

Definition and Classification of CASI and MARSI

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Disclosures

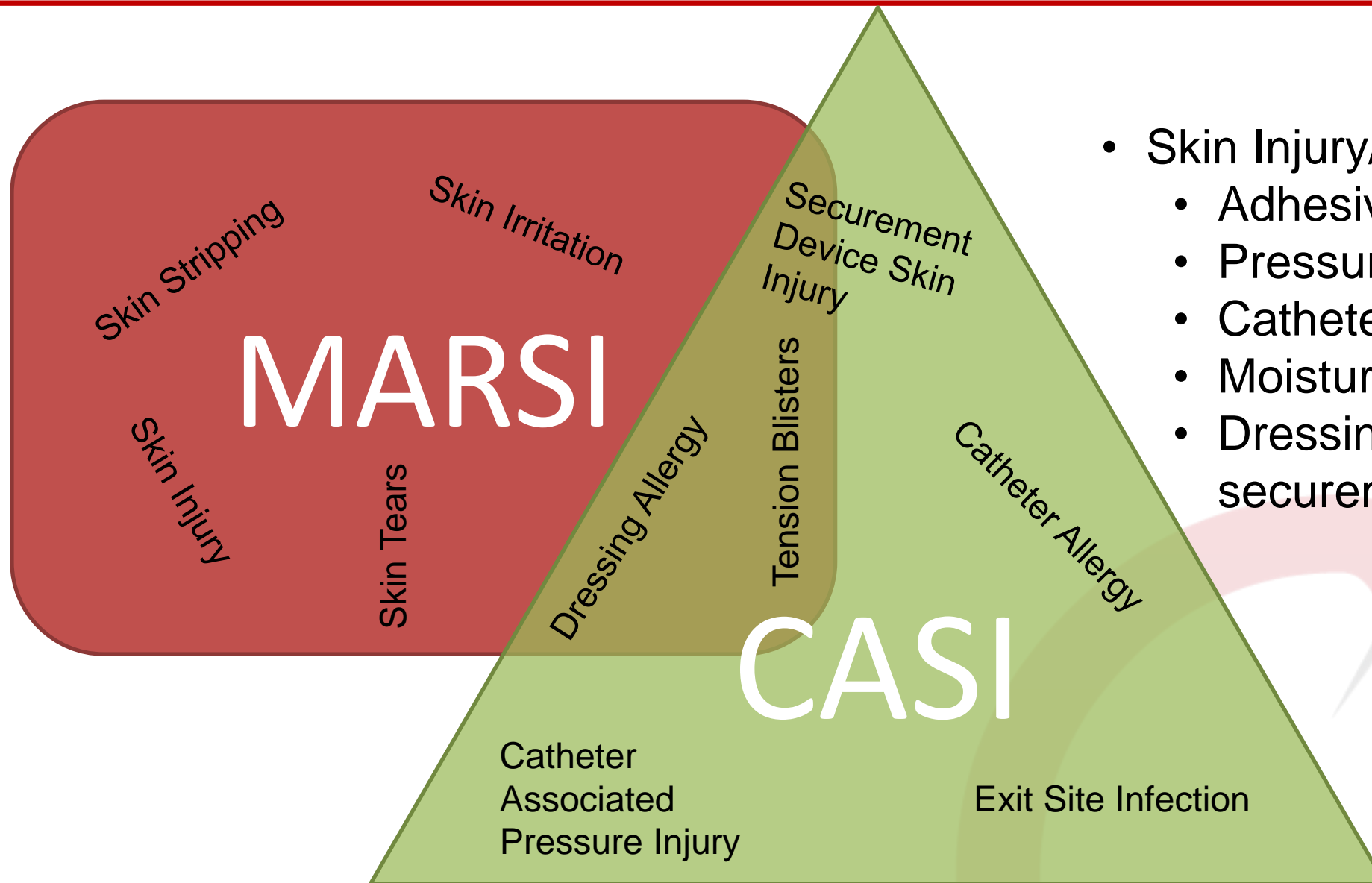
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The speaker has disclosed the following:

Consultant/Speaker's Bureau/Research:

3M, Accuvein, Access Vascular Inc., Advanced Medical Solutions, Cathaid, Chiesi, Civco, Cleansite, Helmier, Javelin Health, Linear Health Sciences, Nexus Medical, Parker Laboratories

Defining MARSI and CASI



- Skin Injury/Impairment
 - Adhesive related
 - Pressure related
 - Catheter related
 - Moisture
 - Dressing or securement

MEDICAL ADHESIVE RELATED SKIN INJURY¹⁻⁸

CASI and MARSI

CLASSIFICATION

CASI Catheter Associated Skin Impairment

“Central Venous Access Device (CVAD) [or Vascular Access Device (VAD)] catheter associated skin impairment (CASI) is an occurrence of drainage, erythema, and/or other manifestation of cutaneous abnormality, including but not limited to vesicle, bulla, erosion or tear, at an insertion site within the underlying area of a dressing, which persists 30 minutes or more after removal of the dressing.”^{1,2}

Commonly seen skin impairment conditions associated with CVADs:

- (1) exit-site infection
- (2) skin injury (including skin stripping, skin tears, pressure injury, and tension blisters);
- (3) skin irritation (irritant or allergic contact dermatitis)
- (4) weeping/oozing (noninfectious drainage).



MEDICAL ADHESIVE RELATED SKIN INJURY¹⁻⁸

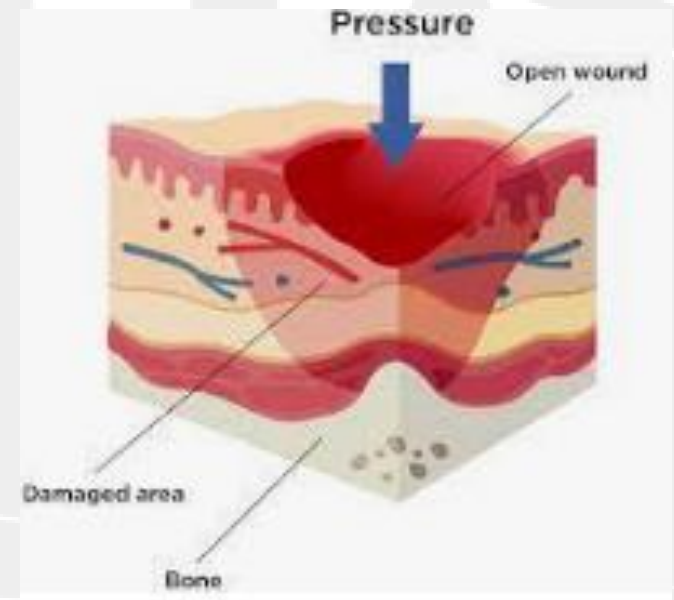
CASI and MARSI

CLASSIFICATION

CASI Catheter Associated Skin Impairment



Often overlooked skin injuries associated with catheter hub or tubing due to pressure



All MARSIs are not CASIs.
All CASIs are not MARSIs. Skin injury can result in association with a catheter and not be related to adhesives.

Greater risk in the very young or very old.



MEDICAL ADHESIVE RELATED SKIN INJURY¹⁻⁸

CASI and MARSI

CLASSIFICATION

MARSI

‘Medical adhesive-related skin injury’ is a term used to define any skin damage related to the use of medical adhesive products or devices such as tape, catheter dressings, wound dressings, stoma products, electrodes, medication patches and wound closure strips. This type of injury is largely avoidable.⁴

Medical adhesive-related skin injury occurs when the attachment between the skin and an adhesive is stronger than that between individual cells, this results in epidermal layer separation or the epidermis to detach completely from the dermis (mechanical trauma)⁴



Any skin damage related to the use of medical adhesive products or devices such as tapes, wound dressings, stoma products, electrodes, medication patches and wound closure strips.^{4,6}



MEDICAL ADHESIVE RELATED SKIN INJURY¹⁻⁸

CASI and MARSI

CLASSIFICATION

MARSI with VASCULAR ACCESS DEVICES

There are three main categories of medical adhesive-related skin injury: mechanical (skin stripping, blistering, skin tears), dermatitis (irritation in response to the adhesive) and other (maceration and folliculitis).⁴

- Mechanical
- Dermatitis
- Maceration
- Folliculitis



While all MARSI is not associated with VADs, dressings, and tape used for securement and protection of the area are primary contributors to these common types of skin irritations and injuries



Incidence, Risk and Causes

Incidence
3.5%-54%
And Under-
reported⁴

Everyone is at RISK
Intrinsic risk with neonates,
pediatric patients, the very
young and the very old.
Thin skin
Dehydration
Malnutrition
Radiation/ultraviolet light
exposure
Skin conditions
Edema
Co-morbidities
Repeated applications of tape
or dressings

Causes
Skin and adhesive pull
separating individual
cells and layers of the
epidermis resulting in
detachment from the
dermis

MEDICAL ADHESIVE RELATED SKIN INJURY¹⁻⁸

CASI and MARSI

CLASSIFICATION

MECHANICAL

Skin Stripping (Epidermal/Dermal)

Removal adhesive tape or dressing resulting in separation of epithelial layer of the stratum corneum of skin. May occur in combination with other types of MARSI.



Results in shallow or irregular lesions that may develop into blisters.

Often appears shiny with redness that does not resolve within 30 minutes.

MEDICAL ADHESIVE RELATED SKIN INJURY¹⁻⁸

CASI and MARSI

CLASSIFICATION

MECHANICAL

Skin Stripping

Skin Injury or Blisters



- Skin blister formation caused from mechanical stress and dermal separation with subsequent fluid accumulation under the skin



MEDICAL ADHESIVE RELATED SKIN INJURY¹⁻⁸

CASI and MARSI

CLASSIFICATION

MECHANICAL

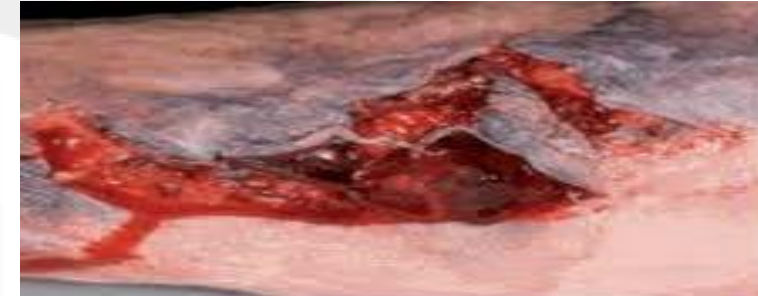
Skin Stripping

Skin Injury or Blister

Skin Tear



- Skin tears
 - **Linear** type 1 no skin loss and edges may be approximated together
 - **Partial** type 2 flap loss
 - **Total flap** type 3 complete flap loss



Separation of skin layers resulting in skin opening similar to lacerations

MEDICAL ADHESIVE RELATED SKIN INJURY¹⁻⁸

CASI and MARSI

CLASSIFICATION

MECHANICAL

Skin Stripping

Skin Injury or Blister

Skin Tear

Tension Injury



- Skin tension injuries relate to pulling on the skin caused by unyielding tape or dressing, or pulling caused by stretching transparent dressings during application
- Shearing forces on the skin resulting in dermal separation, deeper than skin stripping



MEDICAL ADHESIVE RELATED SKIN INJURY¹⁻⁸

CASI and MARSI

CLASSIFICATION

DERMATITIS

Well defined area, consistent with skin adhesive contact zone. May result in redness, edema, and or vesicles and manifest as rash type formation.



MEDICAL ADHESIVE RELATED SKIN INJURY¹⁻⁸

CASI and MARSI

CLASSIFICATION

DERMATITIS

Irritant Contact

Allergic



- Well mediated immune response in and around the area of adhesive contact
- Pruritic response

- May persist a week or more



MEDICAL ADHESIVE RELATED SKIN INJURY¹⁻⁸

CASI and MARSI

CLASSIFICATION

OTHER

Maceration

Moisture related skin injury in conjunction with a diaphoretic patient, and/or a non-breathable, occlusive dressing cover, bandage or dressing.

May resolve within a day or persist with defined area of skin injury, skin sloughing, or deadened skin requiring removal.



MEDICAL ADHESIVE RELATED SKIN INJURY¹⁻⁸

CASI and MARSI

CLASSIFICATION

OTHER

Maceration

Folliculitis



Skin irritation or infection from a hair follicle. Inflammation or infection in and/or around the follicle. May involve redness, drainage, vesicles and fungal contamination.



Incidence and Types of MARSI with PICCs

J Wound Ostomy Continence Nurs.
2018 Jan/Feb;45(1):22-25. doi
10.1097/WON.0000000000000394.

Medical Adhesive Related Skin Injury Prevalence at the Peripherally Inserted Central Catheter Insertion Site: A Cross- sectional, Multiple- Center Study

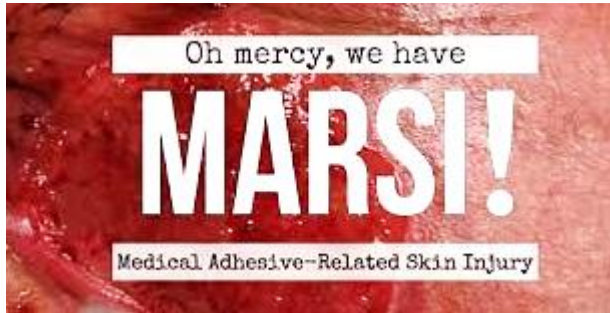
Zhao H, He Y, Wei Q, Ying

TABLE 2.
Prevalence of MARSI

Items	n (%)
Total MARSI	137 (19.7)
Mechanical skin injury	35 (5.0)
CD	103 (14.8)
Folliculitis	7 (1.0)
Moisture-associated skin damage	9 (1.3)
Types of mechanical skin injury	
Skin tear	6 (0.9)
Skin stripping	9 (1.3)
Tension injury/blister	17 (2.4)
Others (subcutaneous ecchymosis)	4 (0.6)
Severity of CD	
Mild	46 (6.6)
Moderate	39 (5.6)
Severe	18 (2.6)
Skin tear category	
Category 1	3 (0.4)
Category 2	1 (0.1)
Category 3	2 (0.3)

Abbreviations: CD, contact dermatitis; MARSI, medical adhesive–related skin injury.

Conclusion



- CASI and MARSII can be defined and identified as any persistent discoloration, irritation, pain, or injury to the skin, in or around a catheter insertion site or dressing application area. Subcutaneous port needle access areas may also be subject to MARSII.
- These skin complications can lead to chronic patient discomfort, anxiety, medical intervention, delayed treatment, and the need for catheter replacement

References

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Thank you

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