

CAST REMOVAL OR SPLITTING USING A CAST SAW IN ED - SCH

PRACTICE GUIDELINE[®]

DOCUMENT SUMMARY/KEY POINTS

- The purpose of this guideline is to guide clinicians when splitting or removing rigid casts to ensure that cast removal and splitting will be carried out in a safe, effective manner by Emergency Department clinicians trained in relevant risk assessment, equipment use and approved techniques.
- Cast modification, removal or splitting may be required in the Emergency setting. Indications may include, but are not limited to:
 - Pain, swelling and/or neurovascular compromise
 - Suspicion of pressure injury or infection under the cast or at cast margins
 - Broken or collapsed cast requiring reinforcement or replacement
 - Wet under-cast padding or water damaged non-waterproof cast which must be removed
 - Splitting cast for air travel
- The clinician undertaking the procedure should confirm the required actions with the primary clinician prior to commencement. Recent post-operative patients should be discussed with the relevant specialty registrar.
- Clinicians who undertake cast removal/splitting must be able to identify risks related to age and assess:
 - Anatomical landmarks
 - Skin integrity
 - Musculo-skeletal function
 - Cognitive age, co-operation level and psycho-social factors
- Electric cast saws are commonly used for ease of cut, patient comfort and speed of procedure; however saws are noisy and may be frightening to children.

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

Approved by:	SCHN Policy, Procedure and Guideline Committee	
Date Effective:	1 st May 2020	Review Period: 3 years
Team Leader:	Nurse Educator	Area/Dept: Emergency Department SCH

CHANGE SUMMARY

- Due for mandatory review.

READ ACKNOWLEDGEMENT

- This guideline applies to Emergency Department Medical Officers and Registered Nurses.
- SCH Physiotherapists and Orthopaedic Medical Officers should read this document.

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1 Introduction

1.1 Purpose

- The purpose of this guideline is to guide clinicians when splitting or removing rigid casts.

1.2 Registered Nurses

- In order to perform this skill, the RN will have undertaken a course of education and supervision to achieve this scope of practice.
- The RN is responsible for keeping an individual log as per current practice for extended skills
- Prior to performing the skill independently the nurse is required to undertake a Clinical Skills Assessment

1.3 Aims and Objectives

- To ensure that cast removal and splitting will be carried out in a safe, effective manner by Emergency Department clinicians trained in relevant risk assessment, equipment use and approved techniques.

1.4 Responsibilities

- Management is responsible for ensuring that registered nurses and medical officers who undertake this practice are provided with appropriate knowledge and training

1.5 Indications

Cast modification, removal or splitting may be required in the Emergency setting. Indications may include, but are not limited to:

- Pain, swelling and/or neurovascular compromise
- Suspicion of pressure injury or infection under the cast or at cast margins
- Broken or collapsed cast requiring reinforcement or replacement
- Wet under-cast padding or water damaged non-waterproof cast which must be removed. Deferment risks severe maceration and subsequent skin breakdown.
- Splitting cast for air travel
- The clinician undertaking the procedure should confirm the required actions with the primary clinician prior to commencement. Recent post-operative patients should be discussed with the relevant specialty registrar.

2 Assessments

2.1 Patient assessment

Clinicians who undertake cast removal/splitting must be able to identify risks related to age and assess:

- Anatomical landmarks
- Skin integrity
- Musculo-skeletal function
- Cognitive age, co-operation level and psycho-social factors
- As there are associated risks, it is important that a risk minimisation approach is applied. Young children have thin, sensitive skin and are at particular risk of cutaneous injury. Potential hazards include discomfort, pinching or skin damage.
- Carers and patients (relevant to age) should be fully informed about the procedure, risks outlined, and consent acquired (implied).
- Electric cast saws are commonly used for ease of cut, patient comfort and speed of procedure; however, saws are noisy and may be frightening to children. The blade oscillates or vibrates rather than rotates or spins like a conventional saw. The blade may touch soft mobile tissues momentarily without harm under light pressure, however it is preferable to avoid all skin contact as the serrated blade edge can abrade or burn the skin even when care is taken. A flexible plastic guard should be inserted under the cast cutting line if possible, especially whenever waterproof padding has been used.
- Clinicians should practice use of the cast saw on previously removed casts prior to removing/splitting a cast on a patient.

2.2 Cast assessment

The cast should be examined and assessed prior to any procedure as regards:

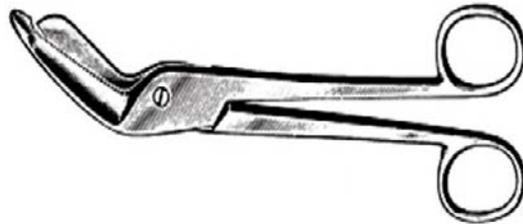
- Type of cast: Plaster of paris (Gypsona®), rigid polyester cast (Dynacast Elite®). Semi-rigid cast (Delta-Cast®Soft) is pliable and may be unwound to remove. Removal does not require use of a cast saw
- Nature and extent of padding
- Thickness of the cast
- Location
- Size and length of the cast: saw blades get hot with constant use, especially when splitting synthetic casts.

Plan and/or mark cutting lines for splitting of the cast (univalve or bivalve) thereby avoiding bony prominences and minimising the number of passes required with the saw.

2.3 Equipment assessment

Tools

There are several tools that may be used in cast removal/splitting including plaster or bandage scissors, shears, spreaders and cast saw. The clinician should understand how and when to use each item of equipment. Adherence to safe work practice ([Workplace Health and Safety, WHS](#)) is expected.



Plaster or Bandage Scissors with protected blade tip



Plaster shears

Small single hand spreader

Large two hand spreader

Oscillating Saw

The blade must not be contaminated or have excessive build-up of plaster dust or debris around the blade. Blade serrations should not be dull or worn which may result in overheating of the blade. Ideally, the cast saw should not be used on wet plaster due to clogging and the subsequent risk of ineffective split and overheating. If used on wet plaster the saw blade should be wiped clean upon completion. The clinician must ensure safe positioning of the electrical cord. The saw must not be left unattended whilst connected to the mains power supply. The plaster saw should have regular service checks as per the Clinical Engineering testing schedule.

Oscillating Cast Saw



Guard

Small and medium sized flexible plastic guards are available. Whenever possible, a guard should be inserted under the cast along the proposed cutting line, especially when waterproof padding is insitu. Tight plasters associated with swelling may preclude use of guards. Forcible insertion of guards may abrade / injure the skin or cause pain and caution should be exercised.

Use of a guard is **NOT** a substitute for correct technique

2.4 Environment assessment

To ensure safe work practice the work surface, the patient and carer and the clinician/assistant should be positioned to enhance access. This will assist in stabilisation of the child/limb and enable correct clinician posture. Positioning may need adjustment during the splitting procedure. The work area should be well lit.

PPE

Limit exposure to contaminated casts and dust particles. When cutting contaminated casts, gloves are recommended to reduce exposure especially from body substances/blood. Use of a saw with a vacuum is preferable. If not available, the use of face masks and draping with sheets is acceptable protection. Optional gowns, safety goggles and hearing protection may also be used as an adjunct.

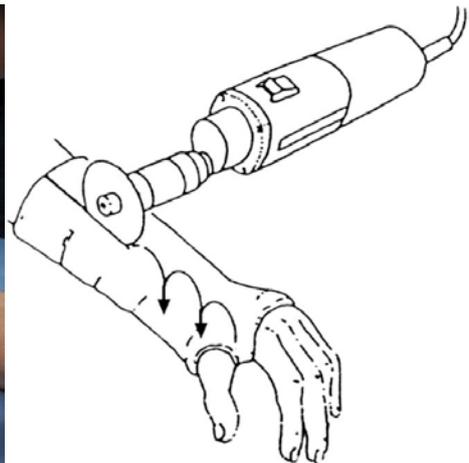
3 Patient preparation

Children and carers should be advised of what to expect during cast removal/splitting. Explanation of noise, vibration and risk of heat is necessary. Equipment should be demonstrated prior to commencement and reassurance given. In addition, the potential for fear, anxiety and distress should be acknowledged and managed in an age appropriate manner. In relevant ages the patient should be instructed to let the clinician know if the blade becomes hot or uncomfortable.

Gain patient and carer co-operation where possible. The patient should be in a secure and comfortable position in order to avoid risk of skin damage. It is therefore recommended that an assistant be recruited to maintain limb stability and prevent unexpected movement thereby minimising risk of injury and avoiding prolongation of the procedure.

4 Saw and Splitting Technique

1. The saw should be securely held with two hands to maintain stable control. The dominant hand should grasp the barrel of the saw. The non-dominant hand should have a finger placed between the barrel and the blade to steady and guide the saw head and to act as a depth gauge. The fingers of the non-dominant hand may also rest along the cast to provide stability.



2. The blade should be positioned over the cutting line, perpendicular to the cast surface. An even 'down and up' vertical motion should be used. Do not exert excessive working pressure – allow the blade to cut at its own rate. Excessive pressure will potentially contribute to overheating of the blade.
3. When the blade breaks through the cast wall there is a loss of resistance referred to as 'end-feel'. At this moment the blade should be withdrawn from the cast and re-positioned progressively along the cutting line in a series of downward cuts. The saw may be rotated slightly before proceeding to the next cut to avoid overheating or blunting of the blade. Cutting proceeds as described in a series of cuts until a full length split is completed.
4. The saw blade must not be dragged horizontally along the cast because the cutting action will be ineffective. In addition, the clinician will be unable to judge end-feel which may increase the risk of soft tissue trauma and produce rough edges along the split.
5. Extra care should be taken when padding is minimal or when the cast is tight fitting.
6. Once the cast has been cut along the full length, the split/s may be opened with spreaders and the padding or liner cut with plaster scissors. The cast may then be removed or bandaged as necessary.
7. The blades of shears and scissors should be kept parallel to the limb where possible to prevent the points of the tools digging into the skin.

5 Post Removal Requirements

- Following the procedure, the patient and carer should be reassured.
- The primary clinician should review the child post procedure. The limb should be inspected for any abnormal or other relevant finding. In some circumstances an X-ray may be indicated. The skin should be inspected and washed post removal. Any wounds or breaches in skin integrity should be cleaned and dressed as required.
- A swollen or compromised limb with a split cast insitu should have a period of limb elevation and documented circulation checks prior to securing the cast with a bandage. A second split (bivalve) may be necessary.
- The primary ED clinician should discuss these cases with the relevant specialty registrar.
- Actions must be documented in the patient record.
- Any adverse incident such as a cut, abrasion or burn must be reported via incident reporting systems. The carer and/or child must be informed and follow-up arranged if required.
- Ensure the work area is left clean and tidy. Wipe debris from the saw blade.
- All equipment should be returned to the storage location.

6 References

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3. Hunter Area Health Service, Safe Work Practice. Bivalving of casts. 2006
4. De Soutter cast saw operating instructions [package insert]. De Soutter Medical Ltd. Berkhamsted UK

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