# 5. Factors delaying wound healing

Many factors have been recognised that reduce or delay healing, the following are identified as some of the main causes for delay in wound healing.

- **Poor circulation -** Delayed healing and tissue breakdown is frequently associated with poor circulation. This may be due to local pressure, vascular disease or diabetes.
- **Poor nutrition/malnutrition -** Nutrition has a significant impact on wound healing. Lack of protein will result in insufficient building blocks for cell regeneration. Deficiency of vitamin C which is essential for collagen synthesis, will delay healing.
  Zinc deficiency will cause slowing down of epithelialisation and collagen synthesis.
- **Drug therapy -** Anti inflammatory drugs suppress initial inflammatory process. Systemic and topical corticosteroids can suppress both multiplication of fibroblasts and the immune system.
- **Immune response -** Allergy to topical applications, e.g. iodine may delay healing. Irritants and allergens include lanolin (wool alcohols), topical antibiotics, emulsifiers such as cetyl alcohol, rubber, parabens group of preservatives, colophony, fragrance mix or balsam of Peru.
- **Age -** Cell replication is slower (senescence) and the skin's resistance to injury decreases with increasing age.
- **Obesity -** Adipose tissue has poor vascularity. No known mechanism is responsible for increased infection and wound breakdown in obese surgical patients, but these patients are at high risk of postoperative wound problems.
- **Psychological -** Increases in hormone levels, particularly glucocorticoids (occurring in stress and anxiety for example) may suppress the inflammatory phase and affect healing in both acute and chronic wounds. Reducing stress has been demonstrated to reduce postoperative wound infection.
- **Infection -** Local or systemic infection inhibits healing. Resistance to infection is related to physiological ability and the patient's physical health. Bacterial toxins are potent inhibitors of healing. Some have more devastating effects than others.
- **Moisture -** Exposure to excessive exudate can be associated with other clinical issues in chronic wounds. It may result from increased bacterial burden related to local wound infection. Poorly managed urinary and faecal incontinence can have a devastating effect on the skin integrity and represents a significant threat to the peri-anal skin. In severe cases, the skin can also be so badly damaged that a moisture lesion develops. These are painful and require prompt treatment to prevent them growing in size.
- **Temperature -** The optimum temperature for cellular activity and division is 37ºC. Frequent dressing changes, application of cold solution and leaving the wound exposed can decrease the local temperature.
- **Chemical -** Inappropriate use of chemicals, for example, dyes or antiseptics, can damage the wound and retard healing. This practice should be discouraged.

- **Mechanical -** Unnecessarily disturbing the wound bed can damage the developing granulation tissue. Inappropriate dressings can also damage the granulation tissue. Mechanical cleansing of the wound is not required.
- **Malignancy -** Malignancy can inhibit healing as can a range of anti-neoplastic therapies
- **Drug Therapy -** Some medication has the potential to cause ulceration e.g. Nicorandil.
- **Sensory Neuropathy -** Sensory loss as a result of diabetic peripheral neuropathy is a major factor contributing to foot ulceration, 15% of diabetic neuropathy sufferers develop foot ulcers (Bild et al(1989) cited in Baker et al (2005). Sensory neuropathy can have other causes and the foot is at risk due to the loss of protective sensations. Damage to the tissues happens and the patient less likely to limit function due to the lack of pain from the wound, they are more likely to underestimate the seriousness of the wound.
  NB pain in a foot that normally has no sensation can be a sign of infection and should be noted and investigated.
- **Local factors -** Poor surgical technique such as over use of diathermy or poor choice of suturing material are among factors that will delay healing of a surgical wound (Kudar et al, 2009) Poor assessment or some wound care practices may predispose to delayed or non healing.
  Inappropriate choice of wound dressing, the use of fibre shedding materials like cotton wool or gauze swabs, tight bandaging can all lead to deterioration in the wound.
- **General factors -** Poor assessment of the cause of the wound can lead to inappropriate treatment and this will lead to poor healing. Any deterioration in the patients overall health adversely affects healing.
- **Pain -** All wounds have the potential to cause pain, and the nature of the pain varies with the type of wound. Many factors may exacerbate pain, including infection and dressing change. Inadequately managed pain can lead to adverse physical and psychological patient outcomes. Continuous, unrelieved pain activates the pituitary-adrenal axis, which can suppress the immune system and result in post-surgical infection and poor wound healing
  Continuous, unrelieved pain also affects the psychological state of the patient and family members. Common psychological responses to pain include anxiety and depression. The inability to escape from pain may create a sense of helplessness and even hopelessness, which may predispose the patient to a more chronic depression (Wells et al 2008)
- **Other -** Smoking