

# When the Solution Becomes A Problem: An Educational Discussion

## INTRODUCTION

Dental implant treatments have developed into a multidisciplinary therapy alternative,<sup>1</sup> mainly because of significant functional and biological advantages and excellent long-lasting results, with success and survival rates of >95%.<sup>2</sup> These factors have given clinicians the opportunity to rethink the principles of reconstruction of edentulous dentitions,<sup>1</sup> and implant therapy increasingly requires accurate clinical judgments.

Nevertheless, the widespread interest in implant dentistry has misled clinicians into regarding implant-supported reconstructions as better solutions (because of their greater longevity) than tooth-borne reconstructions.<sup>1</sup> These professionals tend to overlook the fact that interventions involving surgical procedures for the insertion of devices, such as dental implants, are associated with risk,<sup>3</sup> which could further be associated with the outcomes of implant therapy.<sup>4</sup>

Another inaccurate, but prevalent, idea in implant dentistry is that osseointegration alone represents a successful outcome in implant treatments.<sup>5</sup> This viewpoint may mistakenly lead unprepared dental professionals into making poor clinical judgments and, consequently, choosing inappropriate placement sites. These professionals often disregard the basic assumption in implant therapy, ie, that a proper implant position is a determinant for obtaining optimum outcomes in implant therapy. If the implant is not carefully placed, then it might constitute a major risk factor for successful rehabilitation.

Thus, considering that a correct clinical judgment is imperative in implant dentistry,<sup>6</sup> this study discusses some issues related to the impact that professional knowledge and skill has on patient-centered outcomes. By describing 3 examples of inaccurate treatment decisions through radiographic images (2 panoramic radiographs and 1 periapical X ray) illustrating complete failure in dental implant rehabilitation, this discussion addresses the importance of accurate clinical judgments supported by evidence-based knowledge.

## RADIOGRAPHIC CASES

### Case 1

The patient, aged 82 years, presented at our clinic to repair a fractured ceramic fixed anterior prosthesis. After performing a thorough anamnesis, we conducted an accurate clinical examination and requested a panoramic radiograph. During the clinical examination, the patient remarked that the implant

treatment was performed a few years previously, and the reason for choosing the therapy was the need to solve both esthetic and masticatory problems. Nevertheless, the condition had not been solved until then.

Radiographic examination revealed that the implant placement, both in upper and lower jaws, was unsatisfactory (Figure 1). The upper jaw implant had been placed through the first premolar (12) root and touched the root apex of the canine (11), and the lower jaw implant had been placed close to the second premolar (35) root. Vitality testing showed that all dental elements involved (11, 12, and 13) were non-vital.

Despite improper implant placement, prosthetic treatment had been performed on the implants, but the patient had not been informed of the likelihood of implant failure due to inaccurate placement with consequent impairment of adjacent teeth.

Eventually, a diagnosis was made, but the patient decided not to follow our recommendation for personal reasons.

### Case 2

The patient, aged 54 years, presented at our clinic with a panoramic radiographic examination and reported having been promised a total mandibular fixed implant-supported prosthesis in the previous year. A thorough anamnesis followed by an accurate clinical examination showed that the patient had undergone surgical implant treatment 1 year previously, but the prosthetic procedure had not been initiated. Surprisingly, the professional in charge stopped the treatment.

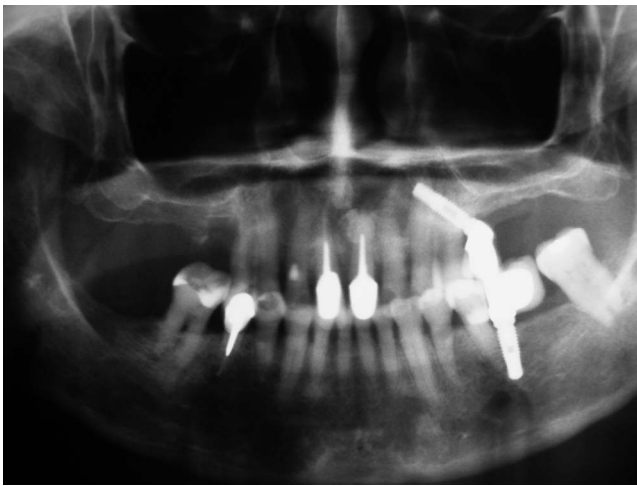
Clinical and radiographic examinations revealed that 4 implants had been improperly placed for a total fixed implant-supported prosthesis (Figure 2). The suggested solution involved removing the posterior implant on both sides and placing two other implants between the mental foramina. However, after learning the case limitations and our treatment planning strategy, the patient opted against the suggested therapy.

### Case 3

The patient, aged 62 years, was referred to our practice by a colleague for implant prosthesis in the first premolar region (12). We performed a thorough anamnesis and proceeded with an accurate clinical examination. We took a periapical radiograph, which showed that the implant had reached the canine root. Detailed information on the case was provided to the patient who was referred back to the clinician responsible for the treatment.

## DISCUSSION

Causality must be established to identify a true risk factor.<sup>2</sup> In the reported cases, the causative factor leading to failure



**FIGURE 1.** Implant placement, both in the upper and lower jaws, was far from satisfactory.

seemed to be the unpreparedness of low-skilled professionals who lacked the ability to successfully perform implant therapy.

Implantology education has become increasingly important, and several courses have been developed by universities and non-university institutions.<sup>7</sup> As a result, more professionals are performing dental implant treatments, which is a praiseworthy advancement in dentistry. However, the desired quality of educational courses may be compromised, with a direct impact on the professionals' reputation. Although some programs are more comprehensive and last up to 3 years with full attendance,<sup>7</sup> others last only for a few days. Yet, regardless of the course length, the question arises whether dentists participating in these courses can successfully perform any kind of implant therapy.

We agree that a dentist should acquire the level of skills and competence desired within implant dentistry and accordingly advance through an educational pathway of increasing complexity.<sup>7</sup> Additionally, continuing professional development should be regarded essential for dentists to maintain their clinical skills, to stay updated on new scientific developments and technology, and to safely incorporate these techniques into clinical practice.<sup>8</sup> After all, high-quality clinical practice should be every oral surgeon's primary goal.

As oral health care providers, dentists must be aware that



**FIGURE 2.** Four implants had been improperly placed for a total fixed implant-supported prosthesis.



**FIGURE 3.** Implant had drastically reached the canine root.

their knowledge, skills, and judgment have to be used to protect and restore their patients' well-being.<sup>6</sup> Thus, all diagnostic aids, such as panoramic radiographs and diagnostic casts mounted on articulators, should be considered because they provide important data for the evaluation of each case.<sup>9</sup> In addition, these aids will ideally be used to evaluate patients' medical and dental histories, and surgical guides of accepted standards of care must be studied and considered before initiating any oral implant procedure.<sup>9</sup>

In doing so, the oral clinician will be able to make better decisions and reach more accurate clinical judgments. Presenting patients with the opportunity to restore their smiles by placing dental implants is highly recommended. However, dental surgeons must be aware that carelessly planned treatments as well as professional imprudence or ineptitude may cause several undesired outcomes for both dentists and patients. This is why we urge extreme caution and careful clinical judgment supported by evidence-based knowledge in any dental implant therapy.

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#### NOTE

The author does not have any conflicts of interest.

## REFERENCES

1. Lang NP. A quarter of a century as a trendsetter in implant dentistry. *Clin Oral Implants Res.* 2014;25:1–2.
2. Buser D, Sennerby L, De Bruyn H. Modern implant dentistry based on osseointegration: 50 years of progress, current trends and open questions. *Periodontol 2000.* 2017;73:7–21.
3. Salvi GE, Brägger U. Mechanical and technical risks in implant therapy. *Int J Oral Maxillofac Implants.* 2009;24 Suppl:69–85.
4. Cochran DL, Schou S, Heitz-Mayfield LJ, Bornstein MM, Salvi GE, Martin WC. Consensus statements and recommended clinical procedures regarding risk factors in implant therapy. *Int J Oral Maxillofac Implants.* 2009; 24 Suppl:86–89.
5. Faverani LP, Ferreira GR, Gaetti-Jardim EC et al. Implantes osseointegrados: evolução sucesso. *Salusvita Bauru.* 2011;30:47–58.
6. Rutkowski JL. Clinical judgment and evidence based knowledge: a prescription for clinical confidence. *J Oral Implantol.* 2016;42:451–452.
7. Matheos N, Wismeijer D, Shapira L. Implant dentistry in postgraduate university education. Present conditions, potential, limitations and future trends. *Eur J Dent Educ.* 2014;18 Suppl 1:24–32.
8. Ucer TC, Botticelli D, Stavropoulos A, Cowpe JG. Continuing professional development in implant dentistry in Europe. *Eur J Dent Educ.* 2014;18 Suppl 1:33–42.
9. Winkler S. Extraordinary implant failure. *J Oral Implantol.* 2010;36: 391–400.