The role of the general dental practitioner in the implant journey

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Key points

- Many implantologists will prefer an immediate placement of the implant and will prefer the consultation to be before extraction of a hopeless tooth.
- Improving the quality of discussions with the patient and referral letters can improve consultations and outcomes.
- There are a number of considerations for general dentists when assessing implants in routine examinations; early referral back can improve patient outcomes.

Abstract

The relationship between referring dentist and implantologist can be crucial in making the treatment journey as efficient and effective as possible for patients. There are a number of considerations to discuss to allow effective communication of options with the patient, as well as the long-term management of these cases once returned to general practice.

Introduction

General dental practitioners (GDPs) are fortunate to have a host of roles in their patients' oral health journeys, from delivering primary care to facilitating and managing patients through a specialist referral for treatment. This is extremely prominent in the facet of implant dentistry, where the long-term upkeep of the treatment is vital to success, and patients tend to see the implantologist for the initial treatment and perhaps annual reviews, whereas the generalist is likely to see the patient more regularly, giving the opportunity to catch complications sooner. Implantology can also be an area of dentistry that is most obscure for generalists as it falls outside of any great detail of teaching at the undergraduate level. For the general dentist, surgical placement and knowledge tend to come as the result of highly targeted continuing professional development for those outside of the periodontic or prosthodontic training pathways and so can remain a daunting topic for many GDPs.

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Refereed Paper.
Submitted 18 February 2024
Revised 29 April 2024
Accepted 29 April 2024
https://doi.org/10.1038/s41415-024-7431-7

There are a number of stops along the implant journey where our communication, both with the patient and with those receiving our referral, is vital. These can essentially be broken down into:

- Discussion of options with the patient before agreeing to referral
- Referral contact with the implantologist
- Management of any post-surgical concerns
- Long-term maintenance, including encouraging reviews and reassessment as required.

Given these considerations, it is vital to communicate well and build good relationships with the implantologists to whom you refer.

Before referral

When identifying a patient for a potential implant referral, it is good practice to discuss all relevant, suitable options for the replacement of one or multiple missing teeth. This can range from no treatment to orthodontics, dentures, bridges and implants. When discussing implant care, however, it is invaluable to already have an awareness of your desired implantologist's workflows and preferences when dealing with various situations to be able to quote the patient correctly with regard to treatment timeframes and costings. This will allow the patient to make a more informed decision as to whether the implant will be a plausible option for them in relation to the alternatives. This can be invaluable in maintaining a good relationship with the implantologist by ensuring patients do not attend consultations when the final terms are not suitable.

Medical considerations

There are a number of factors to consider when assessing implant placement:

- The medical status of the patient and whether they are suitable for the possible surgical requirements of implant placement
- Medications that may have an effect at the time of surgery, such as anti-coagulation medication, should be noted[1]
- Medications that may affect healing, such as bisphosphonates and steroid use, should also be taken into consideration[2]
- Other conditions affecting the systemic health of the patient, as well as being risk factors for peri-implantitis, such as uncontrolled diabetes and smoking, must also be noted and discussed with the patient
- Another area which is becoming increasingly prevalent in research is the importance of Vitamin D in dental implantology, with deficiency shown to result in a reduction of bone formation, as well as bone-to-implant contact, both crucial in osseointegration. This is particularly the case when other co-morbidities such as diabetes are involved.[3] Given the prevalence of vitamin D deficiency in the UK, this may form an important part of the pre-surgical screening in implant care.

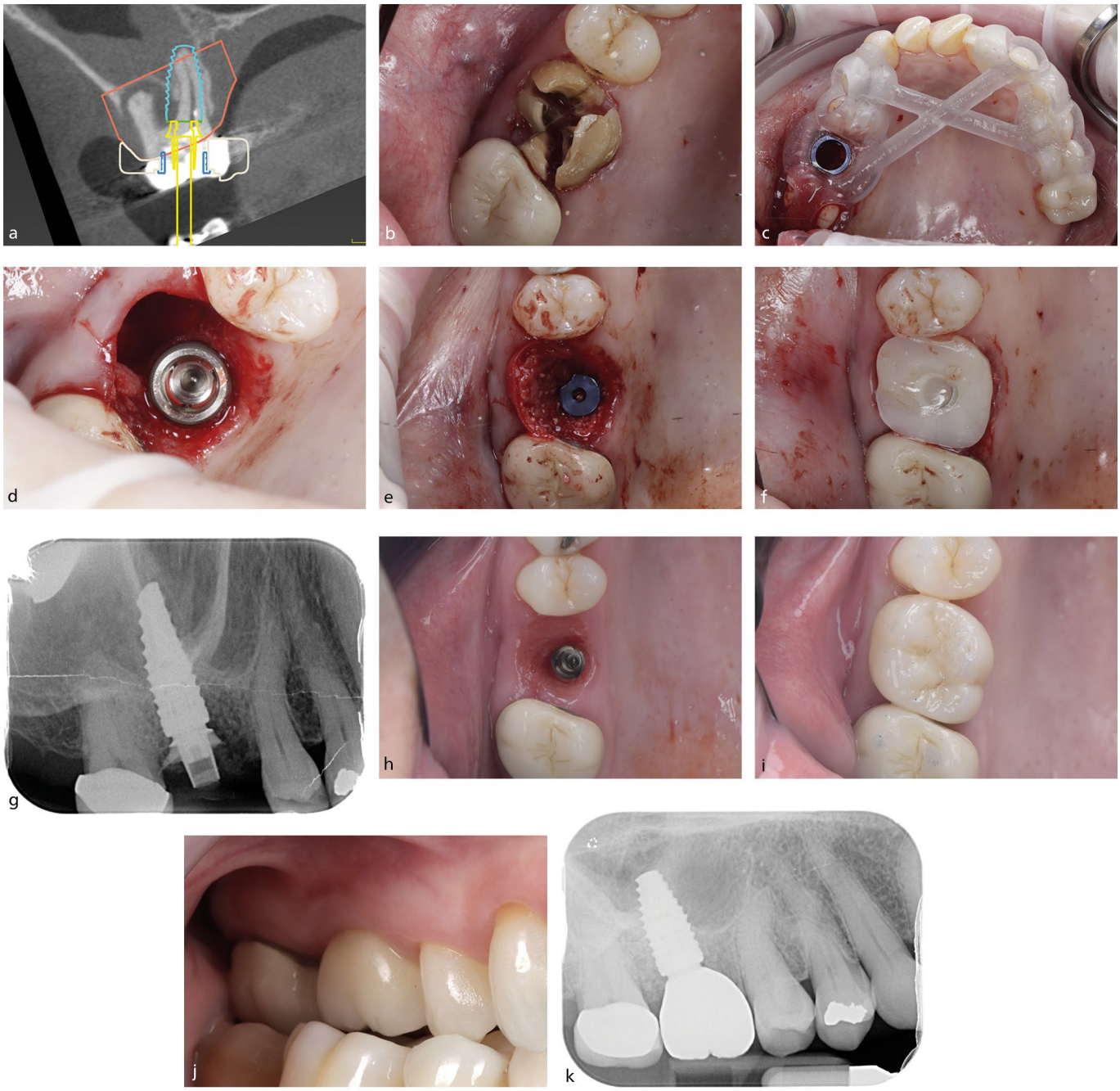

Fig. 1 a) Planning highlighting pathology. b) Sectioning of the roots for atraumatic extraction. c) Implant placement using guided surgery. d, e) Placement and grafting. f, g) Composite healing abutment. h, i, j, k) Definitive restoration placed

Oral health considerations

The patient's overall oral health and risk factors must also be noted to ensure they are a suitable candidate. Periodontal risk factors have already been mentioned, with a history of periodontal disease leading to a 10x increased risk of peri-implantitis when compared to those without a history of periodontal disease.[4]

It is important to consider warning the patient that they may need to be referred to a periodontist first or will be by the implantologist; again, it is valuable to know the implantologist's preference here to avoid unnecessary referrals or delays.

Current status of the space

The next factor to consider is whether the site is healed or whether the tooth or root is still present. This is described with the classification of implant placement:[5]

1. Immediate placement – placing the implant within the extraction site
2. Early placement with soft tissue healing – typically 4–8 weeks post-extraction
3. Early placement with partial bone healing – typically 12–16 weeks post-extraction
4. Late placement – six months or more healing – this includes fully healed sites.

If the tooth is still present, it is imperative to know the implantologist's preference for extracting the tooth themselves or having this done by the referring clinician. Is an immediate placement suitable?[6] Is there chronic periapical pathology that would require healing? Would the patient benefit from ridge preservation

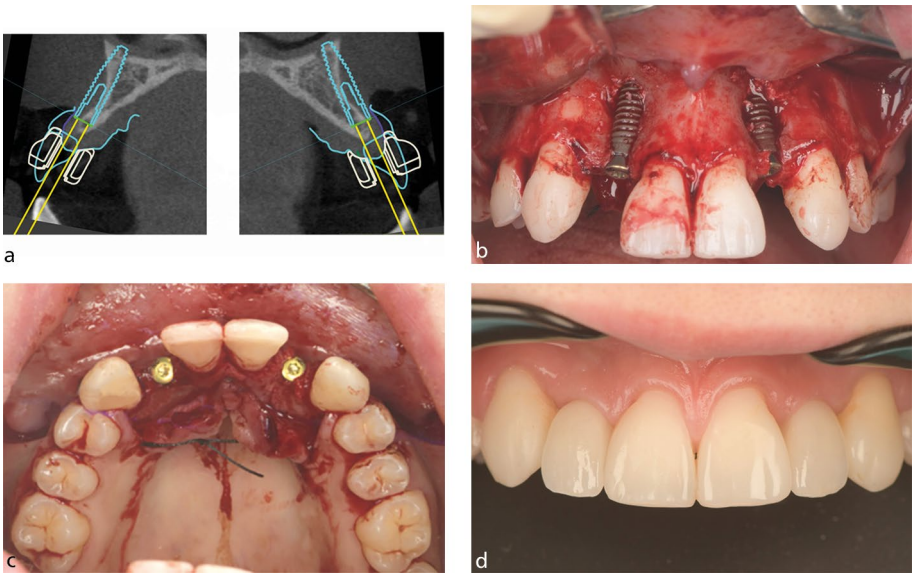

Fig. 2 a) CBCT with overlaid planning illustrating lack of labial bone. b) Placement before grafting showing extent of grafting required. c) Illustration of angulation of placement. d) Definitive restoration

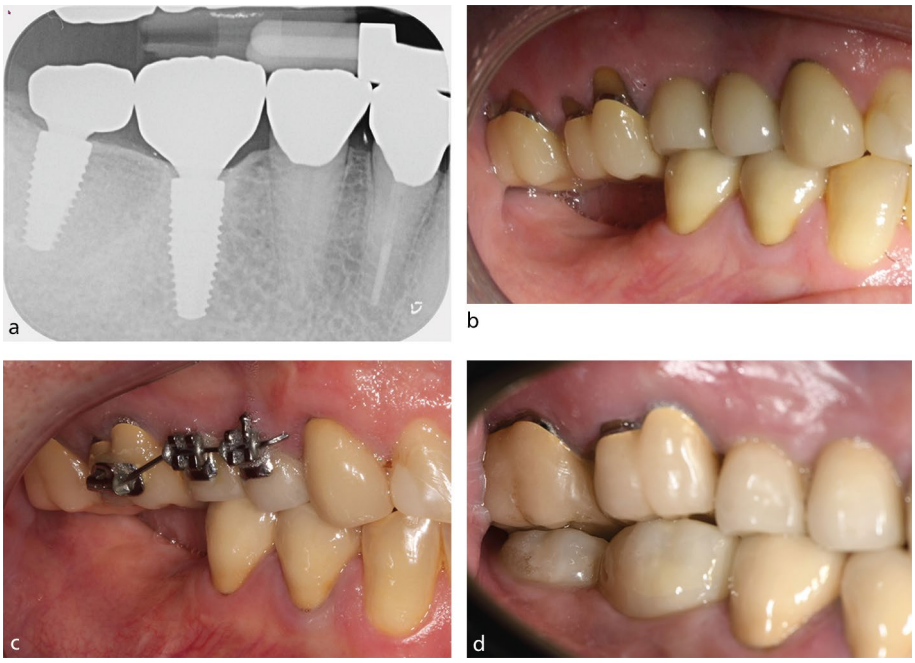

Fig. 3 a, b, c, d) Using orthodontics to create restorative space

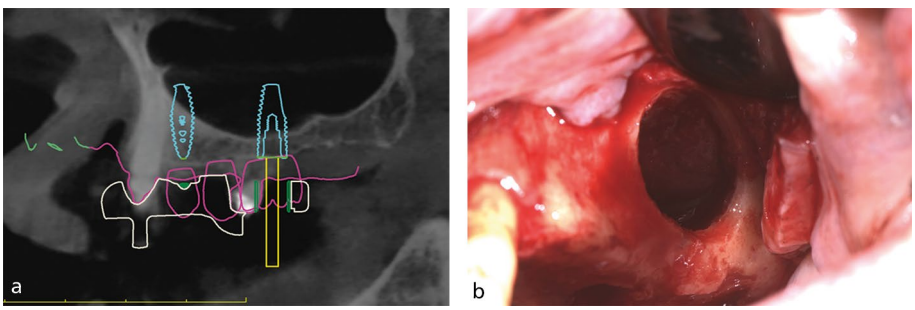

Fig. 4 a) Planning illustrating proximity to maxillary sinus. b) Lateral window sinus graft

protocols and delayed placement?[7] Many implantologists prefer to make this decision and therefore consider referring to the implantologist with the tooth in situ. Figure 1 shows immediate placement and grafting in a site with chronic periapical infection.

Regarding healed sites, a suitable history is important, as well as radiographs. How long ago was the tooth extracted and how much bone has been lost?[8] Will an additional grafting procedure be required? Figure 2 shows a case illustrating replacement of hypodontic maxillary laterals, a situation where lack of labial bone is a common occurrence.

Another consideration is if there has been any movement of the teeth, and is the space still suitable, either restoratively or surgically? Would orthodontics or alteration of the crown be beneficial? Similarly, has there been any dento-alveolar compensation leading to insufficient restorative space? Figure 3 illustrates a case where localised orthodontic intrusion was used to restore restorative space in the opposing arch.

Posteriorly, has there been encroachment of the maxillary sinus floor during the healing process? Will a sinus procedure be required to produce sufficient bone for placement? (Fig. 4). All of these factors can greatly alter the duration and complexity of the treatment recommended, which may make the option unsuitable for patients, either financially, logistically, or surgically.

Aesthetic considerations

Another factor to consider is the aesthetic challenges that may be present. This will include an assessment of the patient's smile line; the higher the lip line, the more aesthetically challenging the case can become. This is particularly challenging when the gingival phenotype in the area is also thin, which may require soft tissue grafting to allow suitable amounts of keratinised tissue.[9] Figure 5 illustrates an anterior implant placement that required soft tissue grafting. This is vital for not only the aesthetic but the long-term prognosis of the restoration, with a thick cuff of keratinised tissue required for cleansability.[10]

It is important to note in the aesthetic region that gingival surgery may not be considered just for the site in question, but gingival and restorative treatment may also be considered and discussed as a part of a wider treatment plan rather than a single-tooth approach.

Aesthetic concerns may also require staged provisionals with multiple visits to achieve the

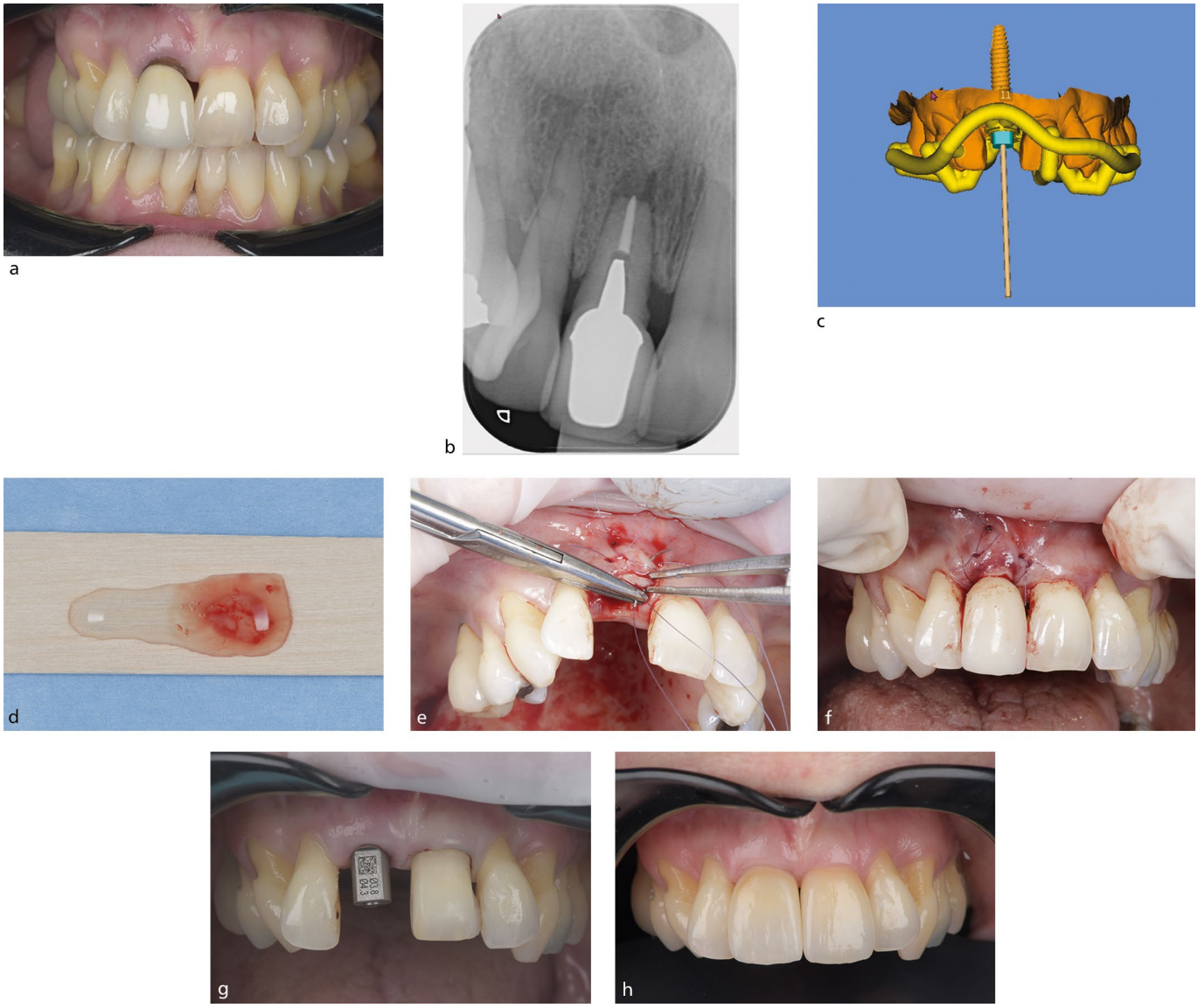

Fig. 5 a, b) Presentation of failing upper right central incisor. c) Planning for guided surgery. d) Harvested de- epithelialised. e) Connective tissue graft at time of immediate placement. f) Immediate provisional and graft in situ. g) Scanning for definitive restorations. h) Definitive restorations

desired emergence profile. This can then also add a significant time and cost factor to the treatment.[11] For anterior restorations, if the implants are unlikely to be immediately loaded or restored with a temporary crown on the day of surgery, then knowing the implantologist's preferred method of replacing the tooth and whether they would like the referrer to provide it is important.

The consultation process

The final stage before referring is to have an idea of the consultation process and, of course, the cost of treatment. Will there be photographs taken, an intra-oral scan, additional radiographs such as cone beam computed tomography (CBCT) and is this included in the consultation or subject to additional charges? It is also worth considering the implantologist's desired review and recall periods, both with themselves, the GDP and the hygiene team, to ensure the patient can commit to this. Once the patient has agreed to explore this avenue, then it is time to consider the content of the referral.

Point of referral

Once this information has been gathered suitably, then the referral process should be an easy one; many referral centres will have their own form or layout, which can be easily followed. If not, creating a template, both in the notes and in the referral to act as a checklist, can be invaluable.

An ideal referral letter from a dentist to an implantologist should contain essential information about the patient's dental health and the reasons for the referral. Appendix 1 below is an example implant referral to use as a starting point.

The referrer could also make a note if they would like to be present at the consultation or if they wish to be contacted before the consultation. Sometimes there might be an element of the referral that the referrer may prefer to discuss with the implantologist before the patient sees them, especially in scenarios where there may be some friction from the referred patient.

Lastly, be specific if you want to restore the case as the referrer – importantly, let the implantologist know what level of involvement you wish to have and, where appropriate, collaborate. However, respect that sometimes the best treatment for a referred patient may not be what you initially think.

Management of post-surgical concerns

Depending on the location of the implantologist in comparison to yourself and the patient, or depending on their own availability, the referrer may see the patient post-surgery with any number of concerns. Having an idea of the implantologist's post-operative instructions and guidance can be useful to remind and reassure patients and relieve any concerns they may have. Appendix 2 shows an example of typical post-operative instructions.

Long-term maintenance

At the final review appointment, before discharging the patient back to the referring dentist, there should be a candid and thorough discussion regarding the level of hygiene required to keep their dental implant(s) healthy. Demonstrate the use of interproximal devices and X-floss and advise the patients that they must clean their implant(s) for at least 30 seconds and use interproximals and floss at least once a day. Patients may be advised to contact us directly if there is a problem with the implant, especially screw loosening, and reinforce the need for close monitoring.

It may be considered good practice for the patient to attend a yearly review with the implantologist, including periapical radiographs, as well as at least two hygiene appointments specific to their dental implants each year. These appointments are in addition to the hygiene they would be having with the referring GDP clinic. The first is recommended 4–6 weeks after the delivery of the implant restoration(s) so that their home cleaning protocol can be reviewed and further advice given if required.

The patient should also be made acutely aware that they must continue to see their own GDP regularly. Regardless of this recall routine, there are a number of checks required from GDPs that should be considered with every implant seen in practice. This way, if concerns are noted, the patient can be encouraged to return sooner to the implantologist for review.

The best thing to do when reviewing dental implants and implant restorations is to consider the two parts as separate but connected items.

The restoration should be checked for movement. This could be caused by a number of issues, including loose crown, loose abutment, screw loosening and loss of integration. A gentle percussion test is helpful with this. The implant crown should have a nice crystalline ring on gentle percussion with a metal instrument. If not, then it is possible that the diagnosis is a loose restoration or even a failed implant.[12]

The occlusion should be checked and, if necessary, refined and polished.[13] The contacts should be checked over time; it is possible that these can open with continued skeletal growth. The integrity, shade and shape of the restoration should all be reviewed too, as fractures to the restorative material can occur. The composite restoration for the screw access hole may need to be replaced, ensuring to check the occlusion again after replacing.

The gingival health and emergence profile of the dental restoration and implant can be initially evaluated via digital palpation of the region buccal to the implant. If the implant is healthy, there will be no bleeding or suppuration. This should be repeated on all sides of the implant. Sometimes, a small amount of white exudate can be produced that is not pus or blood. The GDP can also check with interproximal cleaners – these should be able to be used without creating any bleeding. If there is concern about the health of the dental implant, then this is the time to take a radiograph.[14] This can form a part of the overall recall examination assessment of oral hygiene and periodontal screening.

If there is bleeding from the implant but no discernible bone loss, then gently clean the implant restoration with hand instruments, being careful to just remove the plaque and biofilm, irrigate with chlorhexidine or iodine, reinforce oral hygiene instruction and get the patient to reinstate rigorous home cleaning, for 7–10 days. If there is no improvement and the GDP is not confident in their ability to treat peri-implantitis, it would be recommended to refer back to the placing clinician, or if they are not available, to a colleague with this experience.

Even if the implant looks to have an issue, one should still be wary of probing. If the radiograph shows early (minimal) bone loss, then it is sometimes possible for demineralised bone to reappear when decontamination therapy is used.[15]

This is [Your Name] [Your Dental Practice Name] [Your Address] [City, County, Post Code] [Email Address] [Phone Number] [Date]

[Implantologist's Name] [Implantology Practice Name] [Implantology Practice Address]

Dear Dr ,

I hope this letter finds you well. I am writing to refer my patient, [Patient's Full Name], for a consultation regarding dental implants. [Patient's Full Name] has been under my care, and after a thorough examination, it has been determined that dental implants may be a suitable option to address their specific dental needs.

Patient Information:
Name: [Patient's Full Name]
Date of Birth: [Patient's DOB]
Contact Information: [Patient's Address, Phone Number, Email]
Relevant Dental History: Briefly describe the patient's dental history, including any relevant treatments or procedures they have undergone. Highlight the reason for considering dental implants, such as missing teeth, failed restorations, or other issues.

Clinical Findings: Summarize the clinical examination findings that support the need for dental implants. Include any diagnostic images, such as X-rays or scans, that you may be providing to the implantologist separately.

Treatment Recommendations: Outline your treatment recommendations for the patient, emphasizing why you believe dental implants are a suitable option. Include any specific considerations or challenges that the implantologist should be aware of.
Any Relevant Medical History: Include a summary of the patient's relevant medical history that may impact the implant procedure or treatment plan.

I have attached [number of attachments] documents to support this referral, including diagnostic images and any additional information you may find helpful.

Have discussed your likely fees and given the patient an estimate/ Or I have advised the patient of the likely costs of the consultation and have told them that you will discuss the fess with them directly.

Thank you for your attention to this matter. I trust that your expertise in implantology will provide [Patient's Full Name] with the best possible care.

Please feel free to contact me if you require any further information or clarification.

Sincerely,

[Your Full Name] [Your Title] [Your Dental Practice Name] [Your Signature]

Enclosures: [List of attached documents]

Appendix 1 Sample implant referral letter

What can the GDP manage and when should they refer?

It is often considered that the last person to touch a problem with a patient gets to own it. So, while simple things like replacing a missing composite from a screw access hole should be easy to do, do not forget to place some polytetrafluoroethylene tape before you do it.

Often, if there is a problem, it is valuable to be able to diagnose the cause of the problem. If this is easily done, or the GDP feels confident, then it is a potential win for all involved not to refer back to the implantologists. Patients are usually more than happy enough to get referred back. It shows that the GDP is concerned about their patients' best interests and also allows for the implantologist to assess and manage the situation if it is delicate.

Ethics declaration

The authors declare no conflicts of interest.

Author contributions

Nicholas Fahey – concept, original draft writer.

Rupert Monkhouse – concept, original draft writer.

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Local Anaesthetic
Please be very careful as it is very easy to injure yourself by chewing and biting your lips and tongue whilst they are numb. Please avoid eating until the numbness has gone to prevent this. Please also be very careful not to burn your lips, tongue and cheeks whilst you are numb, e.g. with hot drinks/food, smoking.

Pain Relief
Take pain relief as instructed:
- Take 1 x 400mg Ibuprofen, then 3 Hours later…
- Take 2 x 500mg Co-Codamol, then 3 Hours later…
- Take 1 x 400mg Ibuprofen, then 3 Hours later…
- Take 2 x 500mg Co-Codamol,

Continue for the next 3 days or as instructed by your dentist.
Remember to stay within the daily recommended dose as written on the manufacturer's instructions.
Alternatively, you can take one form of pain relief every 4-6 hours if preferable.

Relax
For the first 48 hours after surgery, avoid alcohol, smoking and strenuous activities e.g. exercise, gardening, etc.
After 48 hours, light exercise is permitted (within your own limits) over the following week. E.g. walking the dog, a relaxing swim etc.

Wound Management
Please do not stretch back your lips to examine the surgical site or fiddle with sutures/wound with your tongue or fingers as this only delays healing or leads to unwanted complications.
Continue your normal oral hygiene routine for the rest of your teeth.

Soft Diet
Please eat a soft diet for the next 2-3 weeks. e.g. smoothies/ porridge/ scrambled eggs/ omelettes/ soup/ pasta/ fish / mince/ jelly/ ice cream.
A good rule of thumb is anything that you can cut with a fork is soft enough.
Further emphasis is placed if immediate loading is planned to avoid chewing on the provisional tooth.

Avoid rinsing
Do not rinse / gargle your mouth out for 24 hours from surgery. This will maintain a blood clot, which is crucial for complication free healing.

Warm Salt Rinse
Starting 24hrs after surgery gently rinse out with warm salt water for 1 minute 5 times a day.
If you have multiples sites where you have had surgery then repeat the bathing action in all areas.

Prescription Mouthwash
If you have been prescribed a mouthwash, please start using this approx. 24 hours after surgery at least three times a day.
Prescription mouthwash is bacteriostatic and it aids in keeping the surgical site clean.
If you happen to reach a point where you're due a warm salt rinse at the same time, please do the warm salt rinse first and then the prescription mouthwash afterwards.

Antibiotics
If antibiotics have been prescribed prior to treatment, please continue to take them until you finish the course. (only if XLA is planned during implant surgery)
If antibiotics have been prescribed after the surgery, please continue to take them until you finish the course.
If the antibiotics are making you feel unwell or are giving you a rash, please stop immediately and contact the surgery for advice as it may be appropriate to prescribe a different type of antibiotic.

Post-Surgery Healing
Swelling, bruising and pain are usually worse in the first 48 hours after surgery and then begin progressivelyimproving.
However, you may experience a longer period of pain and discomfort.
Please note, it is possible that on the 1st day after surgery you may feel well recovered. In this situation, it is still really important you do not over exert yourself. Overexertion can slow recovery, often lasting up to a week.

Follow-up Appointments / Stitches
If an appointment has been made for you, please return for the subsequent appointment for removal of your stitches or for a review.
It is our policy to use very fine, non-resorbable stitches; these are clinically proven to give the very best healing.
So unless, previous discussion has been made about using dissolvable stitches, you will need to have them removed.
Even if you feel that the healing is progressing nicely, it is important that the healing is checked. This is especially important in cases where excellent healing is required before further treatment.

If in this time you have any problems please contact the surgery on 123456789.
If it is out of hours please telephone 987654321.

Appendix 2 Sample post-operative instructions

10. Chackartchi T, Romanos G E, Sculean A. Soft tissue-related complications and management around dental implants. *Periodontol 2000* 2019; **81:** 124–138.
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