Maturation

The maturation phase usually starts 20 days after the injury in acute wounds and it can last from six to 18 months, depending on several factors, such as skin type, age and genetic predisposition of the subject (McCulloch and Kloth 2010; Davey and Ince 1999). The aim of this phase is for the injured skin to regain its strength and elasticity. This delicate process is controlled by metalloproteinases (MMPs), which are responsible for matrix tissue degradation, and their inhibitors (Hess 2008). Approximately 50% of the tensile strength is already regained by the wound two weeks after re-epithelization. However after having some types of wounds, especially chronic wounds, the repaired tissue may not recover completely (Davey and Ince 1999).

Classification of Wound Dressings

The choice of the appropriate dressing is very important and it has to be made in accordance with the overall wound management plan specific to each individual. This process is of course directly determined by the diagnosis of the wound, which is related to a great extent to the aspect and state of the wound bed (colour and tissue types present) (Vowden and Vowden 2014). Wound dressings can be generally classified into: dry and moist products. Dry dressings, such as gauzes, are usually easily available, very cheap, indicated for low-exuding wounds and they can strongly adhere to the newly formed tissue causing painful removal (Jones et al. 2006). Moist dressings include different types of materials: transparent films, hydrocolloids, alginates, foams and hydrogels. Transparent film dressings (such as Tegaderm® by 3M Health Care) are made from polyurethane or co-polyester and are flexible with an adhesive backing but are incapable of absorbing wound fluids, therefore they should be used on dry non-infected wounds only (Sood et al. 2014). Hydrocolloids (such as DuoDERM® by ConvaTec) are usually composed of two layers: the inner adhesive layer in contact with the wound containing pectin, gelatin and/or sodium carboxymethylcellulose, and the outer polyurethane layer impermeable to water. They conform to the wound surface absorbing slight to moderate amounts of exudate and they do not require frequent changes (they can be kept in place for a maximum of seven days) (Hanna and Giacopelli 1997). Alginates (such as Kaltostat® by ConvaTec) are derived from the calcium and sodium salts of alginic acid formed in *Phaeophyceae*, brown seaweed. They are made up of repeating units of mannuronic and guluronic acid and the ratio between the two units greatly influences their absorptive capacity and their tensile strength. They are suitable for medium to highly exuding wounds (Jones et al. 2006). In the presence of high exudate, foam dressings (such as Allevyn® by Smith and Nephew) can be used as well, because they can absorb a large amount of wound fluid within their porous structure, the limitations being that the dressing must be changed frequently so that pooling and spread of wound fluid does not cause breakdown of the surrounding skin (maceration). They are commonly represented by polyurethane or silicon foams (Murphy and Evans 2012). Dressings containing Hydrofiber® technology (such as AQUACEL® by ConvaTec) are made up of sodium carboxymethyl cellulose fibres. The fibres form a gel on contact with wound fluid which conforms well to the wound bed. Dressings containing Hydrofiber® technology are suitable for low to