



Implant dentistry tips for primary care

By G. E. Bryce¹ and E. McColl²

Dental implant placement and restoration is becoming increasingly common within primary care.¹ With this in mind, predictable implant therapy can only be achieved with appropriate assessment, case selection, treatment planning and provision.

We are often asked by colleagues: 'how do I get started in implant dentistry?' In our view, you need to have a sound understanding of case assessment and diagnostic principles and be able to apply these appropriately, with the construction of a considered treatment plan. Whilst core surgical and restorative skills, achieved via experience within other dental disciplines, will greatly help with initial implant cases, ideally, the formative dental implant clinician should seek mentorship from an experienced colleague. Within this article, we will outline the key factors that we consider most important and discuss issues that we have experienced from our own clinical trial and error, questions that have been frequently posed, or observations of failing treatments, that could have been avoided if cases had been appropriately planned.

Assessment and case selection

1. Assessment

- a. Identifying the factors that will influence outcome is crucial to success:²
 - i. Patient factors – contra-indicating medical history, smokers, poor compliance with oral hygiene – bleeding/plaque scores >10%, bruxists or uncontrolled parafunction
 - ii. Soft tissue factors – high lip line, thin tissue biotype, lack of keratinised mucosa, high scalloped gingiva and high susceptibility to periodontitis pose challenges for implant treatment, and consent and consideration of risks is crucial
 - iii. Hard tissue factors – tooth/root orientation, dento-alveolar defects (reduced bone volume), proximity of anatomical features (maxillary sinuses, incisive nerve foramen, IDN, lingual sulcus/shelf).

2. **Imaging.** We advise the taking of a limited volume CBCT scan for most placements³ as this facilitates optimal insight/planning of the implant in harmony with anatomical structures (such as the maxillary sinuses, IDN and incisive canals and adjacent teeth) equating alveolar bone volume to implant length and platform width and integration with the prosthetic rehabilitation of the implant.

3. **Case selection.** When setting out on your implant journey, choose simpler cases for implant placement, with mentorship. In our opinion, the ideal learning case is the single bounded premolar site, with adequate keratinised mucosa, paralleled adjacent roots and bone volume that provides a minimum of 7 mm interproximal, a bucco-palatal dimension of 7 mm and sufficient height to place a 10 mm implant.

Treatment planning

4. **Prosthetic-guided implant planning.** The prosthetic rehabilitation should be foremost within the plan for implant placement.⁴ The use of diagnostic wax-ups, computer planning software, alongside CBCT volumes, enables the construct of a surgical plan to direct three-dimensional placement (bucco-lingual, mesial-distal and vertical planes). The implant plan must account for the implant system's prosthetic interface (for instance, tissue- or bone-level systems) and whether additional abutments or platform-switching components are required, influencing the depth of placement necessary to achieve a natural mucosal emergence profile, from implant to crown. Surgical guides, constructed from the treatment plan work-up, are recommended for all formative implant placements, with designs ranging from simple suck-down Essix-style appliances to fully guided 3D-printed devices.
5. **Placement strategy.** The plan should account for the rationales that underpin immediate, early and delayed implant strategies, with application as appropriate.⁵ If extraction is required, ensure this is undertaken as atraumatically as possible (Luxators, periostomes) and consider alveolar ridge/socket preservation techniques, if immediate or early strategies are not feasible (patient too young, extensive apical infection or insufficient bone apical to the socket to facilitate primary stability of the implant). The decision on purchasing an implant system should also consider availability of company, educational and mentor support, validated implant outcome data and manufacturer resilience (to ensure that components will be available throughout the anticipated lifespan of the implant).
6. **Additional surgical measures.** The plan should encompass the need for both pre-implant grafting (for example, block-grafting of sinus floor elevation procedures) and grafting at the time of implant placement. It is crucial to stay within your competence zone given the significant complications that may ensue during and after such procedures.^{6,7} Appropriate referral in these cases is similarly essential in order to optimise outcomes for patients. Comprehensive training and mentorship is crucial to developing skills in this area.
7. **Immediate prosthetic management.** The immediate prosthetic replacement of the implant site should avoid mucosal loading of the implant site, to reduce the risks of mucosal recession or adverse healing. Options include: Essix retainer with pontic, flangeless acrylic RPD with extension onto the palatal surfaces of adjacent teeth to provide tooth support, resin-bonded bridge, cemented with glass ionomer cement (for ease of removal).

Surgical placement

8. Core surgical skill competence

- a. Soft tissue and flap management. In our opinion, experience with careful raising of mucoperistial flaps and suturing ➤

¹Consultant in Restorative Dentistry, Defence Centre for Rehabilitative Dentistry, Evelyn Woods Road, Aldershot, GU11 2LS; ²Director of Clinical Dentistry, Peninsula Dental School (University of Plymouth)

- « should be gained within oral or, ideally, periodontal surgery procedures before considering implant surgery. In early cases, the planned flap design can be drawn on models or photographs to help pre-operative visualisation.
- b. Equipment – in our practice, a range of instruments are recommended to assist with precise surgical management of the soft tissue, including: round handled scalpels (allowing the scalpel to be finely manipulated, in a similar fashion to a pen), 15c or microblade, Papillae elevators – specific, flat plastic, Buser P5, and Castroviejo Suture holders. The surgical unit must have motor capable of controlling torque and speed settings to implant manufacturer guidelines and capability to provide sterile saline cooling of the surgical bur.

Prosthetic rehabilitation

9. **Provisional restorations.** Provisional restorations can play an important role in achieving optimal aesthetic and functional outcomes. Specific consideration should be given to the use of provisional restorations when there is the requirement to: develop the mucosa/papilla within the aesthetic zone, restore multiple teeth/implants, altering or re-organising the occlusal scheme, within a phased treatment delivery strategy or when compliance relapses.

10. Definitive restoration

- a. Emergence profile for aesthetics and cleansibility. The close coordination of care with the dental laboratory technicians may help achieve an emergence profile of implant-retained crowns that optimises aesthetics and mucosal health. With regards the latter, harmonising the emergence profile to the mucosal tissues may help prevent supracrestal tissue inflammation, which may be a pre-cursor to peri-implantitis.⁸
- b. Screw/cement retention – screw-retained restorations eliminate the risks of soft tissue irritation created by cement excess, which may be associated with cement-retained restorations. In addition, from a retrievability and maintenance perspective, screw-retained restorations are advantageous, when compared to cement-retained counterparts.⁹ However, the requirement to orientate the conventional screw channel within the cingulum plateau of the anterior restoration is often not feasible, without extensive bone grafting or impairing the aesthetic emergence of the crown. The challenge of maintaining screw channel orientation is further increased when multiple implants are required to support the restoration.
- c. Advantages of angle correction systems. Angle correction systems may be employed at both the implant (commonly for single-unit restorations) and abutment level (for full arch implant-supported fixed prostheses).¹⁰ At the implant level, angle correction systems employ multi-directional screw-driver heads to allow torqueing of the restoration screw at an angle up to 30 degrees from the implant orientation. Subsequently, these systems offer the benefits of conventional screw retention retrievability, whilst allowing the implant to be placed in the optimal site for osseointegration and restoration emergence.

Maintenance and planning for complications

11. **Maintenance.** Compliance with biofilm control around the implant/restoration interface is key to longer-term implant success and survival, with the importance of this highlighted to the patient during the consent process. Oral care of the implant must encompass both brushing and the use of adjuncts such as TePe or, our preferred method, of using floss (Super), wrapped around the implant and 'toweled' below the mucosal margin. Additional adjuncts (such as water/air flossers) may be useful but should not replace mechanical plaque removal.

- a. Splint therapy is essential for implant prostheses' survival, if patients have parafunctional habits.

12. Recall and review

- a. The importance of recall should be emphasised as a component of the consent phase for implant therapy.
- b. Initial review of the implant restoration should be three months post-rehabilitation, to reinforce oral hygiene compliance.
- c. Further review should be at 12 months for the taking of a six-point pocket chart^{11,12} and LCPA to assess peri-implant soft tissue and bone stability. CGDent guidelines suggest a baseline radiograph be taken at the time of completion of the prosthodontic phase of treatment, with views recommended after a further 12 months. Radiographs may then be taken at intervals of up to five years³ with close monitoring of clinical parameters determining intervals.

Conclusions

As discussed above, planning, preparation, education, experience and mentoring are in our opinion the key to successful implant dentistry. The above tips can be considered as a useful checklist of key elements to consider in implant dentistry in primary care. ■

References

1. Public Health England. National Dental Epidemiology Programme for England: Oral health survey of adults attending general dental practices 2018. 2020. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/891208/AIP_survey_for_England_2018.pdf (accessed March 2022).
2. International Team for Implantology. SAC Assessment Tool – Step by step guidance to risk assessment in implant dentistry. Available at: <https://www.iti.org/tools/sac-assessment-tool> (accessed March 2022).
3. Horner K, Eaton K A (eds). *Selection criteria for dental radiography*. Third edition. London: FGDP, 2018.
4. Garber D A, Belser U C. Restoration-driven implant placement with restoration-generated site development. *Compend Contin Educ Dent* 1995; **16**: 796–798.
5. Buser D, Chappuis V, Belser U C, Chen S. Implant placement post extraction in esthetic single tooth sites: when immediate, when early, when late? *Periodontol 2000* 2017; **73**: 84–102.
6. Barone A, Santini S, Sbordone L, Crespi R, Covani U. A clinical study of the outcomes and complications associated with maxillary sinus augmentation. *Int J Oral Maxillofac Implants* 2006; **21**: 81–85.
7. Herford A S, Dean J S. Complications in bone grafting. *Oral Maxillofac Surg Clin North Am* 2011; **23**: 433–442.
8. Jepsen S, Berglundh T, Genco R *et al*. Primary prevention of peri-implantitis: managing peri-implant mucositis. *J Clin Periodontol* 2015; **42 Suppl 16**: S152–S157.
9. Priest G. A current perspective on screw-retained single-implant restorations: a review of pertinent literature. *J Esthet Restor Dent* 2017; **29**: 161–171.
10. Cavallaro Jr J, Greenstein G. Angled implant abutments: a practical application of available knowledge. *J Am Dent Assoc* 2011; **142**: 150–158.
11. Berglundh T, Jepsen S, Stadlinger B, Terheyden H. Peri-implantitis and its prevention. *Clin Oral Implants Res* 2019; **30**: 150–155.
12. British Society of Periodontology. The good practitioner's guide to periodontology. Revised March 2016. Available at: https://www.bsperi.org.uk/assets/downloads/good_practitioners_guide_2016.pdf (accessed March 2022).