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Pressure Ulcers

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Definition

- ✦ *Injury resulting from unrelieved pressure over bony prominences*
- ✦ *Occurs when the external pressure exceeds capillary pressure (Landis 1930 - 12mmHg venous, 32mmHg arterial)*

Prevalence + Incidence

✿ Highest incidences

- ✿ *Elderly pts with femoral neck fractures*
- ✿ *Quadraplegic patients*
- ✿ *Neurologically impaired*
- ✿ *Chronic hospitalisation*

	Incidence	Prevalence
Acute setting	0.4 - 38%	10-18% (ave 15%)
Long term care facilities	2.2 - 23.9%	2.3 - 28% (ave 15%)
Home care	0 - 17%	0 - 29% (ave 15%)

Susceptible Areas

- ✿ *Ischial tuberosity (28%)*
- ✿ *Trochanter (19%)*
- ✿ *Sacrum (17%)*
- ✿ *Heel (9%)*
- ✿ *Other (e.g. scalp)*

Pathophysiology

- ✿ *Pressure*

- ✿ *Time*

- ✿ *Tissue*

- ✿ *Position and pressure*

 - ✿ *Supine - sacrum, buttock, heel and occiput (40-60mmHg)*

 - ✿ *Prone - chest and knees (50mmHg)*

 - ✿ *Sitting - ischial tuberosity (100mmHg)*

Extrinsic Risk Factors

- ✿ *Pressure - perpendicular pressure to unit area*
- ✿ *Shear - mechanical stress parallel to plane*
- ✿ *Friction - Resistance to movement between two surfaces*
- ✿ *Moisture (most often from incontinence)*

Intrinsic Risk Factors

- ✿ *Ischaemia/Sepsis*
- ✿ *Decreased autonomic control*
- ✿ *Infection*
- ✿ *Increased age*
- ✿ *Sensory loss/altered conscious state*
- ✿ *Small vessel disease*
 - ✿ *DM, PVD, smoking*
- ✿ *Anaemia and malnutrition*

Classification

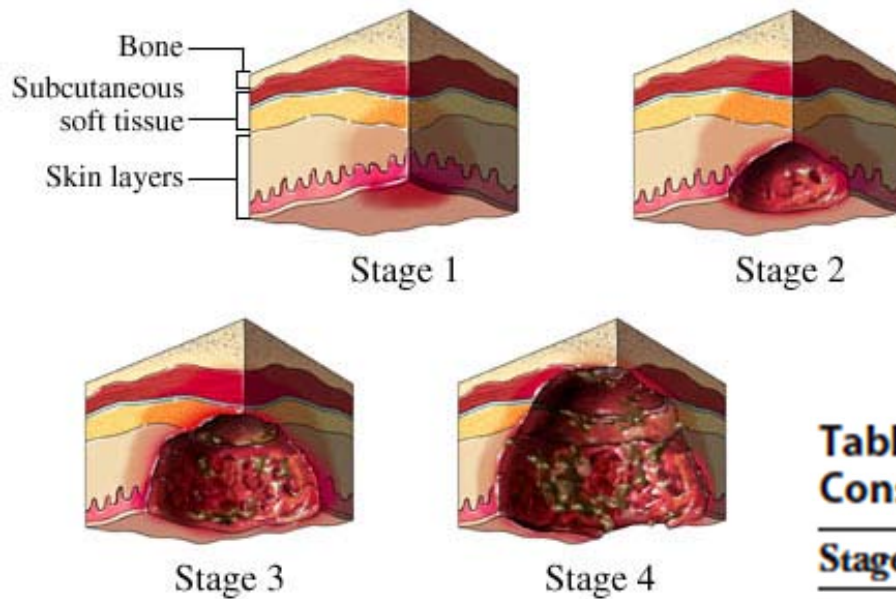
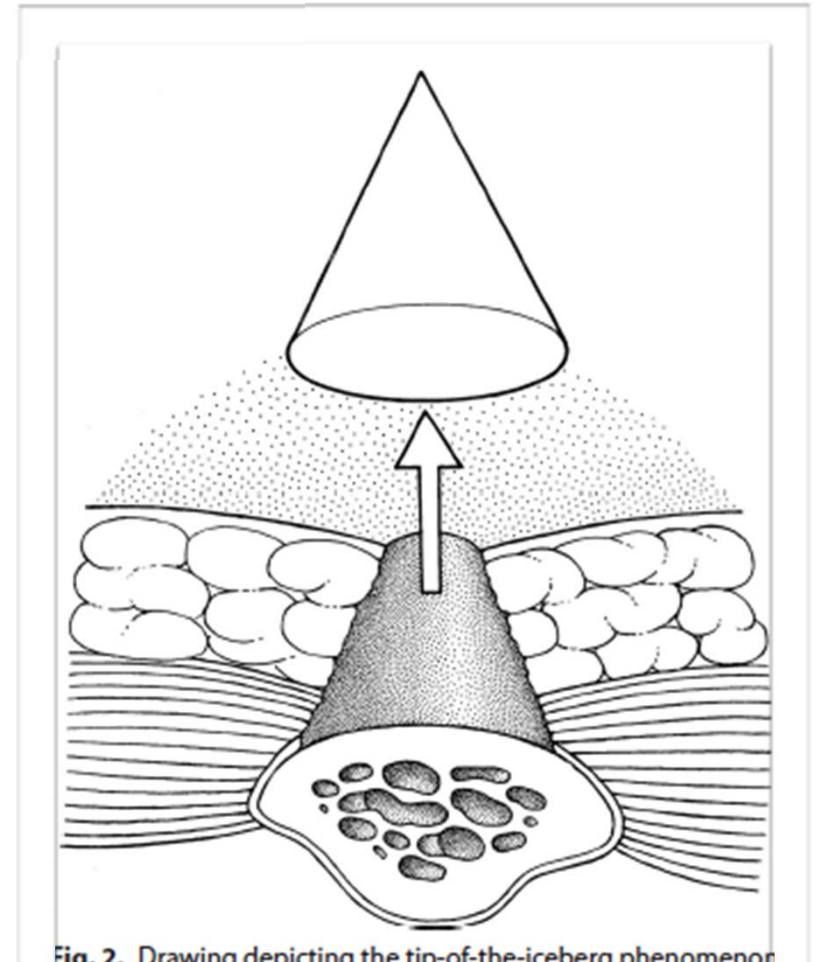


Table 1. National Pressure Sore Advisory Panel Consensus Development Conference

Stage	Description
I	Skin intact but reddened for >1 hr after relief of pressure
II	Blister or other break in the dermis with or without infection
III	Subcutaneous destruction into muscle with or without infection
IV	Involvement of bone or joint with or without infection

Tip of the Iceberg Theory

- ✦ *Underlying tissue types more susceptible*
- ✦ *Worst affected are tissues adjacent to bone*



Patient Evaluation

- ✿ *History is critical*
- ✿ *Examination*
- ✿ *Investigations*
 - ✿ *Bloods*
 - ✿ *Imaging*
 - ✿ *Consider other speciality input*

Surgical management

- ✿ *Stage 1 and II - conservative Mx*
- ✿ *Stage III and IV*
 - ✿ *consider ambulatory status*
 - ✿ *Design flaps as large as possible*
 - ✿ *Do not violate adjacent flap territories*
 - ✿ *Place suture lines on non-weight bearing skin*

Ischial Pressure Ulcers

- ✿ *Posterior thigh flap (fasciocutaneous or musculocutaneous)*
- ✿ *Medial thigh flap*
- ✿ *Gluteal flap (fasciocutaneous or musculocutaneous)*
- ✿ *Fascia lata flap*

Ischial Pressure Ulcers

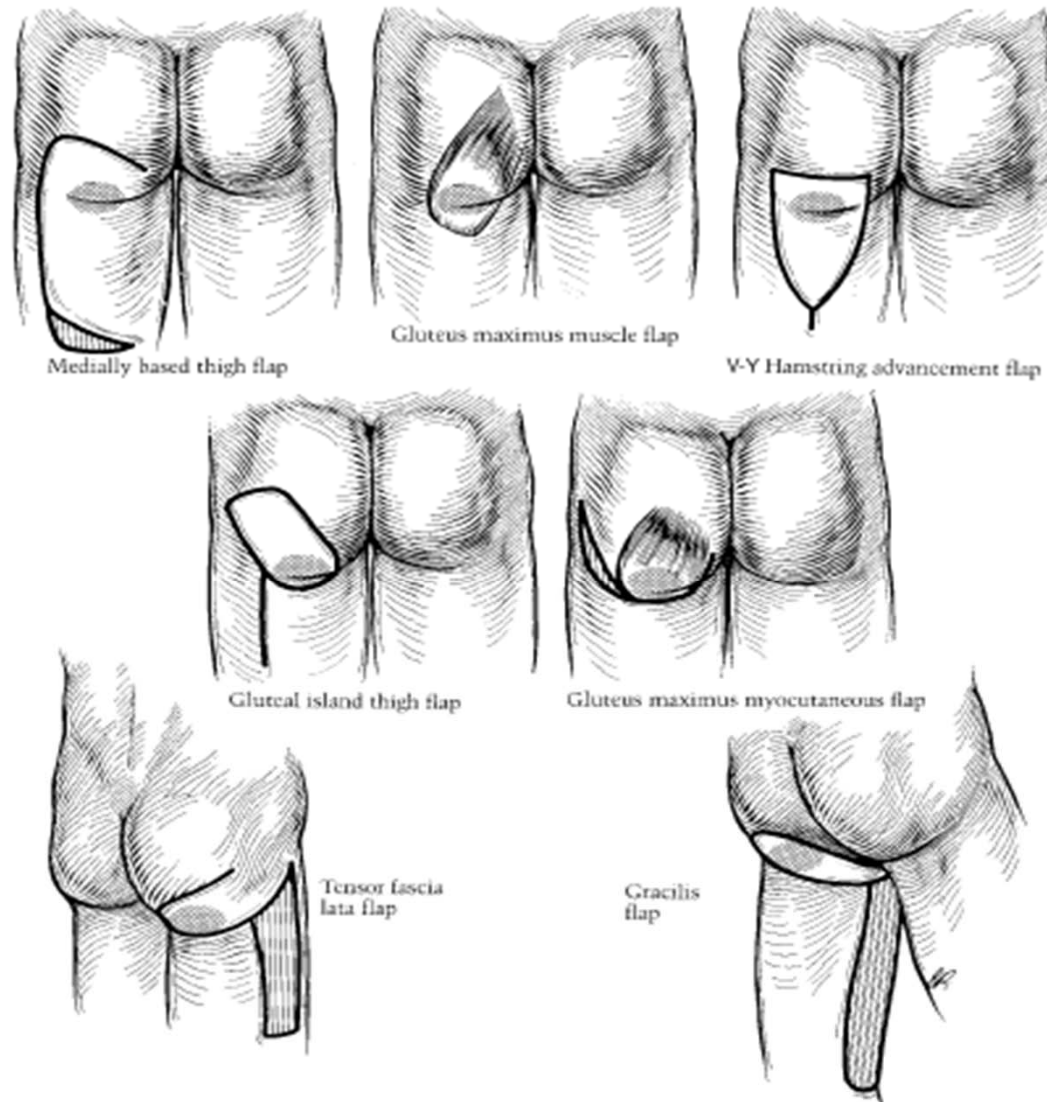


FIGURE 74.6. Flaps for closure of ischial wounds.

Ischial pressure sores

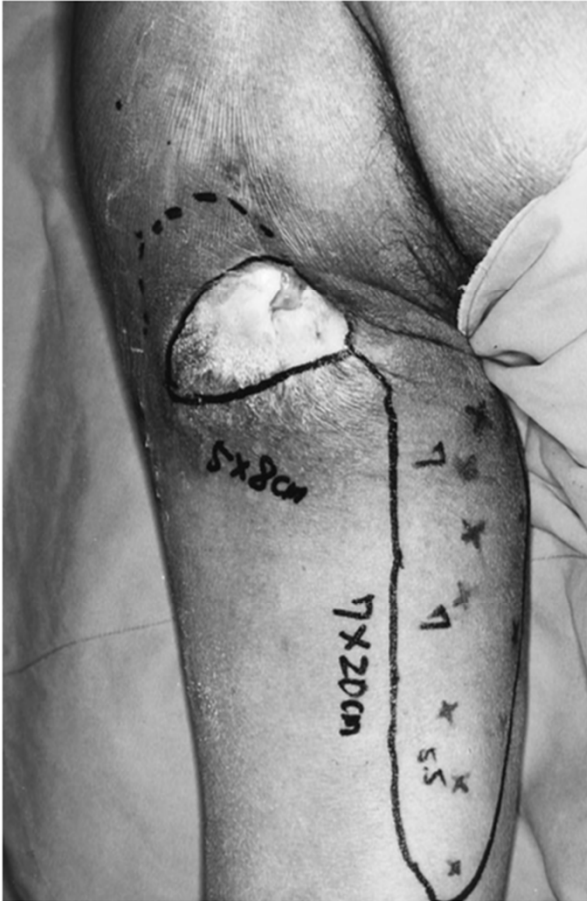
Posterior thigh Hatchet
flap



Posterior thigh flap



Posteromedial Thigh Fasciocutaneous Flap (Homma et al, 2001)



trochanteric

- TFL workhorse flap
- Pedicled ALT
- Vastus lateralis



Sacral Ulcers

- ✿ *Lumbosacral flap*
- ✿ *Gluteal flap*
(musculocutaneous, fasciocutaneous or perforator based)
 - *rotation*
 - *V-Y advancement*
 - *Hatchet*

Free flaps



Sacral pressure sores

V-Y advancement



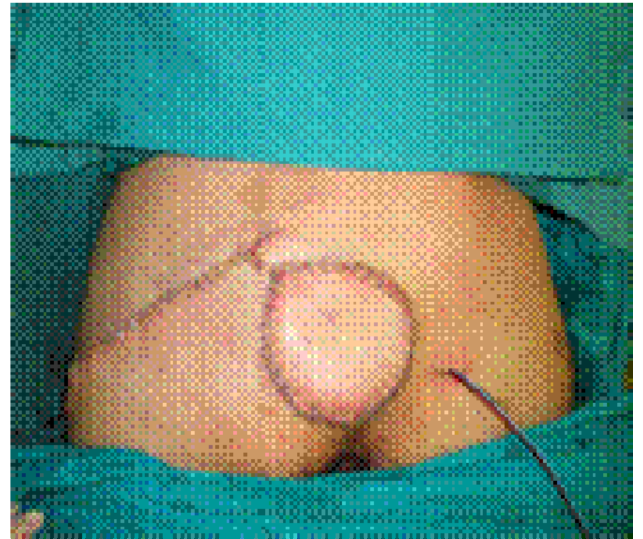
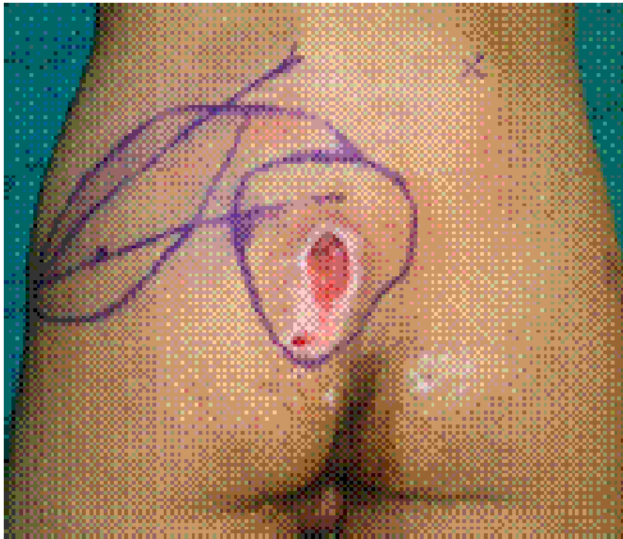
V-Y & a hatchet flap



Gluteal rotation flap



Perforator based flaps - SGAP





Post-operative Management

- ✿ *Pressure relief for 4-6 weeks*
- ✿ *air mattress*
- ✿ *Antibiotics*
- ✿ *Bowel/bladder control*
- ✿ *Nutrition*
- ✿ *sitting protocol*
- ✿ *Education is critical*
- ✿ *70% recurrence rate within 9 months*
- ✿ *Complication rate 36%*
- ✿ **EDUCATION EDUCATION EDUCATION**