GUIDELINES

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Educational Requirements & Professional Responsibilities for Implant Dentistry

The Guidelines of the Royal College of Dental Surgeons of Ontario contain practice parameters and standards which should be considered by all Ontario dentists in the care of their patients. It is important to note that these Guidelines may be used by the College or other bodies in determining whether appropriate standards of practice and professional responsibilities have been maintained.

CONTENTS

Royal College of
Dental Surgeons of Ontario

Ensuring Continued Trust

6 Crescent Road
Toronto, ON Canada M4W 1T1
T: 416.961.6555 F: 416.961.5814
Toll Free: 800.565.4591 www.rcdso.org

Introduction

Implant dentistry is the branch of dental practice that aims to restore and maintain the oral function, appearance and health of the patient through the placement of endosseous dental implants and associated fixed and/or removable prosthetic components.

The provision of dental implant treatment requires a specific base of knowledge and clinical skills for both the surgical and prosthetic phases of treatment. This document outlines suggested educational requirements and professional responsibilities for those dentists who wish to use dental implants for their patients.

It is not the purpose of this document to provide dentists with detailed step-by-step instructions for the placement and restoration of dental implants. Rather, it is to guide dentists in the use of "best practices" for providing implant dentistry. This document includes several checklists to help dentists assess their preparedness to undertake different levels of clinical cases and improve situational awareness.

To keep pace with the rapid advancements in the field of implant dentistry, this document should be periodically reviewed by the Royal College of Dental Surgeons of Ontario.

Educational Requirements

Implant dentistry encompasses a wide variety of techniques and procedures. However, clinical cases may broadly be divided into two levels of complexity:

1. Cases involving the straightforward placement and/or restoration of dental implants; and
2. Cases involving the complex placement and/or restoration of dental implants.

See Appendix 1: Guidance for "Straightforward" and "Complex" cases.

The level of complexity of the cases dentists elect to undertake should reflect the commensurate level of training and courses they have successfully completed and competency and experience they have acquired.

> Cases involving high aesthetic requirements and/or high patient expectations often fall in the complex category.

INITIAL EDUCATIONAL REQUIREMENTS

Prior to performing any dental implant procedure, dentists who wish to provide dental implant treatment must undertake comprehensive training and successfully complete a course or courses that adhere closely to the criteria outlined below.

It is recognized that dentists may receive training in dental implant treatment in a variety of ways. Many registered dental specialists have received comprehensive training and have been assessed to be competent to provide dental implant treatment as part of an accredited postgraduate specialty training program. This should be acknowledged as the most desirable mode of training. Those dentists who have not received such training must conform to the following minimum initial educational requirements.

> The minimal initial educational requirements suggested in this document are directed to those dentists who wish to use dental implants for their patients and have little or no prior training and experience.
>
> It is recognized that there are dentists who have already completed training in a variety of ways and acquired experience in implant dentistry by performing dental implant procedures. These dentists should reflect on the level of training and courses they have successfully completed, and competency and experience they have acquired, in light of the minimal educational requirements suggested in this document. If necessary, any perceived deficiencies should be addressed through additional and ongoing education.

The course or courses should:

1. be conducted by persons who have had recognized comprehensive formal, preferably university-based, training and significant experience performing dental implant procedures;
2. have didactic and clinical-related components with formal evaluation;
3. have a hands-on clinical simulation component with formal evaluation;
4. teach methods and systems that have been shown to be successful and safe by published scientific research, preferably supported by well-designed longitudinal clinical studies that demonstrate the efficacy and effectiveness of the method and biocompatibility of the materials;
5. be of adequate duration involving not less than 35 hours of instruction for each of the surgical and prosthetic phases, or 70 hours of combined instruction, so that dentists wishing to become involved in implant dentistry:
   - understand the biological basis of osseointegration (materials, biomechanics and bone physiology) for dental implants and their interactions with host tissues, and the implications regarding dental implant loading;
   - understand the anatomical considerations and limitations in relation to dental implant placement;
   - understand the current diagnostic and imaging procedures that are available for the assessment of bone quantity and quality at the planned dental implant site(s);
   - are able to recognize and identify local and systemic or behavioural conditions that may influence the surgical, prosthetic or maintenance aspects of dental implant treatment;
   - understand sequential planning procedures for dental implant treatment, including appropriate referral procedures;
   - understand pre-surgical prosthodontic preparation procedures, such as surgical and radiographic guides, and the basis for specific dental implant selection;
   - understand the importance of post-surgical follow-up and the management of complications;
   - understand the various provisional and definitive prosthodontic procedures for dental implant supported and/or retained prostheses;
   - understand the importance of effective communication between the various members of the dental implant team and other providers, and especially with the patient.

Dentists who provide both phases (surgical and prosthetic) of dental implant treatment must have successfully completed a course or courses involving not less than 35 hours of instruction for each of the surgical and prosthetic phases, or 70 hours of combined instruction.

Dentists who limit their practice to one phase only (surgical or prosthetic) of dental implant treatment must have successfully completed a course or courses involving not less than 35 hours of instruction for the phase practiced and 14 hours of instruction for the phase not practiced.

Dentists who provide the surgical phase of dental implant treatment must be competent and experienced in dentoalveolar surgical procedures.

The minimum initial educational requirements suggested in this document are adequate for most dentists to begin cases involving the straightforward placement and/or restoration of dental implants. Additional training and education should be completed before undertaking cases involving the complex placement and/or restoration of dental implants.

Since implant dentistry is often practiced using a team approach, it is important that all members of the dental implant team understand the conditions, concerns and constraints faced by each member of the team. It is recommended, therefore, that all members of the dental implant team have a working knowledge of all phases of dental implant treatment and accept shared responsibility.

A clear mechanism of communication should exist between all members of the dental implant team and be effectively used. In addition, communication with the patient should be coordinated between those dentists who separately provide the surgical and prosthetic phases of dental implant treatment.

EDUCATIONAL REQUIREMENTS FOR COMPLEX CASES

Dentists must be competent and experienced in the straightforward placement and/or restoration of dental implants, as described above, before progressing to this level of complex treatment. It is likely that the planning and treatment of complex cases will require a team approach, and that different aspects of care may be undertaken by appropriately experienced members of the dental implant team.

The prosthodontic team should be familiar with and competent in managing changes to the occlusal scheme, including vertical dimension and position of teeth, and how these interact with the existing dentition (if present) and the jaw relationships. Dentists who provide the prosthetic phase of complex dental implant treatment should have been mentored by a suitably competent and experienced individual in an appropriately structured training program.

The placement of dental implants requiring hard and/or soft tissue augmentation demands a high level of surgical experience and the ability to care for such patients. Dentists who provide the surgical phase of complex dental implant treatment should have been mentored by a suitably competent and experienced individual in an appropriately structured training program. Further, those dentists must also have attended courses that specifically train in these techniques and be competent to deal with any immediate and long-term complications of the treatment provided.

It is recommended that all members of the dental implant team should keep detailed records of their training, the courses they have attended and all mentoring they have received.

The placement of dental implants requiring hard and/or soft tissue augmentation demands a high level of surgical experience and the ability to care for such patients.

ONGOING EDUCATIONAL REQUIREMENTS

Dentists involved in implant dentistry should maintain their knowledge and clinical skills on an ongoing basis. This can be accomplished by ensuring that continuing education programs are taken that review basic dental implant principles and/or present advances in implant dentistry. In the rapidly changing and expanding field of implant dentistry, it is especially important that additional training be obtained before using new techniques or materials.

It is the responsibility of each dentist to evaluate new technology, products and techniques to ensure that their use is supported by valid scientific data and long-term studies, and that necessary Health Canada approvals are in place. Caution is advised in extrapolating results from one dental implant system to another.

All medical devices licensed for sale in Canada are listed in a searchable online Health Canada database at: www.mdall.ca.

Professional Responsibilities

All stages of dental implant treatment are driven by the goal of achieving the end result: the definitive ("final") prosthesis. Careful patient evaluation and treatment planning, followed by meticulous execution of treatment steps, are necessary to achieve the desired outcome.

While the actual treatment steps may vary to meet the specific needs and expectations of each patient situation, in general, they follow the following pattern:

1. preliminary evaluation and treatment planning by the dentist providing the prosthetic phase of treatment (the "prosthetic dentist");
2. pre-surgical assessment by the dentist providing the surgical phase of treatment (the "surgical dentist");
3. consultation and development of the proposed treatment plan by both prosthetic and surgical dentists;
4. additional evaluation/assessment, if necessary;
5. finalization of the treatment plan and establishment of a surgical prescription by both prosthetic and surgical dentists:
   (a) diagnostic (aesthetic/functional) set-up and intra-oral trial, if necessary;
   (b) preliminary hard and/or soft tissue augmentation, if necessary;
   (c) fabrication of a surgical guide, if necessary;
   (d) fabrication of a transitional prosthesis, if necessary;
6. execution of surgical treatment and post-surgical follow-up;
7. post-surgical pre-prosthetic assessment;
8. execution of prosthetic treatment;
9. long-term follow-up and maintenance.

PRELIMINARY EVALUATION AND TREATMENT PLANNING

The preliminary evaluation of the patient, including the collection of clinical and radiographic records, must be orchestrated by the prosthetic dentist, who establishes the treatment plan in collaboration with other members of the dental implant team. The evaluation should include the following elements:

- complete medical and dental histories, including a determination of the patient's chief complaint(s) and expectations;
- a clinical extra-/intra-oral examination;
- appropriate radiographs of the proposed dental implant site(s);
- appropriate study models and other diagnostic aids, such as photographs, diagnostic set-ups and radiographic/surgical guides, as indicated.

Proper patient selection is essential. Considerations must include the physical and medical suitability of the patient to undergo dental implant treatment, as well as the:

- presence of oral pathologies;
- anatomy and form of bony ridges;
- inter-arch relationships and their position relative to the remaining dentition;
- occlusion;
- presence of parafunction;
- quality, localization and quantity of bone;
- periodontal condition of the remaining dentition;
- localization of favourable dental implant sites, especially in relation to their accessibility;
- ability to attain the design of the proposed prosthesis;
- ability to address the patient's chief complaint(s) and expectations;
- patient's ability to maintain oral hygiene.

The evaluation should also determine the necessity for additional orthodontic, surgical, periodontal, endodontic or prosthodontic intervention, before dental implant treatment can proceed.

Dental implant treatment should be considered in the context of a comprehensive treatment plan that addresses the specific needs and expectations of the patient and the various treatment options available. The use of dental implants represents but one treatment option for the replacement of missing teeth. Thus, there must be a sound rationale for selecting dental implant treatment over and above other treatment options, with a clear and demonstrable benefit to the patient. The use of dental implants should be made in consideration of the following factors:

- the presence of systemic medical conditions;
- pre-existing dental disease;
- the patient's motivation and oral hygiene ability;
- financial constraints;
- a careful evaluation of the advantages and disadvantages of alternative prostheses in relation to the presenting status of the surrounding teeth, soft tissues and associated structures.

Setting unreasonable treatment goals can lead to failure to achieve the desired outcome and result in dissatisfied patients. This principle especially applies when patients develop unrealistic functional and aesthetic expectations.

PRE-SURGICAL ASSESSMENT

Ideally, the pre-surgical assessment is initiated by a surgical prescription from the prosthetic dentist, setting out the preferred number and positions of dental implants to be placed to support the planned prosthesis. In essence, the pre-surgical assessment should determine whether the surgical prescription can be fulfilled and at what level of confidence. This, in turn, provides for the development of a surgical treatment plan, which should be structured so as to accomplish and be integrated with the prosthetic treatment goals and procedures.

In conducting the pre-surgical assessment, the surgical dentist is guided by the prosthetic treatment goals, but certain factors have special significance when viewed from a surgical perspective. In particular, the pre-surgical assessment must consider the anatomy and form of the edentulous ridges (e.g. length, width, shape), as well as the inter-arch relationships and their position relative to remaining natural teeth, which determine whether adequate space exists for the placement of dental implants and the prosthesis. In addition, the volume and quality of bone, as well as its position relative to the planned prosthesis, and the characteristics of the overlying soft tissues (e.g. keratinized, attached mucosa versus non-keratinized, non-attached mucosa) must be assessed, as they affect the probability of successful integration and long-term maintenance.

The number of dental implants to be placed, as well as their angulation and vertical orientation, are determined by the prosthetic treatment plan and the patient's anatomy. Biomechanical factors must be considered to avoid over-loading of dental implants and prostheses, which can lead to their failure. Aesthetic factors must be considered if dental implants are to be placed in the aesthetic zone; for example, a patient with a high lip (i.e. smile) line who exposes gingival tissues may require ancillary surgical procedures or prosthetic manoeuvres, such as the use of pink methacrylate ("acrylic") or porcelain, to optimize aesthetics.

The surgical dentist should evaluate the radiographs and other diagnostic records obtained by the prosthetic dentist and, if necessary, arrange for them to be supplemented as required. Two-dimensional radiographs are absolutely essential in all cases and may include periapical and/or panoramic films. Conventional clinical and radiographic techniques may be sufficient to evaluate the edentulous ridges in cases involving ample alveolar bone. Cases involving suspected anatomical challenges (e.g. advanced alveolar resorption, clinical doubt about the shape of the alveolar ridge, close approximation to the incisive canal, maxillary sinus or mandibular canal) may benefit from additional three-dimensional imaging of the edentulous ridges with conventional or computerized tomography.

Appropriate management of the surgical patient requires a comprehensive medical assessment. In general, conditions must be identified that affect the patient's ability to undergo the surgical procedure safely (e.g. history of a coagulation disorder or use of anticoagulants, etc.), as well as those that may impair the healing process and successful integration of the dental implants (e.g. history of smoking or use of bisphosphonates, presence of auto-immune disorders or uncontrolled diabetes, etc.). The patient's medical status, the scope of the surgical treatment plan and patient preference must also be considered when making recommendations for the use of sedation or general anaesthesia.

In general, ASA Class I and II patients may be regarded as straightforward from a medical standpoint, whereas ASA Class III and IV patients should be regarded as compromised (see Appendix 2: American Society of Anesthesiology Physical Status Classification System). For patients who are known to be medically compromised or whose medical status is unclear, consultation with their physician may be indicated. Further, pre-operative medical testing (e.g. bloodwork, ECG, chest x-ray, etc.) should be considered as part of the medical work-up and the need for peri-operative medical management, such as the use of antibiotics and steroids, should be assessed.

FINALIZATION OF THE TREATMENT PLAN AND INFORMED CONSENT

Proper patient evaluation and treatment planning is of utmost importance in dental implant treatment.

In addition to the above, study models and diagnostic set-ups may facilitate treatment planning for the optimal positioning of dental implants in complex cases, including those involving high aesthetic requirements. These same study models may also elucidate unfavourable jaw relationships (e.g. pseudo-Class III jaw relationship resulting from advanced maxillary alveolar bone resorption), which may not be suitable for treatment with fixed bridges. Surgical guides may assist placement in cases requiring precise positioning of dental implants (e.g. multi-unit fixed cases, single unit cases in the aesthetic zone).

The treatment plan should also include a transitional strategy, while the dental implants heal. This may include the use of a transitional removable prosthesis placed over the dental implants, a transitional fixed prosthesis supported by adjacent teeth or, in appropriate cases, attached to dental implants immediately at the time of their placement.

Dentists must take all reasonable steps to minimise the risk of harm occurring to a patient as a result of dental implant treatment.

Risk reduction measures for implant dentistry include:

- accurate assessment of the level of complexity of the clinical case and the dentist's skill level to undertake it;
- setting reasonable and achievable treatment goals;
- careful patient evaluation and treatment planning;
- appropriate discussion with the patient regarding the proposed treatment;
- excellent communication between all members of the dental implant team;
- employment of carefully evaluated and approved dental implant systems and ancillary equipment;
- employment of appropriately trained dental staff;
- employment of best practices for the procedure;
- employment of best practices for infection prevention and control.

In obtaining informed consent for dental implant therapy, the discussion with the patient should address:

- the patient's diagnosis;

- the nature and purpose of dental implant treatment, as well as the rationale for choosing it in this case;
- a clear explanation of the benefits and risks associated with dental implant treatment, including the risk of dental implants failing to osseointegrate;
- all available treatment options and alternatives, and their relevant advantages and disadvantages, including those that do not involve dental implants;
- the cost and duration of dental implant treatment;
- the expected post-surgical sequelae (e.g. pain, bleeding, swelling, bruising, etc.);
- the necessary post-treatment care and monitoring;
- the likely prognosis and lifespan of dental implant treatment;
- the patient's responsibility for the long-term success of the treatment.

Dentists performing implant dentistry must show evidence of the informed consent discussion with the patient and consultations with all professionals involved in the treatment process.

Dentists performing implant dentistry have an obligation to fully inform their patients of the procedures and the source of any grafting materials that will be used during dental implant surgery as part of the informed consent process.

SURGICAL TREATMENT

Surgical dentists must be competent and experienced in dentoalveolar surgical procedures and the management of related complications. Consideration should be given to referral to a more experienced surgical dentist in cases that are complicated by virtue of the scope of the dental implant treatment plan or the patient's medical history.

Dental implants should be placed by a trained clinician with trained assistants using a careful, aseptic surgical technique. Success is highly dependent upon a surgical technique that avoids overheating the bone.

An adequate number of dental implants should be placed at the correct positions, depths and angulations to allow for the fabrication of a functional and aesthetic prosthesis. Adequate width of bone and soft tissues between dental implants is required to avoid prosthetic components from impacting on each other and facilitate good oral hygiene for long-term maintenance. Additionally, adequate width of bone and soft tissues between dental implants and natural teeth is required to avoid iatrogenic injury. Drilling techniques and dental implant design should be selected to provide good initial mechanical stability while avoiding damage to adjacent vital anatomical structures.

In some cases, intra-operative or immediate post-operative radiographs may be desirable.

POST-SURGICAL FOLLOW-UP

Post-surgical follow-up is important to ensure good short-term healing and long-term maintenance of dental implant health. Initial healing assessments are usually carried out within the week or two following the surgery. Clinical assessment confirms appropriate healing of the hard and soft tissues. Stability of the dental implants and their abutments can be confirmed with manual palpation. Radiographs may be taken to confirm good position relative to vital anatomical structures, appropriate depth placement and appropriate seating of healing or prosthetic abutments. Transitional prostheses should be adjusted for stable and comfortable fit without adverse loading of the dental implant and/or grafting sites or exposed healing abutments. In cases where immediate, implant-supported prostheses have been placed, assessments should include stability of the dental implants, abutment connections and the absence of adverse loading.

Following the initial healing phase, patients are reappointed to confirm successful osseointegration of the dental implants after an adequate healing period. Testing of osseointegration is done by clinical assessment of the dental implants and the surrounding tissues. Clinical assessment of dental implant stability, including palpation, percussion, reverse torque testing and radio-frequency analysis are all considerations for the assessment of osseointegration. Radiographic evaluation at this time is appropriate to confirm healthy peri-implant bone. Successful completion of this assessment enables progression to the prosthetic phase of treatment.

The surgical dentist is responsible for providing short-term maintenance following the insertion of the dental implants and up to the time that the prosthetic dentist is prepared to assume responsibility for the remaining stages of treatment.

POST-SURGICAL PRE-PROSTHETIC ASSESSMENT

Before commencing the steps to fabricate the definitive prosthesis, the prosthetic dentist should conduct a pre-prosthetic assessment of the case. This includes:

- verifying that the dental implants have integrated, both by clinical means as described above and radiographic means as deemed appropriate;
- communicating with the surgical dentist about the need for further assessment, if the outcome of the case is questionable;
- evaluating the location and angulation of the integrated dental implants in relation to the remaining dentition and the opposing arch, and their suitability to support the desired prosthesis, as planned.

Consideration should be given to fabricating a transitional implant-supported prosthesis to further assess the case before proceeding with the definitive prosthesis in the following circumstances:

- there are concerns about the dental implants' suitability to support the desired prosthesis;
- there are highly challenging functional and/or aesthetic demands;
- significant changes to the occlusal scheme and/or other parameters are advisable.

The patient should function with the transitional prosthesis for an adequate period of time to provide for meaningful assessment.

PROSTHETIC TREATMENT

Once the dental implants are deemed ready to proceed, a master cast impression is taken to replicate the anatomy of the oral structures and their relationship to the dental implant(s). Care must be taken to eliminate errors, since the accuracy of the definitive prosthesis is highly dependent on this step. Appropriate impression materials, trays, adhesives and techniques, including verification of proper seating of the impression copings (if used), are required. The latter may be verified clinically and, when appropriate, radiographically.

The fabrication of a successful definitive prosthesis is also dependent on careful attention to the following steps:

1. verifying proper fit ("passive fit") between the framework and the dental implants and/or prosthetic abutments (if used). This may be accomplished using a variety of clinical techniques. Radiographic assessment may also be used, but cannot replace appropriate clinical evaluation;
2. verifying proper shape of the prosthesis to provide adequate form, aesthetics and function, and to allow for adequate oral hygiene. If a properly shaped transitional prosthesis has been utilized for a sufficient period, then the definitive prosthesis should closely match its form;
3. verifying proper occlusion after pre-loading ("torquing") the prosthetic and/or abutment screws.

The patient should clearly communicate acceptance of the definitive prosthesis prior to its insertion.

Consideration should be given to maintaining access to the prosthetic and/or abutment screws, especially in extensive cases.

Depending on the complexity and nature of the prosthesis, as well as patient-mediated factors, an appointment should be scheduled within a few days to weeks of insertion to verify proper function, comfort and patient satisfaction. Gingival health, phonetics, aesthetics and occlusion should also be re-assessed.

LONG-TERM FOLLOW-UP AND MAINTENANCE

The placement of dental implants and construction of a definitive prosthesis concludes the active phase of dental implant treatment.

Following the insertion of the definitive prosthesis, the prosthetic dentist is responsible for providing long-term follow-up and maintenance or ensuring that another responsible dentist is doing so. Although it is the responsibility of the members of the dental implant team to recommend and provide long-term maintenance care, patients must be informed of and assume responsibility for their role in complying with such recommendations.

The patient should be seen within one year of the insertion of the definitive prosthesis, at which time radiographs should be taken to verify the stability of peri-implant bone and integrity of all abutment connections.

The schedule for long-term maintenance visits should be customized for the requirements of the case, but may be combined with regular recall visits and include oral hygiene assessment and appropriate care. In particular, the peri-implant soft and hard tissues should be assessed, as well as the continued stability of the dental implants, prosthesis and occlusion. Patients with a history of parafunction are often candidates for bruxism appliances. Accordingly, long-term maintenance visits should include evaluation of such appliances for their fit and wear.

MANAGEMENT OF COMPLICATIONS

While long-term follow-up and maintenance is the responsibility of the prosthetic dentist, the management of complications is a responsibility shared by all members of the dental implant team. Accordingly, individual members of the dental implant team, such as the surgical dentist or dental laboratory technician, should be consulted as the need arises.

Complications may vary in severity and complexity, and their origin may be evasive or remain unknown. Best practices for investigating and addressing complications include the following:

- a detailed history of all signs and symptoms should be taken, including their time of onset relative to the various stages of dental implant treatment;
- a meticulous clinical and radiographic examination should be conducted and the findings compared with records obtained before the complications arose;
- if a clear cause for the complications cannot be established, then the most likely cause should be designated as the working hypothesis;
- once the cause (or most likely cause) is determined, then the question of whether it can be predictably addressed should be ascertained;
- if the remedy for a given complication is unpredictable and/or complex, then retreatment should be considered. This option may involve removal of the dental implant(s) and/or replacement of the prosthesis;
- once the complication is addressed and a favourable outcome is achieved, consideration should be given to preventing further complications.

RECORDKEEPING

Detailed records are a mandatory and critical part of any dental treatment and, especially, dental implant treatment. They help the practitioner to focus on the important and critical aspects of the case, while reducing the risk of misunderstandings, errors in component selection and usage, and the omission of important steps in the delivery of treatment. Moreover, detailed records form an invaluable defence tool for the practitioner when he/she is challenged by the patient either directly or through legal proceedings.

As with all dental treatment, detailed dental records must be kept and maintained, and should include:

- documentation that the informed consent process was fulfilled;
- radiographs, study models and other diagnostic aids;
- detailed progress notes relative to the procedures performed and post-operative advice given to the patient, including a record of any educational materials given to the patient;
- documentation of ongoing clinical monitoring, including radiographs where appropriate.

While there is no requirement to maintain working models, dentists performing implant dentistry should consider the advisability of doing so for documentary purposes, as well as the long-term maintenance of the case.

Surgical notes should include standard surgical notations as well as:

- dental implant location, size and type, lot and/or catalogue number, and expiry date, as applicable;
- difficulties encountered during placement, if any;
- all materials used during surgery;
- size and type of abutment placed at uncovery;
- osseointegration status using standardized measurement or descriptive criteria;
- any significant findings that may affect the expected outcome;
- any recommendations, instructions or advice given to the patient about the surgical treatment.

Prosthodontic notes should include notations on the prosthodontic procedures performed, as well as:

- size, location, type and angulation of the dental implant;
- osseointegration status using standardized measurement or descriptive criteria;
- size and type of abutment used;
- type of prosthesis fabricated and materials used;
- type of connection — screw or cement;
- a record of all components secured for function in the patient's mouth;
- any pain or discomfort reported by the patient during prosthodontic treatment, particularly at the time of delivery of the prosthesis;
- any recommendations, instructions or advice given to the patient about the prosthodontic treatment.

Comprehensive training programs in the use of dental implants will serve to protect the public of Ontario as well as afford protection for the practitioner.

Lack of adequate and/or inadequate clinical treatment and records may place a practitioner at risk for civil proceedings, if there are adverse results due to the treatment rendered.

Appendix 1

GUIDANCE FOR "STRAIGHTFORWARD" AND "COMPLEX" CASES

Level of Complexity	Straightforward Case	Complex Case
Perception of Case	You can easily visualise the end result and the treatment stages are predictable.	The end result cannot be easily visualised without extensive case work-up and multiple treatment stages are required to achieve the desired outcome. Complications are to be expected.
Tooth Position	The teeth to be replaced conform to the existing arch form and the adjacent teeth easily determine the optimal prosthetic tooth position.	There are no adjacent teeth or those present are in an unsuitable position and extensive case work-up is required to determine the optimal prosthetic tooth position for aesthetics and function.
Implant Surgery	The dental implant surgery is without anatomically related risks and can be carried out without the need for significant hard tissue grafting (including onlay bone grafting and sinus grafting). The surgical care can be provided by an appropriately trained dentist.	The dental implant surgery is more difficult, with anatomically related risks and may require significant hard tissue grafting (including onlay bone grafting and sinus grafting). The surgical care should be provided by an oral and maxillofacial surgeon, periodontist or a dentist with advanced surgical training and extensive experience.
Soft Tissue	There is little or no need to augment or alter the position of the peri-implant mucosa. Such intervention will not require significant grafting of hard/soft tissue.	There is a need to augment or alter the position of the peri-implant mucosa, requiring significant grafting of hard/soft tissue.
Occlusion	The teeth can be replaced by conforming to the existing occlusal scheme and at the same vertical dimension.	There is a need to substantially change the existing occlusal scheme and/or the vertical dimension. The prosthetic care should be provided by a prosthodontist or a dentist with advanced prosthodontic training and extensive experience.
Aesthetics	The aesthetic requirements of the case are not high and the expectations of the patient are reasonable.	The aesthetic requirements of the case are high, as are the expectations of the patient.

It is acknowledged that few treatment episodes will fall exactly into either category, but it is anticipated that the above definitions should help to guide members of the dental team with the selection of appropriate cases.

Adapted from the Faculty of General Dental Practice (UK), the Royal College of Surgeons of England: "Training standards in implant dentistry for general dental practitioners" (2008).

Appendix 2

AMERICAN SOCIETY OF ANESTHESIOLOGY PHYSICAL STATUS CLASSIFICATION SYSTEM

ASA I: A normal healthy patient.

ASA II: A patient with mild systemic disease.

ASA III: A patient with severe systemic disease that limits activity but is not incapacitating.

ASA IV: A patient with incapacitating systemic disease that is a constant threat to life.

ASA V: A moribund patient not expected to survive 24 hours with or without operation.

ASA VI: A declared brain-dead patient whose organs are being removed for donor purposes.

ASA E: Emergency operation of any variety; E precedes the number, indicating the patient's physical status.

Appendix 3

PRE-SURGICAL CHECKLIST

- ☐ Patient's chief complaint(s) and expectations identified
- ☐ Medical and dental histories completed and significant findings identified
- ☐ Medical consultation/tests performed and results obtained
- ☐ Clinical extra-/intra-oral examination completed
    - o presence of oral pathologies
    - o anatomy and form of bony ridges
    - o inter-arch relationships and their position relative to the remaining dentition
    - o occlusion
    - o quality, localization and quantity of bone
    - o periodontal condition of the remaining dentition
    - o localization of favourable dental implant sites
- ☐ Radiographs and diagnostic tests completed
    - o study models
    - o periapical radiographs
    - o panoramic radiographs
    - o tomography
    - o dental CT scan
    - o diagnostic set-up
    - o computer guided virtual 3D planning
- ☐ Level of case complexity determined: straightforward or complex
- ☐ Diagnosis established
- ☐ Treatment plan and surgical prescription finalized
- ☐ Informed consent process fulfilled and documented
- ☐ Surgical guide fabricated
- ☐ Pre-operative instructions and medications provided to patient

Appendix 4

SURGICAL CHECKLIST

Pre-Operative

- ☐ Informed consent reviewed and confirmed
- ☐ Sedation/anaesthetic technique confirmed
- ☐ NPO status confirmed for patients having sedation or anaesthesia
- ☐ Responsible adult escort confirmed
- ☐ Preoperative medications taken
- ☐ Surgical technique and sites confirmed
- ☐ Surgical drill system and corresponding dental implants available
- ☐ Backup surgical handpiece and drill system available
- ☐ Ancillary grafting tissues available
- ☐ Surgical guide present
- ☐ Essential radiographs/imaging present and displayed
- ☐ Transitional prosthesis present

Intra-Operative

- ☐ Bone quality assessed
- ☐ Adequate number of dental implants placed for planned prosthesis
- ☐ Initial mechanical stability of dental implants assessed
- ☐ Necessary intra-operative radiographs taken
- ☐ Cover screw or healing abutments placed

Post-Operative

- ☐ Transitional prosthesis placed
- ☐ Postoperative instructions provided
- ☐ Postoperative medications provided
- ☐ Postoperative follow-up appointment scheduled
- ☐ Patient fit for discharge with responsible adult escort

Appendix 5

POST-SURGICAL CHECKLIST

- ☐ Normal healing confirmed
- ☐ Swelling and bruising resolving
- ☐ Sutures dissolved or removed
- ☐ Absence of pain, infection, paraesthesia
- ☐ Dental implant and abutments stable
- ☐ Transitional prosthesis sustained comfortably
- ☐ Radiographs confirm good dental implant position with stable peri-implant bone
- ☐ Report to prosthetic dentist prepared and sent

Appendix 6

CHECKLIST FOR CONFIRMING IMPLANT OSSEOINTEGRATION

- ☐ Dental implant stability confirmed
- ☐ Absence of pain
- ☐ Peri-implant soft tissues healthy
- ☐ Radiographs confirm stable peri-implant bone
- ☐ Patient appointed for prosthetic restoration
- ☐ Report to prosthetic dentist prepared and sent

Appendix 7

CHECKLIST FOR LONG-TERM FOLLOW-UP AND MAINTENANCE

- ☐ No voiced complaints
- ☐ Attending recall appointments as scheduled
- ☐ Peri-implant soft tissues healthy
- ☐ Oral hygiene acceptable
- ☐ Prosthesis stable
- ☐ Occlusion stable
- ☐ If taken, radiographs confirm stable peri-implant bone and intact prosthetic abutment connections

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