



# Surgical treatment of pressure sores

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# Introduction

A pressure ulcer is defined as tissue injury, usually over a bony prominence, due to pressure or a combination of pressure and shear forces. These wounds occur in patients debilitated by age, illness, immobilization from orthopedic injuries, or spinal cord injury.

# Introduction

Prevention of pressure ulcers first requires identification of susceptible patients. Once such patients are identified, measures to prevent development of ulceration include frequent position changes use of pressure reduction equipment nutritional optimization, hygienic control of incontinence, and medical and/or surgical treatment of muscle spasm and joint contracture.

# Introduction

Once an ulcer has developed, these same factors must be carefully evaluated and deficiencies corrected before embarking on a complex reconstructive treatment plan. Successful reconstruction also requires a medically stable, cooperative, motivated patient with adequate social support.

## National pressure ulcer advisory panel staging system

CLASSIFICATION	DESCRIPTION
Stage I	Intact skin with nonblanchable redness
Stage II	Partial-thickness loss of dermis; may present as blister
Stage III	Full-thickness loss of dermis with visible subcutaneous fat (no deeper structures exposed)
Stage IV	Full-thickness loss of dermis with exposed bone, tendon, or muscle
Unstageable	Full-thickness loss of dermis with ulcer base obscured by eschar



## General rule

Stage I and II ulcers are treated conservatively with dressing changes and basic pressure ulcer prevention strategies as already discussed. Patients with stage III or IV ulcers should be evaluated for surgery

# Wound Examination

The wound is examined for soft tissue infection or abscess, osteomyelitis, and involvement of deeper structures or spaces (joint space, urethra, spinal canal)

Blood laboratory

Imaging studies:CT and MRI

# Débridement

Wet gangrenous tissue and abscesses should be surgically débrided without delay to prevent or treat sepsis.

In patients who do not meet the strict reconstruction criteria, débridement to healthy tissue without subsequent reconstruction may be the optimal treatment.

# Osteomyelitis

If bone is present at the wound base, it should be débrided only to bleeding bone and left with a smooth contour. Complete ischiectomy should not be performed for ischial decubitus ulcers, because removal of one ischium only transfers subsequent pressure trauma to the contralateral ischium

# Osteomyelitis

. If osteomyelitis is present, which is best proven by culture of specimens obtained by intraoperative bone biopsy, long-term antibiotic therapy guided by microorganism sensitivity is indicated.

# Autonomic hyperreflexia

A special note should be made regarding surgical treatment of spinal cord injury patients with T5 or higher injuries. In these patients, manipulation of a pressure ulcer and even simple urinary retention can trigger autonomic hyperreflexia. This dangerous condition is characterized by critically high blood pressure elevation and sympathetic discharge.

# Autonomic hyperreflexia

Effective management is immediate recognition and reversal of trigger factors along with prompt administration of pharmacologic agents to prevent complications such as intracranial and retinal hemorrhage, seizure, cardiac irregularities, and death.



# *Surgical Treatment Options*

# Direct closure

Direct closure of a pressure ulcer is rarely performed because it usually creates tension in the healing tissues already stressed by nonphysiologic external pressure, predisposing the closure to breakdown.

# Skin Grafting

Skin grafting is useful for shallow ulcers with wellvascularized beds that are not subjected to high mechanical shear. Unfortunately, these requirements remove most pressure ulcers from skin graft candidacy.

# Flaps

The mainstay of deep pressure ulcer reconstruction is coverage with well-vascularized local flaps. There is debate over whether myocutaneous flaps are better than fasciocutaneous flaps for resurfacing regions prone to excess pressure and shear. Although myocutaneous flaps have excellent bulk and blood supply, muscle has low tolerance for ischemic injury.

# Flaps

From an anatomic viewpoint, there is no pressure point on the human body where bone is padded by muscle. On the other hand, although fasciocutaneous flaps provide reasonable bulk and are teleologically appropriate, some argue that subcutaneous fat and fascia have low resistance to pressure and shear forces and have less robust perfusion than muscle.

# Flaps

The anatomic location of the pressure ulcer naturally has a profound impact on flap choice. Regardless of the wound site, however, the flap design should be very large, more than needed for closure, so that if the ulcer recurs the flap can be readvanced.

In addition, care should be taken to place suture lines, the weakest part of the reconstruction, away from pressure points

# Sacral sores

Sacral decubiti are well treated with gluteus maximus myocutaneous flaps . In ambulatory patients, either the superior or the inferior gluteus muscle is spared to preserve hip extension function

A common alternative is the gluteal fasciocutaneous advancement or rotational flap



# Ischial sores

A good first-choice flap for ischial wound reconstruction is the hamstring V-Y myocutaneous flap. The gluteus maximus flap may also be transposed inferiorly to cover this wound. A fasciocutaneous alternative is the posterior thigh flap, based on the continuation of the inferior gluteal artery

# Trochanteric ulcers

The tensor fasciae latae myocutaneous flap is an expendable muscle unit in ambulatory patients that has a reliable blood supply. It can be advanced superiorly or transposed on its long arc of rotation



# Trochanteric ulcers


GOOD SECOND-CHOICE FLAPS ARE THE RECTUS FEMORIS MUSCLE FLAP AND THE VASTUS LATERALIS MYOCUTANEOUS FLAP

# Hip Disarticulation

When pressure sores are neglected, they can become confluent, forming large areas of deep tissue destruction. This dire situation may require hip disarticulation and use of the upper leg soft tissue as a total thigh flap for coverage

# Postoperative care

transfer of the patient from the operating room table onto an air-fluidized bed, where the patient will remain for the next 7 to 10 days in the hospital. Meticulous instructions must be given to the nursing staff and therapists regarding the positioning and rolling of the patient to prevent stressing the suture lines during these maneuvers. Nutrition and muscle spasm control are carefully maintained.



**THANK YOU**

For Your Attention!