From a completely optimistic point of view, the ultimate goal for every dentist performing a restorative and/or endodontic procedure should be to maintain the pulp vitality and functionality of the tooth without any discomfort for the patient. The pulp tissue is needed to provide nutrition, innervation and immunocompetence, with these acting as a defence mechanism and alerting to the presence of any external aggression.1

The pulp tissue may be exposed to the oral environment as a result of dental caries or by mechanical means when performing restorative or prosthetic procedures. Two possible treatment options in these types of cases are root canal therapy and tooth extraction; the former procedure is a good choice, whereas the latter should be avoided at all costs in order to maintain the patient’s oral health and natural function.2–4

A third alternative in the case of pulp exposure is to use conservative vital pulp therapy procedures, which include direct pulp capping, indirect pulp capping where the pulp is not fully exposed, and partial or total pulpotomies; this way, it is possible to maintain the vitality of the tooth, the nociceptive function and the body’s self-defence system. Thanks to the points mentioned previously, among others, it has been shown that teeth with no root canal therapy survive longer than those that have been treated endodontically.2, 5, 6

Next, we present two clinical cases in which the pulp tissue was exposed mechanically when carious tissue was removed. In both cases, it was managed to maintain the pulp vitality of the affected teeth by means of direct pulp capping. The vital pulp capping protocol suggested in this article is presented in the first case. The second case describes a treatment performed with long-term follow-up, where full formation of calcified tissue below the capping material could be observed by means of radiography. The treatment protocol was similar in both cases.

**Clinical Case 1**

The 24-year-old patient attended the dental clinic with transient pro-

**Clinical Case 2**
voiced pain in tooth #19 (Fig. 1). The diagnosis was reversible pulptis. The carious tissue was removed under complete isolation, producing two incisions of pulp exposure, with minimal bleeding (Fig. 2). Bleeding was stopped by applying pressure for 30 seconds using a cotton roll dampened with a sterile saline solution. The cavity was disinfected with 2.5% sodium hypochlorite (Fig. 3), and then white mineral trioxide aggregate (MTA, Produits Dentaires) was placed as a direct pulp capping material (Fig. 4). To ensure that the MTA was placed accurately, the MAP System micro-applicator for dental materials (Produits Dentaires) was used. This system allows the clinician to place the material exactly on the exposure site, and this avoids staining the dental walls, which could over time show pigmentation due to the material used (Figs. 5 & 6). Once the MTA was placed on the sites of pulp exposure and the deep parts of the pulp chamber roof, a light-curing calcium hydroxide paste was applied. This was used to protect the material (Fig. 7) and to be able to proceed to the bonding procedure, to put the final restoration of the tooth in place, a temporary non-radiopaque material was placed. This made it possible to ascertain the suitable thickness of the pulp capping material and its precise positioning at perforation level, while keeping the dental margin clear for a good bonding protocol (Figs. 13-15). It has been reported that the success rate of vital pulp therapy procedures may drop when the final restoration is put in place two days after the initial procedure.7 The MAP System is put in place two days after the initial procedure.8 The MAP System is an ideal case is a diagnosis of reversible pulpitis with no previous history of spontaneous or prolonged dental pain.9 It is generally accepted that a history of spontaneous pain or pain at night is associated with the existence of an irreversible pulp inflammation process.10,11 In these cases, the success of direct pulp capping may be questionable,12 although there are studies indicating that vital pulp therapy can be successful even in these situations.13-15

When it comes to the long-term success of conservative pulp procedures, it is extremely important to provide a final permanent restoration for the tooth that ensures a suitable marginal seal. The reason is that this last factor, in conjunction with the absence of bacterial contamination during the procedure, is among the most important factors to consider in order to avoid subsequent pulp inflammation.16,17 The success rate reported for vital pulp therapy procedures using MTA with a follow-up period of up to ten years is greater than 80%18— a fairly high percentage for a dental procedure within that functional period.

Clinical Case 2
The 35-year-old patient attended the dental clinic with transient provoked pain in tooth #4. The diagnosis was reversible pulptis. The same vital pulp therapy protocol described in the first case (Figs. 10-12) was followed, except that in this case, the permanent restoration was not put in place during the same session. In its place, a temporary non-radiopaque restorative material was placed. After seven days, it was possible to ascertain the suitable thickness of the pulp capping material and its precise positioning at perforation level, while keeping the dental margin clear for a good bonding protocol (Figs. 13-15). It has been reported that the success rate of vital pulp therapy procedures may drop when the final restoration is put in place two days after the initial procedure.7 The MAP System is put in place two days after the initial procedure.8 The MAP System is an ideal case is a diagnosis of reversible pulpitis with no previous history of spontaneous or prolonged dental pain.9 It is generally accepted that a history of spontaneous pain or pain at night is associated with the existence of an irreversible pulp inflammation process.10,11 In these cases, the success of direct pulp capping may be questionable,12 although there are studies indicating that vital pulp therapy can be successful even in these situations.13-15

When it comes to the long-term success of conservative pulp procedures, it is extremely important to provide a final permanent restoration for the tooth that ensures a suitable marginal seal. The reason is that this last factor, in conjunction with the absence of bacterial contamination during the procedure, is among the most important factors to consider in order to avoid subsequent pulp inflammation.16,17 The success rate reported for vital pulp therapy procedures using MTA with a follow-up period of up to ten years is greater than 80%18— a fairly high percentage for a dental procedure within that functional period.