



Queensland
Trauma Education

WARD TRAUMA CARE

Changing a semi-rigid cervical collar

Procedural skill

Facilitator resource kit

CSDS



Clinical Skills Development Service



Queensland Trauma Education

The resources developed for Queensland Trauma Education are designed for use in any Queensland Health facility that cares for patients who have been injured as a result of trauma. Each resource can be modified by the facilitator and scaled to the learners needs as well as the environment in which the education is being delivered, from tertiary to rural and remote facilities.

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Queensland

Queensland Trauma Education

**Ward trauma care – Changing a semi-rigid cervical collar: Procedural skill
– Facilitator resource kit
Version 2.0**

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About this training resource kit

This resource kit provides clinicians with knowledge and skills for the care of a patient who requires a semi-rigid cervical collar for management.

National Safety and Quality Health Service (NSQHS) Standards



Target audience

Ward medical and nursing clinicians

Duration

30 minutes

Group size

Suited to small group participation

Learning objectives

By the end of this session the participant will be able to:

- Understand the process for changing a semi-rigid cervical collar
- Describe the complications from collar use
- Demonstrate the safe application and care of a semi-rigid cervical collar

Facilitation guide

1. Facilitator demonstrates/describes the process for semi-rigid collar application on a manikin with participants
2. Facilitator uses the question and answer guide to explore management of a patient in a semi-rigid collar

Supporting documents

1. Putting on a collar while someone is lying down
2. Putting on a collar when someone is sitting upright
3. Examples of semi-rigid collars

Procedural skill

Resources required

| | |
|----------------------|---|
| Equipment | <ul style="list-style-type: none"> • Manikin or standardised patient • Cervical collar devices - several types can be demonstrated • Assistant |
| Delivery tool | Facilitator discussion and demonstration using manikin using the supine demonstration steps. |

Case 1

A patient has been admitted to the ward for ongoing management following a motor vehicle crash. They have sustained a C4 fracture with no retropulsion or spinal cord injury. The management plan has been documented as non-operative with the utilisation of a semi-rigid collar. The patient has arrived on the ward with a soft collar and the spinal team request a change to the semi-rigid collar device. You have been requested to apply this collar.

Case 2

A 32-year-old female has been admitted to the ward for 3 days with a C6 fracture. She has been allowed to mobilise with the cervical spine collar and whilst showering has got the padding material wet. She is requesting assistance to change the collar padding material.

Case 3

A 78-year-old man has an Aspen collar in-situ to manage his ligamentous cervical spine injury. He is complaining that the collar does not feel right and is pressing under his chin. You have been asked to review the area for pressure wound complications.

Case 4

An 18-year-old man has been moved to your ward after being admitted following a diving injury today where he sustained injury after an axial load. He has tingling in his L hand and is awaiting an MRI. He requires a Miami-J collar to be fitted prior to the MRI. You are required to change his soft collar for the semi-rigid collar device.

Question and answer guide

1. What are the three types of cervical collars?

- Soft Collar
- Rigid Cervical Collar (Hard Cervical Collar)
- Semi-Rigid Cervical Collar

2. What are the indications for the use of these collars?

| Priority Option | Collar Description | Indications | Application Duration |
|-----------------|---|---|----------------------|
| One | Rigid collar <ul style="list-style-type: none"> • Laerdal Stiffneck | <ul style="list-style-type: none"> • Immobilisation, extrication, and transportation | < 4 hours |
| Two | Soft collar | <ul style="list-style-type: none"> • Short term cervical spine immobilisation – pre-hospital and / or pending cervical spine clearance | > 4 hours |
| Three | Semi-rigid collar <ul style="list-style-type: none"> • Philadelphia Collar • Aspen Collar • Miami J Collar | <ul style="list-style-type: none"> • Immobilisation, stability, and support | > 4 hours |

THHS (Townsville Hospital and Health Service) – Cervical Collar Management: collar types and background processes (THHSCLI110552v3)

3. What benefits are in the application of a semi-rigid collar device in a trauma patient?

Semi-rigid collars are used in the management of cervical spine injury with or without spinal cord injury. A well fitted semi-rigid collar will restrict cervical spine flexion, extension, and rotation to allow healing of fractures, ligamentous injury and may be used in some degenerative conditions.

4. What are the main risks of use of semi-rigid collars?

- Incorrectly sized or applied collars may lead to ineffectual support and immobilisation.
- Pressure injuries from incorrect sizing, moisture, friction, debris, or extended use.
- Pain and discomfort may increase agitation and non-compliance.
- Impaired jugular venous return may increase ICP (intracranial pressure) 4-7mmHg.
- May impair ventilatory function. (1)

5. What equipment is required for application or reapplication of a semi-rigid collar?

- Personal protective equipment (PPE) as required
- Semi-rigid cervical collar
- Spare foam liners
- Pressure relieving dressing, if applicable

Note: To provide cervical spine alignment a second staff member is required for collar application.

6. What are some things you need to consider prior to the application of a semi-rigid collar?

- Obtaining informed consent
- Performing a complete motor and sensory neurological assessment
- Competency of staff
- Ascertaining roles
 1. cervical neck immobilisation
 2. application (reapplication / exchange / removal) of the collar

7. How are semi-rigid collars applied?

A minimum of two staff are required to apply a semi-rigid collar. Either the front or back panel may be applied first, at the discretion of the team present.

If the patient is lying supine:

- Place the back panel behind the neck by sliding along the bed from one side without moving the patients head, each of the straps should be centred between the ear and top of the shoulder.
- Open the front panel of the collar and ensure the top of the collar sits under the chin supporting the jawbone, push the sides of the front panel around the neck.

In the erect patient (this should only be used in patients who have documentation of authority for this process from the spinal team):

- Open the sides of the front panel outward and ensure the top of the collar sits under the chin supporting the jawbone, push the sides of the front panel around the neck
- While holding the front panel with one hand, centre the back panel and attach both sides to the front with Velcro straps.

8. How do you replace the pads on a semi-rigid collar?

The pads should be kept clean and dry, if they become wet, they can be replaced. The collar is supplied with additional pads for replacement, but additional pieces can be ordered.

Process:

Cleanse the plastic parts of the collar and replace soiled foam pads with daily bath or more frequently as needed.

For routine cleansing follow steps:

1. Release the Velcro straps and remove the front part of the collar.
2. Remove foam pads and replace as needed.
3. Clean hard plastic pieces of collar.
4. Observe the neck and skin for any breakdowns or irritation.

KEY POINT: For any noted breakdown in skin, follow medical officers' or wound care team recommendations and orders. Document the skin wound in the patients record.

5. Wash the neck with mild soap and water and dry thoroughly.
6. Replace the collar front and fasten the Velcro straps.
7. Supporting the neck, logroll the patient to the side position.
8. Remove the back of the collar, replace any pads as needed and clean the neck with mild soap and water and dry thoroughly.
9. Replace the back of the collar and secure the Velcro straps.
10. Logroll the patient back to the supine position and assess the collar for proper fit.

KEY POINT: It is necessary to utilise assistive personnel to maintain neck alignment.

11. Wash the foam pads in mild soap and water and allow to air dry so they may be reused.
12. Reassess the movement in the extremities after the collar is reapplied (2)

9. How do you assess for correct fit of the semi-rigid collar?

The collar must be checked to ensure that the correct fit is maintained in the setting of fluctuating neck and facial swelling.

- Observe patient in collar for appropriate fit each shift (see local policy)
- Check that the collar extends from the mandible to the sternal notch.
- Check chin is sitting in the chin support of the anterior section.
- Check that the posterior section is symmetrical with no rotation and aligned with spine.
- Check the Velcro strap are positioned midway between the ears and shoulders and even on both sides.
- Ensure all soft edges maintains even contact with skin.
- Check the collar extends from the mandible to the sternal notch with no flaring or flattening of the edge of collar.

10. What ongoing care would you need to consider with a patient with a collar in place?

- Observe patient in collar for appropriate fit.
- Assess skin integrity for pressure ulcer development, particularly around occiput, neck, chin, ears, shoulders, and superior aspect of scapula.
- 4th hourly neurological and spinal assessments (increase or decrease frequency as per clinical judgement and medical orders based on the patient's condition).
- Replace the liners with the spare ones if they become wet or soiled.

11. You perform your neurological and spinal assessment, what clinical signs and symptoms of spinal injury would you escalate?

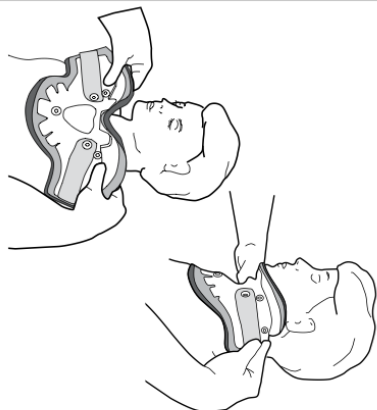
- Pain / tenderness / deformity of spine
- Altered muscle power
- Altered sensation (e.g., pins and needles, numbness, or reduced sensation)
- Bladder dysfunction – usually urinary retention (perform regular bladder scans)
- Bowel dysfunction – faecal incontinence or constipation, loss of anal tone
- Hypotension / Bradycardia (signs of spinal shock)

Supporting documents

The following supporting documents are provided for this case discussion

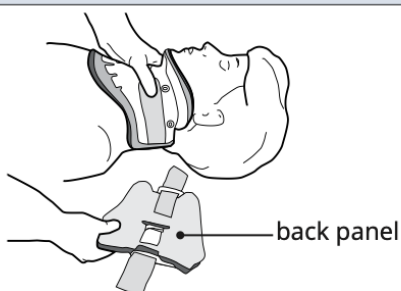
Putting on the collar while someone is lying down

Step 1 - Putting on the front panel



1. Open the sides of the front panel outward.
2. Make sure the top of the collar sits under the chin and supports the jawbone. The chin should not slip down into the collar.
3. Hold firmly with one hand.
4. Push the sides of the front panel around the neck.

Step 2 - Putting on the back panel

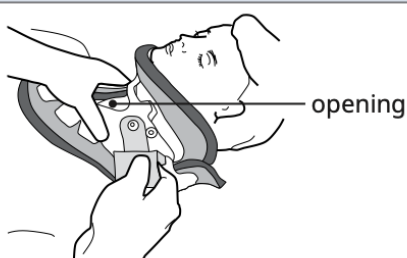


Place the back panel on the back of the neck by sliding it in place, either from the side or down the back of your head.

What should it look like?

The end of each strap should come to the same position on each side. The straps should be centered between the ear and the top of the shoulder.

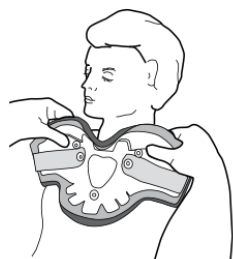
Step 3 - Attaching the front and back panel together



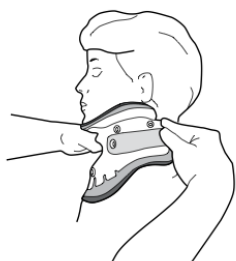
While holding the front panel with one hand, attach both sides of the back panel to the front with the Velcro straps.

Putting on the collar when someone is upright

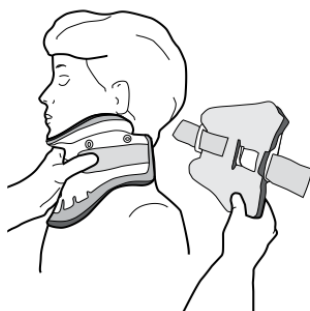
Step 1 - Putting on the front panel



1. Open the sides of the front panel outward.
2. Make sure the top of the collar sits under the chin and supports the jawbone. The chin should not slip down into the collar.
3. Hold firmly with one hand.
4. Push the sides of the front panel around the neck.



Step 2 - Attaching the front panel to the back panel



While holding the front panel with one hand, centre the back panel and attach both sides to the front with the Velcro straps.

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Examples of semi-rigid collars



Miami J Collar



Aspen Collar



Philadelphia Collar

Acronyms and abbreviations

| Term | Definition |
|------|--------------------------------------|
| ICP | Intracranial pressure |
| MRI | Magnetic resonance imaging |
| C6 | Sixth cervical vertebra of the spine |

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