Many factors need to be considered in the surgical placement and restoration of dental implants. These factors are almost too many to list, but they include all clinical issues that go into making a decision of what, when, where and how to replace a missing tooth or teeth.

The history of implants has seen an evolution in design, shape, surface area, size, etc. These changes have occurred in both the body of the implant and prosthesis that attaches to the implant body. The width and length of an implant are factors that are considered in the surgical placement of implants. Is the width of the implant important, and if so, how important is it? Likewise, the length is also a variable factor that needs to be evaluated. Are width and length crucial factors or are they of minor consequence?

In the first phase of dental implant history the placement of implants were limited to the mandibular anterior area mesial to the foramen. The protocol that was recommended at that time included implants placed to engage the inferior border of the mandible. Length was considered very important in order to satisfactorily place implants according to that parameter. At that time in the early days of endosseous implants there was little variability in width.

Implants, because of their success, subsequently were applied to all areas of the mouth. In order to accommodate the various anatomical areas several innovations were introduced including acid etching and hydroxyapatite surfaces. Greater variations in width were also introduced. The ability to vary the width based on the anatomical area seems perfectly logical, however is it really necessary? It is generally accepted that wide diameter implants improve the ability of posterior implants to accommodate greater occlusal forces, provide a wider base for the prosthesis and avoid situations where two smaller implants would be necessary. Indications would include use in areas of poor bone quality, inadequate bone height, immediate replacement of smaller non-osseointegrated implants and in immediate extraction situations. Is there any proof that increasing the width will aid the longevity of an implant. How much length is necessary for long term success or does greater length increase the longevity?

The answers to these questions may appear obvious. Wouldn't increasing the width and length naturally improve long term success? The past twenty to thirty years have produced many articles and studies about implants and what leads to success.
Regarding width, several earlier studies showed a decreased success rate for implants 5.0m or wider. Closer examination of these studies showed that other variables accounted for the reduced success rate such as a non-polished collar area, use in anterior situations and non-tapered design. These factors could explain the unfavorable outcomes. Many subsequent and more recent studies have reported no reduced success rates for wide diameter implants versus standard diameter. Conversely, with the use of smaller than standard diameter implants (less than 3.0mm) success rates have ranged from 68-95%. Depending upon their intended use the poorer success rates can be tolerated such as in temporary anchorage devices for orthodontic movement where their removal (if necessary due to mobility or infection) and replacement is expected. Their loss can also be tolerated in over-denture situations where there are several other supporting implants. In single tooth or fixed prosthesis their loss would be more problematic.

Length of implant has also been the subject of many studies. A recent literature review appeared in the Journal of Periodontology that evaluated 300 articles related to implant length. Their conclusion was that "short rough-surface implants is not a less efficacious treatment modality compared to the placement of conventional rough-surface implants in either partially or totally edentulous patients. Their definition of short implants was less than 10.0mm.

In conclusion, when deciding upon the width and length desired for an implant it is not necessary to either expect a reduced success rate for the wide diameter implants or attempt to place the longest implant possible. For mini (less than 3.0mm) implants their reduced success rate needs to be taken into consideration based upon their intended function.

NEXT ISSUE: Are Their Differences in Success Rates Between Implant Systems?

Do you have suggestions for future topics?

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