Pressure sores

Pressure sores are defined as soft-tissue injuries resulting from unrelieved pressure over a bony prominence.
Approximately 9% of all hospitalized patients develop pressure sores.

Pathophysiology

Compression of soft tissues results in ischemia and, if not relieved, it will progress to necrosis and ulceration, even in well vascularized areas .
In susceptible patients, this sequence of events may be accelerated owing to other endogenous sources such as infection, diabetes, or altered neurologic states.

Predisposing factors

-unrelieved pressure (excessive and prolong)
- Decreased skin sensation:
-incontinence
-exposure to moisture
-altered activity and mobility
-shear force
-Decrease nutrition,
-Increase age

Pressure sore staging

Stage	Description
Stage I	Skin intact but reddened for more than 1 hour after relief of pressure
Stage II	Blister or other break in dermis ± infection
Stage III	Subcutaneous destruction into muscle ± infection
Stage IV	Involvement of bone or joint ± infection

Prevention

1-Idetification of patient with high risk factors.

2-the skin is carefully inspected twice daily for damage or redness, particularly over bone prominences.

2-Turning the bedridden patients at intervals.

3-use of variable available mattresses that designed to relief pressure.

4-The skin should be kept clean and dry .It should be washed and dried immediately after any bowel movement or urinary incontinence.

Preoperative care

1-*nutritional assessment and maintenance*: Normal healing potential exists as long as serum albumin is maintained above 2.0 g/dL.The patient should be provided with 1.5 to 3.0 g/kg/day of protein and 25 to 35 cal/kg of nonprotein calories daily. vitamins A and C. ,zinc,ferrous , copper ,and calcium are all important for proper wound healing.

2-contorl of Infection: include

A- Local infection :using

-topical antimicrobial agents like Dakin solution at 0.025%, silver sulfadiazine, or mafenide acetate.

- Surgical debridement to remove the nonviable tissue.

-Preoperative systemic antibiotics should cover gram-positive, gram-negative, and anaerobic organisms.

*B-Systemic infection:*like pulmonary and renal infection

3- Relief of Pressure

The initial goal is to avoid any further progression of the sore by relieving the source of pressure through a simple program of relieving it for only 5 minutes every 2 hours and the use of special mattresses

*4- Spasticity :*is common in patients with spinal cord injuries. Medications available to reduce spasm include Valium, baclofen,and dantrolene. If patients fail to respond to medical therapy, surgical intervention may be required, including peripheral nerve blocks, epidural stimulators, and baclofen pumps.

Locations:

Most common locations are sacral, heel ,ischium and trochanter.Other less common areas include the elbow, occipit and perineum

Treatment

Nonsurgical treatment: indicated in:
1-for patients who may never candidate for surgical correction because of significant medical problems.
2-for ulcers that during the period of assessment or observation appear to be "healing significantly"
3-In the rare instance when a patient presents with a shallow, newly formed pressure sore (grade I or grade II).

The treatments include:
- Avoidance of unrelieved pressure,
-Control of infection (local and remote),
-Control of incontinence,
-Improved nutrition,
-use of topical agent such as recombinant human platelet-derived growth factor BB and basic fibroblast growth factor.
-and use of new wound-care products.

Most stage I and II pressure sores will heal within few weeks, while stage III and IV sores may take longer (3-6months).

Surgical treatment

1-Debridement: this includes removal of all necrotic tissues. Specimens of viable tissue should be sent for quantitative culture to aid in postoperative systemic and topical antibiotic coverage.
2- Ostectomy: Removal of the bony prominence is an integral part of the surgical treatment of pressure sores. However, radical ostectomy is avoided.
3- *Closure of the wound*: this is achieved with healthy tissue that is durable and can provide adequate padding over the bony prominence and this may include Musculocutaneous flaps and Fasciocutaneous flaps

The choice of closure strategy depends on the location, size, and depth of the ulcer, and the previous surgeries performed. Primary closure is avoided because it leads to tension and dehiscence. Skin grafting has only a 30% success rate as grafting tends to provide unstable coverage.

Postoperative care

1-Nutrition, medical (for spasm, diabetes, hypertension), psychological, and rehabilitative care continues as required.
2- Avoid pressure on the operative site.
3- Drains are kept for 2 weeks.
4-broad-spectrum antibiotic therapy is continued during the perioperative period.

Complications:

1-Acute: hemorrhage, pulmonary and cardiac complications, and infection.
2-long-term complications: such as recurrence because of the persistence of the predisposing factors.