Surgical Complications with Dental Implants

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Continuing Education Units: 2 hours


Disclaimer: Participants must always be aware of the hazards of using limited knowledge in integrating new techniques or procedures into their practice. Only sound evidence-based dentistry should be used in patient therapy.

Surgical complications of dental implants that have been reported are discussed along with the factors that increase the potential for these complications to occur and the anatomic knowledge needed to reduce or minimize such complications.

Conflict of Interest Disclosure Statement
• Dr. Goodacre reports no conflicts of interest associated with this work.

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Overview
To optimize success and minimize complications with dental implants, it is imperative to know the types of complications that have been identified in the dental literature and understand the causes of each complication. This presentation will identify the most common surgical complications that have been identified through the dental literature and clinical experience and present methods of minimizing or preventing their occurrence as well as managing the complications when they occur.

Learning Objectives
Upon completion of this course, the dental professional should be able to:
• Know how to predict the pain that patients experience following implant placement.
• Identify the incidence of implant infection and hemorrhage-related complications.
• Know how to avoid adjacent tooth devitalization.
• Understand the affect that a knowledge of anatomy has on avoiding or minimizing neurosensory disturbance.
• Know the anatomic knowledge available regarding the inferior alveolar canal, mental foramen, and incisive canal.
• Describe how to avoid life-threatening hemorrhage.
• Identify the anatomic knowledge required to minimize or avoid complications with grafting.
• Know how to avoid swallowing and aspiration complications.

Course Contents
• Introduction
  ◦ Questions Patients May Ask About Implant Surgery
  ◦ Predicting Pain Following Implant Placement
  ◦ Incidence, Magnitude, and Duration of Pain
  ◦ Implant Infection
• Additional Surgical Complications
  ◦ Hemorrhage-related Complications
  ◦ Adjacent Tooth Devitalization
  ◦ Implant Failure Associated with Asymptomatic RTC
  ◦ Implant Failure Associated with Retained Root Fragment
  ◦ Mandibular Fracture
• Complications Related to Anatomy, Part 1
  ◦ Neurosensory Disturbance
  ◦ Proximity to Vital Structures
  ◦ Course of the Inferior Alveolar Canal
  ◦ Mental Foramen Position
  ◦ Anterior Loop Incidence, Distance, and Range
  ◦ Incisive Canal
• Complications Related to Anatomy, Part 2
  ◦ Complications Related to Anatomy
  ◦ Life-threatening Hemorrhage
  ◦ Lingual Foramina Presence and Location
  ◦ Grafting Considerations
  ◦ Symphysis Grafting
  ◦ Ramus Grafting
  ◦ Connective Tissue Grafting
  ◦ Swallowing & Aspiration
• Frequently Asked Questions
• Course Test Preview
• References
• About the Author
Course Test Preview
To receive Continuing Education credit for this course, you must complete the online test. Please go to: www.dentalcare.com/en-US/dental-education/continuing-education/ce439/ce439-test.aspx

1. Which of the following statements correctly reflects the clinical findings related to pain associated with implant surgery?
   a. The pain is highest during the second day following surgery.
   b. The best predictor of pain following implant placement is a patient’s state of anxiety at the time of surgery.
   c. There is no relationship between the number of implants placed and the pain experienced following surgery.
   d. All of the above.

2. Most patients report the pain following implant placement surgery to be slight or mild.
   a. True
   b. False

3. What happens when an implant is placed too close to an adjacent tooth?
   a. There can be a loss of pulpal vitality.
   b. The adjacent tooth can be lost.
   c. The implant can be lost.
   d. All of the above.

4. Which of the following statements are true regarding neurosensory disturbance associated with the placement of a dental implant?
   a. It is most commonly associated with single implant placement.
   b. It occurs most commonly when implants are placed less than 2 millimeters from a vital structure.
   c. Periapical radiographs are the best means of determining the location of vital structures.
   d. None of the above.

5. Which of the following statements correctly reflect the location of the mental foramen?
   a. It is located about 15 millimeters above the inferior border of the mandible.
   b. The canal exits the mandible in a superior and posterior direction.
   c. Most panoramic radiographs do not accurately show the position of the foramen.
   d. All of the above.

6. Which of the following statements are correct regarding life-threatening hemorrhage that has occurred following implant placement?
   a. It is the result of perforating the mandibular lingual cortical plate in the canine/first premolar area during preparation of the osteotomy.
   b. There is injury to the inferior alveolar artery that results in the bleeding.
   c. The use of panoramic radiographs are the best means of preventing life-threatening hemorrhage.
   d. All of the above.

7. Which of the following complications can occur when harvesting bone from the mandibular symphysis as part of a bone grafting procedures?
   a. There can be altered innervation of the mandibular incisors.
   b. There can be altered innervation of the soft tissues in the area.
   c. There can be persistent loss of mandibular incisor sensitivity.
   d. All of the above.
8. Which of the following guidelines are correct when attempting to avoid the mandibular incisive canal and avoid changes in the chin contour and facial profile during the harvesting of bone from the mandibular symphysis?
   a. It is recommended to stay at least 8 mm apical to the root apices.
   b. It is recommended to preserve the inferior bone margin of the symphysis.
   c. It is recommended to preserve the mental protuberance.
   d. All of the above.

9. When harvesting connective tissue from the palate, it is important to avoid the area where the greater palatine artery is located. Which one of the following statements is true regarding the location of the greater palatine artery?
   a. It is generally located at the junction of the vertical and horizontal aspects of the palate.
   b. It is generally located 5 millimeters lateral to the palatal midline.
   c. It is generally located 4 millimeters apical to the marginal gingiva of the maxillary posterior teeth.
   d. It is generally located 4 millimeters apical to the marginal gingiva of the maxillary anterior teeth.

10. When harvesting connective tissue from the palate, it is recommended to stay 3 millimeters occlusal to the junction of the vertical and horizontal portions of the hard palate.
    a. True
    b. False

11. Swallowing and aspiration of dental implant screwdrivers and components is best avoided by tying floss to all implant screwdrivers.
    a. True
    b. False
References

About the Author

Charles J. Goodacre, DDS, MSD

Dr. Goodacre received his DDS degree from Loma Linda University School of Dentistry in 1971. He completed a three-year combined program in Prosthodontics and Dental Materials at Indiana University School of Dentistry and in 1974, earned his MSD degree. He began full-time teaching at Indiana University School of Dentistry in 1974 and has three times received awards from senior dental classes as the outstanding clinical instructor or outstanding lecturer. He served as Chairman of the Department of Prosthodontics at Indiana University, and currently is Dean of the Loma Linda University School of Dentistry.

Dr. Goodacre is a diplomate of the American Board of Prosthodontics, past-president of the American Board of Prosthodontics, a fellow of the Academy of Prosthodontists, fellow of the American College of Prosthodontists, and holds membership in the American Academy of Fixed Prosthodontics.

He has co-authored the 4th edition of Johnston’s Modern Practice in Fixed Prosthodontics, has written textbook chapters for pediatric dentistry and endodontics, and served as an editor of the International Journal of Prosthodontics for 10 years.

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