

After Traumatic Dental Injury, When Should Implants be placed?

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Short Communication

Dental implants can be used to replace teeth that have been lost due to a serious dental injury. Dental implants, on the other hand, behave like ankylosed teeth and should not be implanted in growing people due to the risk of infraposition. This risk can be decreased by ensuring that skeletal growth is halted and that incisal support is optimal. Implant placement might be immediate, early, conventional, or late, depending on the severity of the trauma, remaining growth, and hard and soft tissue characteristics. The timing should allow for an observation period to accurately assess the prognosis of nearby teeth that have been injured at the same time. After a traumatic dental injury in a young person, orthodontic alignment is frequently required to provide symmetric dental conditions around the facial midline, allow implant placement in the correct 3-dimensional position for later prosthetic reconstruction, and ensure sufficient mesiodistal space with at least 1.5 mm of healthy alveolar bone between the future implant and neighboring teeth. Bonded retainers and a night splint should be utilized to maintain space and stable occlusion. As an interim replacement, a partial prosthesis is frequently indicated. If a fixed provisional prosthesis is needed, it must not interfere with the remaining growth and incisal support while still allowing for good oral hygiene. After a catastrophic oral injury, the timing of dental implant implantation is critical for long-term functional stability and aesthetics of the implant-supported prosthetic repair. The remaining craniofacial growth, the extent of the trauma, hard and soft tissue problems, the necessity for orthodontic alignment, incisal contact, and occlusal stability are all factors that can alter the predictability of implant treatment. In the event of tooth loss due to traumatic dental damage, dental implant therapy is a viable treatment option. However, TDI is more common in young patients whose facial skeleton is still growing, making dental implant implantation impossible due to the danger of infraposition. Furthermore, injury to the gingiva and alveolar bone generally necessitates a longer healing time. Finally, even though the situation may appear dire and the prognosis gloomy just after the TDI, comprehensive replantation, fixing, and suturing may give favorable healing conditions for long-term tooth preservation and should be considered first whenever possible. When previously traumatized teeth are pronounced hopeless and dental implants are recommended for tooth replacement, the best time to insert the implants must be established. This article will cover the timing of implant placement in adults following TDI, the challenges of treating growing individuals, the prerequisites for later implant therapy, and methods to monitor growth, as well as a list of professionalization and retention options until dental implants can be placed predictably.

The amount of the TDI and the local anatomic circumstances at the implant location determine the time of implant placement in adults. When a tooth avulsion occurs without causing harm to the supporting hard and soft tissues, the situation can be similar to that of a tooth extraction, and implant placement can be scheduled accordingly.

Immediate placement (type 1) occurs within 24 hours of tooth extraction; early placement (type 2) occurs after 6-8 weeks; conventional placement (type 3) occurs after 3 months, and late placement (type 4) occurs after more than 6 months.

Because TDI is never planned, immediate implant implantation is rarely a viable option. If the patient presents with an avulsed tooth that cannot be located or a non-restorable tooth remnant and the following conditions are met: intact socket walls and a facial bone wall thickness of at least 1 mm, thick soft tissue phenotype, no acute infection at the implant site, and bone apical and palatal to the socket to provide ideal primary implant stability, an immediate approach can be considered. If none of these criteria exist, rapid implant implantation may result in an aesthetically unappealing retraction of the facial mucosal margin as well as implant failure.

In most cases, early implant placement is recommended if the preexisting bone can give optimal implant stability. Soft tissue closure will be complete after six to eight weeks of recovery. However, to offer long-term support for the facial soft tissues, simultaneous contour augmentation of the facial bone wall is frequently required.

In cases where the bone conditions do not give sufficient primary implant stability for the implant in the restoratively proper 3-dimensional location using an early implantation strategy, 12 to 16 weeks of healing will allow significant bone healing in the socket.

In circumstances when there has been severe harm to the supporting hard and soft tissues, a late implant insertion strategy may be used. In circumstances when the eventual prognosis of nearby wounded teeth mandates a longer period of surveillance, postponed implant placement may be considered.

Dental implants should not be placed in growing individuals due to the possibility of implant infraposition. Implants emerge like ankylosed teeth and do not follow the growth of the alveolar process or erupt in synchronization with surrounding teeth. The risk of implant infraposition is greatest in the anterior maxilla, which is also the most prone to TDI and the most cosmetically exposed location.

Dental implants should not be implanted in growing people to avoid infraposition. With aging, the typical degree of implant infraposition has been demonstrated to diminish. When examined 5-18 years following implant placement, even mature adults (>40 years of age) may exhibit implant infraposition of >1.5 mm. Currently, there is no age limit beyond which implants can be implanted without the risk of infraposition. The degree of infraposition of dental implants has been linked to the amount of body height that remains. Patients with no evidence of continued bone growth, on the other hand, can develop an infraposition of up to 2.2 mm. As a result, halting skeletal growth cannot be employed as a single preventative approach for implant infraposition. Radiographs of the hands and wrists are used to determine the patient's skeletal age and, in particular, to forecast the adolescent growth spurt. However, they are not excellent for determining when craniofacial growth stops. The characteristic of the minor continuing eruption of adjoining teeth is most likely to blame for the late infraposition of implants put in adult patients. As a result, stopping skeletal growth isn't the only way to avoid implant infraposition. Radiographs of the hands and wrists are used to determine the patient's skeletal age, as well as to forecast the teenage growth spurt. They are, however, ineffective in determining when craniofacial growth stops. The phenomenon of minor continuing eruption of adjoining teeth is most likely to blame for the late infraposition of implants placed in adult patients.

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The temporary restoration is more complicated. The patient usually prefers a fixed treatment, such as a resin-bonded bridge, and does not want to worry about the missing tooth/teeth until the implant is placed. Resin-bonded bridges are now most commonly retained on just one abutment tooth. However, in terms of recurrence of rotations and malalignments after orthodontic treatment, this technique will not prevent relapse. A resin-bonded bridge retained on two abutment teeth, on the other hand, may obstruct continued growth, resulting in central incisor impaction and an unstable condition when the bridge is removed. Furthermore, occlusal contact with the metal frame may result in abutment teeth face displacement.

There's also the possibility of one of the abutment teeth losing its hold. There is a substantial chance of caries and return of the earlier malposition of one or more teeth if this goes undetected. Finally, removing and remounting the bridge during subsequent bone augmentation and implant procedures is difficult and dangerous to nearby teeth. If a permanent solution is required, a temporary anchorage device can keep a fixed provisional solution without interfering with growth or interincisal support. This temporary solution will not keep any orthodontic treatment in place, so it should be used in conjunction with bonded retainers and a splint. A removable partial denture is usually advised because it allows access to adequate oral hygiene and can be easily adjusted during the surgical phases of the implant therapy.