

TIPS FROM OUR READERS

## Surgical safety checklist for dental implant and related surgeries



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Throughout the world, dental implant therapy continues as a highly successful modality for replacing missing teeth, and its popularity remains high among general dental practitioners and dental specialists. Nevertheless, as dental implant therapy includes a surgical component and is an elective procedure, clinicians must strive to provide a safe and high quality treatment for patients. With the increase in the number of clinicians performing implant surgeries, the number of complications and surgical errors is expected to increase. Some of these errors will be minor and self-resolving, but some will have serious consequences.

One method of minimizing errors in the practice of surgery is the use of perioperative surgical safety checklists.<sup>1,2</sup> Generally, perioperative refers to the 3 phases of surgery: preoperative, intraoperative, and postoperative, and separate checklists are necessary for each of the 3 phases. Such checklists have been used in the medical field for many years and have been shown to minimize surgical errors and improve patient outcomes.<sup>1,2</sup> The World Health Organization (WHO) has also developed a surgical safety checklist for use by medical surgeons worldwide.<sup>3</sup> Wall-mounted surgical checklists are common practice in hospitals and are usually monitored by perioperative nurses and allied hospital staff.<sup>1</sup>

In contrast, most dental implant surgeries are elective and occur in an office (out-patient), where the dentist is primarily responsible for ensuring all perioperative steps are followed. Therefore, the likelihood of procedural errors and subsequent complications may be higher and may also have medical-legal consequences. Historically, safety checklists have not been used in dental implant surgeries, probably because these surgeries were traditionally performed by a smaller group of dental specialists

who might have deemed this process unnecessary. However, with the increase in the number of dentists with varying experience levels performing implant surgeries throughout the world, a surgical safety checklist may help standardize the perioperative workflow.

The present author is aware of only one safety checklist published in the peer-reviewed dental publications for implant placement.<sup>4</sup> Although a Delphi panel validated this comprehensive checklist, it was broad in description and did not include the detailed surgical elements and steps often considered consequential by clinicians. Additionally, this checklist did not specifically address items related to errors of omission (failure to do something that should have been done) and errors of commission (doing something that should not have been done).<sup>5</sup> Another series of treatment planning and surgical checklists was previously published in a textbook to aid the practitioner.<sup>6</sup>

The purpose of this article was to describe a simplified yet detailed perioperative surgical safety checklist that could be used by clinicians with varying experience levels for straightforward and/or complex implant and related surgeries in an out-patient (dental office) setting without sedation. The checklist for administering sedation is distinct and is outside the scope of the presented checklist. For many years, this author has successfully used this checklist and reduced errors and complications in several hundred implant surgeries. The surgical safety checklist is described in [Table 1](#). The advantages of this checklist include its comprehensiveness and the incorporation of minor surgical elements in a sequential manner. It can be wall-mounted and filled by dental assistants and/or clinicians to reduce errors and can improve patients' confidence, as well as provide the clinician with reassurance and satisfaction after implant

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**Table 1.** Surgical safety checklist for dental implant and related surgeries

Patient Name:		
Doctor Name:		
Date of Surgery:		
Number	Item	Check off
<b>A. Preoperative Checklist</b>		
1.	Review and update changes to medical/dental history	
2.	Signed prosthodontic treatment plan form	
3.	a. Consent for oral anxiolysis (if needed)	
	b. Consent for tooth extractions (in immediate implant situations)	
	c. Consent for implant surgery	
	d. Consent for bone grafting (if needed)	
	e. Consent for sinus membrane elevation (if needed)	
4.	Availability of prosthetic guide (“surgical guide”)	
5.	Availability of updated radiographs/cone beam computed tomography (CBCT) images	
6.	Preoperative photographs	
7.	Blood pressure reading (with time of recording)	
8.	Oral anxiolysis medication (if needed)	
9.	Preoperative antibiotics	
10.	Preoperative analgesics (if needed)	
11.	Administer local anesthetics (long-duration and short-duration)	
12.	Preoperative oral rinse with chlorhexidine	
<b>B. Intraoperative Checklist</b>		
1.	Use of prosthetic guide (“surgical guide”)	
2.	Bone resection and contouring (if needed)	
3.	Use of implant guide pins for position and angulation check between drilling	
4.	Intraoperative radiograph (if needed)	
5.	Change drilling speed for expanding osteotomy (if needed)	
6.	Collection of autogenous bone through slow-speed drilling (if needed)	
7.	Use of countersink/profile drill (if needed)	
8.	Use of tap drill in dense bone situations	
9.	Final irrigation of implant osteotomy with chilled saline	
10.	Intraoperative photographs (as needed)	
11.	Change drilling speed to implant mode before implant placement	
12.	Use of bone milling drill (in angled implant situations)	
13.	Insert treatment abutment, healing abutment, or cover screw	
<i>If guided bone regeneration is required:</i>		
a.	Collection of additional autogenous bone chips (if needed)	
b.	Release of flap by dissection of periosteum	
c.	Adequate hydration of bone graft particles with saline/blood/synthetic growth factors	
d.	Trimming of membrane	
e.	Immediate disposal of membrane trimming template (if any)	
f.	Use of tenting screws and membrane tacks (if needed)	
g.	Use of mattress sutures (horizontal and/or vertical)	
14.	Attainment of hemostasis after complete suturing	
<b>C. Immediate Postoperative Checklist</b>		
1.	Postoperative local anesthetics (long-duration/short-duration)	
2.	Use of ice-pack extraorally to minimize swelling	
3.	Postoperative radiograph	
4.	Postoperative photographs	
5.	Blood pressure reading (with time of recording)	
6.	Postoperative analgesics/steroids (if needed)	
7.	Prescriptions for antibiotics, analgesics, and antiseptic mouth rinse	
8.	Video/verbal postoperative wound care patient instructions	
9.	Written postoperative wound care patient instructions	
10.	Recording patient’s updated mobile phone number for follow-up phone call	
11.	Adjustment of interim fixed or removable partial denture or occlusal device (if necessary)	
12.	Delivery of sterile gauze in the mouth and to take home to maintain hemostasis	
13.	Scheduling patient’s follow-up appointment	
14.	Entry of implant and bone graft material records into patient chart	

surgery. Future clinicians will no doubt modify this checklist to suit personal preferences and incorporate emerging science and technology. Most of the items described in this surgical safety checklist are based on scientific evidence, but some items are empirical and are listed here based on practicality and common clinical practice. The disadvantages of the checklist are that adhering to it requires additional time and vigilance by the clinician and that the checklist may need to be updated and validated by future research.

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