will immobilise the cervical spine, as well as provide handles to ease the lifting and sliding of the patient.¹⁻⁷

If the patient is time critical and the CED will delay extraction, consider application of the CED as a lifting device (application of the chest and groin straps only) which takes less than 2 minutes to apply, if the benefit of preventing gross twisting of the spine, and the prevention of back injury to the Officers undertaking the extraction is justified.

If a CED is not applied, manual in-line stabilisation of the patient's head needs to be maintained until the patient is properly immobilised onto a LSB.¹⁻⁹

Tie the patient's legs together as outward rotation of the legs will cause pelvic girdle movement and therefore movement of the spinal column.

**Step 3a**

If Rescue is available, removal of the steering wheel will create additional space for the extraction of the driver, and prevents legs & feet getting caught during the slide out.

SIDE DOOR EXTRACTION FROM A SEAT

**Step 3b**

To allow for the removal of a patient through a side door, an opening needs to be made.

Push the door open fully to provide an adequate opening.

**Step 3c**

An alternative to the above is full door removal, but as this takes additional time, a clear benefit is needed to justify this added scene time (such as the requirement for a dash roll due to the legs being trapped under the dashboard).¹⁰⁻¹¹

**Step 3d**

The height of a patient sitting in a seat, is often higher than the roof line of the door. This requires the patient to be quashed down or tilted sideways to get out of the vehicle for this procedure. If the seat cannot be lowered adequately to clear the patients head, consider flapping the side of the roof.

**Step 3e**

A forward roof flap or full roof removal will also provide additional head space, when access to the patient from the sides is limited, or the dash has been crushed in on the patient.

Again if there is no clear benefit, a forward roof flap or full roof removal should be avoided due to added scene time.¹⁰⁻¹¹

SIDE DOOR EXTRACTION FROM A SEAT

**Step 4**

Position Officers at:

Officer 1 is placed behind the patient to assist in the rotation of the patient during the extraction.

Officer 2 is placed on the inside of the vehicle and grasps the handle of the CED to lift the patient for LSB insertion under the patient.

Officer 3 is placed on the outside of the vehicle and grasps the handle of the CED to lift the patient for LSB insertion under the patient.

Officer 4 is placed on the outside of the vehicle and inserts the LSB under the patient's bottom when Officers 2 & 3 lift the patient.

**Step 5**

Begin the slide out of the vehicle by keeping the patient in a sitting position and:

Officer 1 from behind supports the patient's head in the initial movement.

Officer 2 inside the vehicle assists in the rotation of the patient's legs the extraction.

Officer 3 grasps the inner side handle of the CED as soon as it can be reached.

Officer 4 holds the outer side handle of the CED at the beginning of the slide and will assist in the rotation & control of the torso of the patient during the extraction.



Officer 5 & 6 support the end of the LSB.

The patient is slid slowly in 30 cm movements along the LSB and slowly rotated ensuring the patient's pelvis and legs are kept in alignment to the torso.



SIDE DOOR EXTRACTION FROM A SEAT

**Step 6**

Once the patient is 1/2 way along the LSB, the patient is laid down onto the LSB.

**Step 7**

The patient is slid up the LSB until the patient's shoulders are level with the shoulder markings on LSB in preparation for immobilisation.

**Step 8**

Now immobilise the patient to the LSB.⁹

If a CED has been applied correctly, it is considered that further head immobilisation will generally not be necessary as the CED is currently considered to have splinted the cervical spine adequately.¹⁻⁷ However body immobilisation for protection of the thoracic and lumbar spinal cord will still be necessary.⁹

The patient can now be safely carried away from the vehicle to the Ambulance stretcher.

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Impact of on-site care, prehospital time, and level of in hospital care on survival in severely injured patients.

VEHICLE ON SIDE EXTRACTION

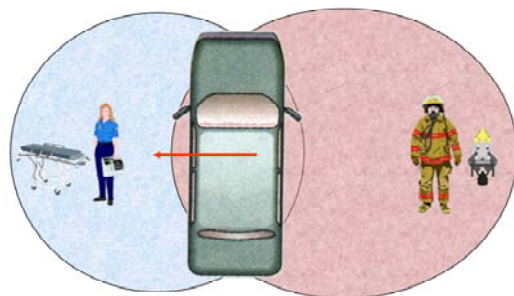
The following technique offers one of numerous options for a vehicle on it's side.

Training Requirements:

5 x Staff
1 x Patient
1 x Cervical Collar
1 x Blanket
1 x Long Spine Board (LSB)
1 x Stretcher
Vehicle Cutting Equipment

Scene Setup

With the patient in this scenario being extracted out the roof, the following general principles should be applied whenever practical:



- Ambulance equipment staging area should be setup at the extraction side of the vehicle on the 5 m outer circle.
- Rescue equipment staging area should be setup at the side opposite to the extraction of the vehicle on the 5 m outer circle..
- Fire protection with a live hose is again placed on the 5 m outer circle, but at the front of the vehicle so as not to interfere with the Ambulance or Rescue staging area.



VEHICLE ON SIDE EXTRACTION



Step 1

Once the vehicle has been stabilised, Officers can enter the vehicle and perform Manual In-Line Stabilisation of the patient's head and apply a Cervical Collar.

The use of a jacket style Cervical Extrication Device (CED) is very limited in these cases unless the patient is found in an upright sitting position.



Step 2

To allow for the removal of a patient, a number of options are available.

Complete roof removal offers the greatest access to the patient and the safest work area for Officers.



Roof removal is undertaken by:

1. Cutting the upper side A, B & C pillars, removing or cutting the windscreen, making two relief cuts in the roof and then folding the roof down.
2. A can opener is then used to remove the roof at the crease, with the remaining sharp edges covered with sharps protection.



This roof removal technique has the advantage of the side of the vehicle in which the patient is lying on (including door and window) remains intact.



VEHICLE ON SIDE EXTRACTION

**Step 3**

Place the LSB on top of the sharps protection. The addition of a blanket over the sharps protection will further allow the LSB to slide easily in and out of the vehicle. Failure to do this may result in severe LSB vibration during extraction.

**Step 4**

The patient will usually be found on their back or side, however LSB insertion is similar in either situation. To insert the LSB under the patient, the patient will need to be lifted using a modified Straddle Lift - Side technique:

Officer 1 places the LSB at the patient's head.

Officer 2 positions at the patient's head and stabilises the patient's head for the LSB's insertion.

Officers 3 & 4 are positioned on either side of the patient at the patient's torso, placing their hands under the patients shoulders and pelvis.

Officer 5 positions at the patients feet and will assist the legs onto the LSB.

When ready, Officers 2, 3 & 4 raise the patient 3-5 cm whilst Officer 1 slides the LSB under the patient.

VEHICLE ON SIDE EXTRACTION

**Step 5**

Officers begin the slide out of the vehicle onto a LSB by:

Officer 1 continues to support the LSB.

Officer 2 continues to stabilise the patient's head during the slide out of the vehicle onto the LSB.



Officer 3 & 4 positioned on the either side of the LSB assist in the sliding of the patient out of the vehicle by grasping the patient's clothes at the shoulders and waist.

Officer 5 positioned at the patients feet assist the patient's legs onto the LSB.



The patient is slid up the LSB in 30 cm movements until the patient's shoulders are level with the shoulder markings on LSB in preparation for immobilisation.

**Step 6**

If the patient was extracted on their back, immobilise the patient to the LSB.¹

However if the patient was extracted on their side (as depicted here), carry the patient to a safe place and log roll the patient onto their back, then immobilise to the LSB.¹

The patient can now be safely carried to the Ambulance stretcher.

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1. Victorian Ministerial Task Force on Trauma
Review Of Trauma And Emergency Services Report 1999

VEHICLE OF ROOF REAR EXTRACTION

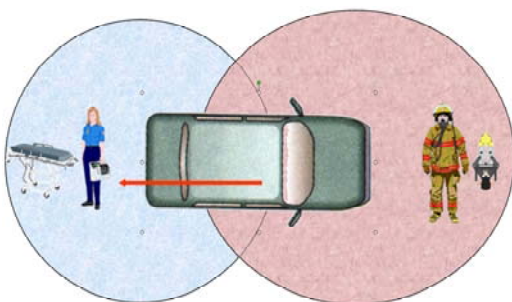
The following technique offers an option for a vehicle on it's roof when the patient has been released from their seatbelt and fallen onto the roof of the vehicle with their head and torso pointing towards the rear of the vehicle. The advantages of this method are spinal alignment (to protect the spinal cord) is maintained, and body twisting (which can further aggravate fractures and other injuries) is minimised as compared to other techniques available.

Training Requirements:

4 x Staff
1 x Patient
1 x Cervical Collar
1 x Blanket
1 x Long Spine Board (LSB)
1 x Stretcher
Vehicle Cutting Equipment

Scene Setup

With the patient in this scenario being extracted out the rear of the vehicle, the following general principles should be applied whenever practical:



- Ambulance equipment staging area should be setup at the rear of the vehicle on the 5 m outer circle.
- Rescue equipment staging area should be setup at the front of the vehicle on the 5 m outer circle.
- Fire protection with a live hose is again placed on the 5 m outer circle, but at a 45° angle to the front of the vehicle so as not to interfere with the Ambulance or Rescue staging area.

VEHICLE ON ROOF - REAR EXTRACTION

**Step 1**

Once the vehicle has been stabilised, Officers can enter the vehicle and perform Manual In-Line Stabilisation of the patient's head.

If the patient is in the prone position (lying on their front) as depicted here, a Cervical Collar cannot be applied.

The use of a jacket style Cervical Extrication Device (CED) is very limited in these cases unless the patient is found in an upright sitting position in the vehicle.

**Step 2a**

To allow for the removal of a patient through a rear window, an opening needs to be made. Generally removal of, or the faster process of breaking the rear window will be adequate.

**Step 2a**

To allow for access to the patient, the doors of the vehicle will need to be opened.

In rare cases full side removal will be required for adequate access to the patient, but a clear benefit is needed to justify the extra time.²⁻³

Please Note: In this scenario, a full side removal has been undertaken to allow improved viewing of the extraction technique.

VEHICLE ON ROOF - REAR EXTRACTION

**Step 3**

Place a blanket over the broken glass to allow the LSB to easily slide in and out of the vehicle. Failure to do this may result in severe LSB vibration during extraction.

The patient will usually be found on their stomach or side, however LSB insertion is similar in either situation. To insert the LSB under the patient, the patient will need to be lifted using a modified Straddle Lift - Side technique:

Officer 1 places the LSB at the patient's head.

Officer 2 positions at the patients head and stabilises the patient's head for the LSB's insertion.

Officers 3 & 4 are positioned on either side of the patient at the patient's torso, each placing one hand under the patient's shoulders and the other hand under the pelvis.

When ready, Officers 2, 3 & 4 raise the patient 3-5 cm whilst Officer 1 slides the LSB under the patient until it stops (usually about the patients waist level).



VEHICLE ON ROOF - REAR EXTRACTION

**Step 4**

Begin the slide out of the vehicle by:

Officer 1 continues to support the LSB.

Officer 2 continues to stabilise the patient's head during the slide out of the vehicle onto the LSB.

Officers 3 & 4 positioned on the either side of the LSB assist in the sliding of the patient onto the LSB by grasping clothes at the shoulders and waist.



The patient is slid up the LSB in 30 cm movements until the patient's shoulders are level with the shoulder markings on LSB in preparation for immobilisation.

Once the patient is correctly positioned on the LSB, slide the LSB out of the vehicle and place it on the ground.

**Step 5**

If the patient was extracted supine (on their back), immobilise the patient to the LSB.¹

However if the patient was extracted on their side or stomach (as depicted here), carry the patient to a safe place and log roll the patient using the log roll 5 person prone 180° technique to get the patient supine, then immobilise.¹

The patient can now be safely carried to the Ambulance stretcher.

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1. Victorian Ministerial Task Force on Trauma Review Of Trauma And Emergency Services Report 1999
2. Trunkey
Sci Am 1983;249:28.
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J Trauma 1993;34:252—61.
Impact of on-site care, prehospital time, and level of in hospital care on survival in severely injured patients.

VEHICLE ON ROOF SIDE EXTRACTION

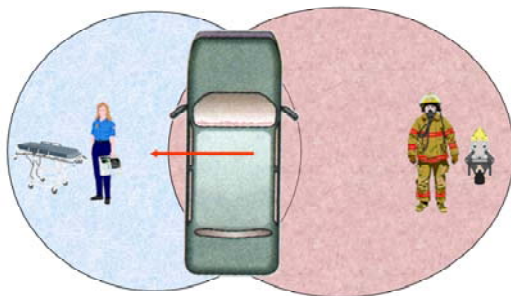
The following technique offers an option for a vehicle on it's roof when the patient has been released from their seatbelt and fallen onto the roof of the vehicle with their head and torso pointing towards the side of the vehicle. The advantages of this method are spinal alignment is maintained, and body twisting (which can further aggravate fractures and other injuries) is minimised as compared to other techniques available.

Training Requirements:

4 x Staff
1 x Patient
1 x Cervical Collar
1 x Blanket
1 x Long Spine Board (LSB)
1 x Stretcher
Vehicle Cutting Equipment

Scene Setup

With the patient in this scenario being extracted out the side of the vehicle, the following general principles should be applied whenever practical:



- Ambulance equipment staging area should be setup at the extraction side of the vehicle on the 5 m outer circle.
- Rescue equipment staging area should be setup at the side opposite to the extraction of the vehicle on the 5 m outer circle..
- Fire protection with a live hose is again placed on the 5 m outer circle, but at the front of the vehicle so as not to interfere with the Ambulance or Rescue staging area.



VEHICLE ON ROOF - SIDE EXTRACTION

**Step 1**

Once the vehicle has been stabilised, Officers can enter the vehicle and perform Manual In-Line Stabilisation of the head.

If the patient is in the prone position (lying on their front) as depicted here, a Cervical Collar cannot be applied.

The use of a jacket style Cervical Extrication Device (CED) is very limited in these cases unless the patient is found in an upright sitting position in the vehicle.

**Step 2a**

To allow for the removal of a patient, the doors of the vehicle will need to be opened.

**Step 2b**

Full side removal will provide excellent access to the patient and ease the extraction.

Please Note: In this scenario, a full side removal has been undertaken to allow improved viewing of the extraction technique.

**Step 2c**

Rotating the seat's back support fully rearwards will also create additional space for the extraction.

VEHICLE ON ROOF - SIDE EXTRACTION

**Step 3**

Place a blanket over the roof ledge to allow the LSB to easily slide in and out of the vehicle. Failure to do this may result in severe LSB vibration during extraction.

The patient will usually be found on their stomach or side, however LSB insertion is similar in either situation. To insert the LSB under the patient, the patient will need to be lifted using a modified Straddle Lift Side technique:

Officers 1 & 2 are positioned on either side of the patient at the patient's torso, each placing one hand under the patient's shoulders and the other hand under the patient's pelvis.

Officer 3 positioned at the patient's head continues stabilising the patient's head for the LSB insertion.

Officer 4 places the LSB at the patient's head.

When ready, Officers 1, 2 & 3 raise the patient 3-5 cm whilst Officer 4 slides the LSB under the patient until it stops (usually about the patients waist level).



VEHICLE ON ROOF - SIDE EXTRACTION

**Step 4**

Officers begin to slide the patient out of the vehicle by:

Officer 4 continues to support the LSB.

Officer 3 continues to stabilise the patient's head during the patient's slide out of the vehicle onto the LSB.



Officers 1 & 2 positioned on the either side of the LSB assist in the sliding of the patient onto the LSB by grasping the patient's clothes at the shoulders and waist.

The patient is slid up the LSB in 30 cm movements until the patients shoulders are level with the shoulder markings on LSB in preparation for immobilisation.

Once the patient is correctly positioned on the LSB, slide the LSB out of the vehicle and place it on the ground.

**Step 5**

If the patient was extracted supine (on their back), immobilise the patient to the LSB.¹

However if the patient was extracted on their side or stomach (as depicted here), carry the patient to a safe place and log roll the patient using the log roll 5 person prone 180° technique to get the patient supine, then immobilise.¹

The patient can now be safely carried to the Ambulance stretcher.

Bibliography

1. Victorian Ministerial Task Force on Trauma Review Of Trauma And Emergency Services Report 1999

VEHICLE OF ROOF EXTRACTION FROM A SEATBELT

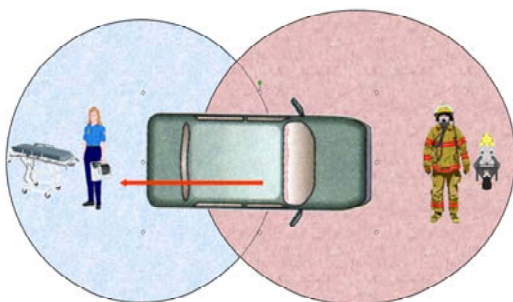
The following technique offers an option for a vehicle on it's roof with the patient still strapped in their seatbelt. The advantages of this method are the removal from the seatbelt can be achieve rapidly compared to other methods, spinal alignment is maintained, and body twisting (which can further aggravate fractures and other injuries) is minimised as compared to other techniques available.

Training Requirements:

5 x Staff
1 x Patient
1 x Cervical Collar
1 x Blanket
1 x Cervical Extrication Device (CED)
1 x Long Spine Board (LSB)
1 x Stretchers

Scene Setup

With the patient in this scenario being extracted out the rear of the vehicle, the following general principles should be applied whenever practical:



- Ambulance equipment staging area should be setup at the rear of the vehicle on the 5 m outer circle.
- Rescue equipment staging area should be setup at the front of the vehicle on the 5 m outer circle.
- Fire protection with a live hose is again placed on the 5 m outer circle, but at 45° angle to the front of the vehicle so as not to interfere with the Ambulance or Rescue staging area.

VEHICLE ON ROOF - EXTRACTION FROM A SEATBELT

**Step 1**

Once the vehicle has been stabilised, Officers can enter the vehicle and perform Manual In-Line Stabilisation of the patient's head.

**Step 2a**

To allow for the removal of a patient through a rear window, an opening needs to be made. Generally removal of, or the faster process of breaking the rear window will be adequate.

**Step 2b**

To allow for access to the patient, the doors of the vehicle will need to be opened.

In rare cases full side removal will be required for adequate access to the patient, but a clear benefit is needed to justify the extra time.²

Please Note: In this scenario, a full side removal has been undertaken to allow improved viewing of the extraction technique.

VEHICLE ON ROOF - EXTRACTION FROM A SEATBELT

**Step 3**

Officers are positioned at the following places:

Officers 1 & 2 are positioned on either side of the patient's torso - Officer 1 outside the vehicle and Officer 2 inside the vehicle.

Officer 3 & 4 are positioned on either side of the patient's pelvis - Officer 3 outside the vehicle and Officer 4 inside the vehicle.

Officer 5 is positioned at the rear of the vehicle and controls the insertion of the LSB under the patient.

**Step 4**

Officer 3 positioned at the patient's pelvis rotates the back of the seat rearwards as far as it will go as it is providing no support for the patient.

**Step 5**

Officer 1 & 2 positioned at the patients torso then insert a jacket style Cervical Extrication Device (CED) under the patient. Using the CED as a torso splint, rotate the patients torso upwards towards the back of the seat. It may be of benefit if time permits to attach the chest straps of the CED for improved stability.



It will be necessary for the patients head to be carefully rotated to the side by Officer 5 for application of the CED.

VEHICLE ON ROOF - EXTRACTION FROM A SEATBELT

**Step 6**

Officer 5 positioned at the rear of the vehicle places a blanket over the broken glass of the rear window to allow the LSB to easily slide in and out of the vehicle. Failure to do this may result in severe LSB vibration during extraction. Officer 5 then inserts the LSB through the rear window and into the steering wheel for stability, and for reduced dropping height of the patient when released from the seatbelt.



Officer 3 positioned at the patient's pelvis assists Officer 5 ensuring the LSB is inserted into the steering wheel.

**Step 7**

Officer 4 cuts the patient's seatbelt.

Officers 3 & 4 positioned at the patient's pelvis uses the seatbelt to lower the patient onto the LSB, and ensure the patient's legs rotate either side of the steering wheel.



Officers 1 & 2 positioned at the patient's torso, at the same time, support the patient in the horizontal position with the CED, slowly lowering the patient onto the LSB in conjunction with Officers 3 & 4.



VEHICLE ON ROOF - EXTRACTION FROM A SEATBELT

**Step 6**

Begin the slide out of the vehicle by:

Officers 1 & 2 positioned on the either side of the patient's torso assist in the sliding of the patient onto the LSB by grasping handles on the CED.

Officers 3 & 4 positioned on the either side of the patient's pelvis assist in the sliding of the patient onto the LSB by grasping the patients clothes at the pelvis.

Officer 5 continues to support the LSB to prevent the LSB from slipping out of the steering wheel.

The patient is slid up the LSB in 30 cm movements until the patients shoulders are level with the shoulder markings on LSB.

Once the patient is correctly positioned of the LSB, slide the LSB carefully out of the steering wheel and out of the vehicle, placing it on the ground.

**Step 7**

With the patient extracted prone (on their stomach), carry the patient to a safe place and log roll the patient using the log roll 5 person prone 180° technique to get the patient supine, then immobilise.¹

The patient can now be safely carried to the Ambulance stretcher.

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1. Victorian Ministerial Task Force on Trauma
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