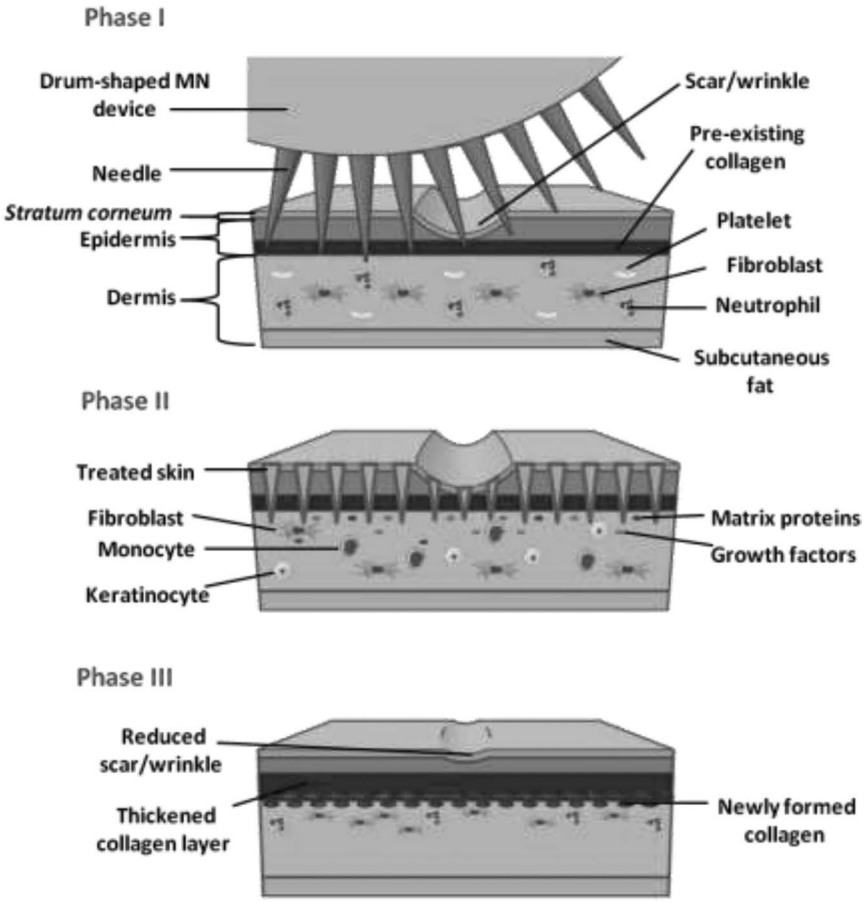

FIGURE 39.5 Schematic representation of PCI on a skin blemish using a handheld, drum-shaped device similar to that developed by Fernandes in 2002 [150–152].

tissue remodeling and vascular maturation, which results in the formation of a new, fully vascularized collagen layer and tightened skin with reduced blemish definition [152].

Microneedling in this fashion is associated with reduced disruption of skin architecture when compared to other cosmetic treatments that are highly ablative such as subcision, chemical peels, collagen injections, cortisone-like injections, cryosurgery, dermabrasion, and laser resurfacing [153]. The invasive nature of these methodologies can result in extended healing times and undesirable skin effects, including increased scarring and/or skin dyschromias (alteration in normal skin pigmentation) [154, 155]. In addition, nonablative microneedling has the advantage of being suited for delicate or hard-to-reach areas of the skin where ablative methods cannot be performed, for example, around the eyes. Currently, the most commonly used device used for cosmetic microneedling is an FDA-approved class I medical device known commercially as a Dermaroller. Based on the design first reported by Fernandes, the device is intended to be rolled across the skin, vertically, horizontally, and diagonally and, depending on the needle length used, is suitable for use in either a home or health care setting [41]. Treatment of skin aging is typically carried out using a device possessing true MNs i.e., needle height in the range of 100 to 1000 µm [156], whereas needles larger than 1000 µm, and therefore not strictly true MNs, are reserved for use by trained professionals for the treatment of scarring [156]. Subsequent modifications to the standard Dermaroller design in response to identified potential shortcomings have produced alternative forms of cosmetic microneedling devices. One such alternative is the Dermastamp (Figure 39.6), a miniaturized