The predictably and success of implant based therapy rests on surgical implant placement in predetermined, restoratively driven locations of the jaws after adequate consideration is given to the native soft tissue, hard tissue and occlusion. It is important that implants are placed, keeping in mind the ideal three dimensional position, to optimize the prosthetic outcome (1). However, before an implant can be placed in its correct restorative position, the assessment of local hard, soft tissue is important. In the absence of sufficient hard and soft tissue contours, augmentation procedures may be required to improve implant sites.

LITERATURE REVIEW

Although there have been several studies which have discussed hard tissue and soft tissue augmentation techniques for implant based treatment (2-6), the traditional emphasis has always been on the assessment of hard tissue profile and its development prior to soft tissue assessment (7). Various bone grafting techniques and materials have been studied to augment the horizontal and vertical dimension of the alveolar ridge such as guided bone regeneration (GBR), onlay/veneer grafting, combinations of on lay, veneer, interpositional inlay grafting, distraction osteogenesis, ridge splitting, free and vascularized autografts for discontinuity defects, mandibular interpositional grafting, and socket preservation (6,8-10). Satisfactory results in terms of implant survival have been demonstrated in systematic reviews comparing these techniques and no technique has been demonstrated to be superior as compared to others (6,8-11). Thus, the current evidence indicates that any of the grafting procedures, after giving due consideration to their advantages and disadvantages, can successfully be used for ridge augmentation.

Unlike hard tissue augmentation, soft tissue assessment prior to implant placement has not been studied as extensively. However, in the last few years, there is growing evidence demonstrating the importance of the presence of keratinized tissue around implants and its role in maintaining lower plaque accumulation and tissue inflammation (12-16). Thus, the present literature indicates that keratinized mucosa around implants is considerably different from that around natural teeth (17,18). A direct anchorage of the connective tissue to the implant surface is not possible due the absence of periodontal ligament and cementum as seen in natural teeth. Instead, collagen fibers run parallel to the implant surface and the mechanical quality of this attachment is low (17,18). On a biologic level, it would be favorable to have a zone of keratinized tissue around dental implants. However, the need for keratinized tissue around implants is highly debated. There have been several studies which have documented positive associations between the presence of keratinized mucosa around implants and improved soft tissue health (19-21). Further, lack of keratinized mucosa around implants has been demonstrated to make the peri-implant region more susceptible to plaque-induced tissue destruction (22). Painful oral hygiene has been reported due to the absence of the keratinized tissue surrounding implants, and this has been attributed to the mechanical irritation caused by the mobility of the non-keratinized tissue under function (21,23). Conversely, limited need for keratinized tissues around implants to maintain health and tissue stability has also been shown (24). However, it must be noted that the majority of systematic reviews have indicated a positive relation between presence of keratinized tissue around implants and clinical parameters such inflammation and plaque accumulation (13-16). Thus, the present literature indicates that keratinized mucosa around implants would improve the predictability of implant based treatment for long-term maintenance.

Importance of keratinized tissue around dental implants

The traditional literature on grafting procedures has always been focused on development of alveolar hard tissue dimensions to allow implant placement in restoratively driven positions, with adequate stress on the available keratinized tissue around implants. There have been cases where implants have been placed in regions without sufficient keratinized tissue (Figures 1 and 2). The anatomy and histology of the mucosal attachment around dental implants is considerably different from that around natural teeth (17,18). A direct anchorage of the connective tissue to the implant surface is not possible due the absence of periodontal ligament and cementum as seen in natural teeth. Instead, collagen fibers run parallel to the implant surface and the mechanical quality of this attachment is low (17,18). A direct anchorage of the connective tissue to the implant surface is not possible due the absence of periodontal ligament and cementum as seen in natural teeth. Instead, collagen fibers run parallel to the implant surface and the mechanical quality of this attachment is low (17,18).
Gharpure et al

DISCUSSION

Guidelines to assess and develop keratinized tissue around implants

Although the need for keratinized mucosa around dental implants for success is controversial, as discussed earlier, several systematic reviews have shown that its presence is essential to maintain optimal implant health (Table 1) (13-16). For those implants placed without any keratinized tissue as seen in Figure 3, studies have shown a higher buccal crestal resorption and a more apical soft tissue position when compared to those implants which have a 2 mm band (25). A better prognosis has been demonstrated in implants having a band of 2 mm keratinized tissue in terms of plaque accumulation, tissue inflammation, mucosal recession and attachment loss (12,13). Additionally, a significantly lower crestal bone change in bone-level implants placed in an initial keratinized tissue thicknesses of 2 mm or less has been shown in previous studies (26).

CONCLUSION

There is a need for a well-organized protocol for assessing and planning soft tissue augmentation for implant site management with strong emphasis on bone tissue augmentation, prior to hard tissue assessment and grafting. The current evidence indicates that this would improve the prognosis of the treatment in terms of long-term implant health and maintenance. Thus, at the time of clinical examination for implant placement, it is critical to identify whether adequate keratinized tissue is available at the implant site and treatment plan the necessary soft tissue augmentation procedure if it is insufficient.

REFERENCES


