Diagnosis and Management of Surgical Complications

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Complication

- Webster’s New World Medical Dictionary defines complication as “an additional problem that arises following a procedure, treatment or illness and is secondary to it. A complication complicates the situation”
Surgical Complications

- Complications resulting in poor results or treatment failures will occur.
- Not all variables can be controlled.
- Any non-reversible intervention may require further intervention to correct the complication,
- Non-intervention can lead to complications.
Surgical Complications

- A thorough review of the patient’s medical, surgical, and social history directs the surgical plan to minimize untoward events.

- Communication encourages understanding of specific complications and can promote realistic expectations.
Surgical Complications

- **Early** diagnosis and management usually provide the best outcome.
Informed Consent

- A risk and benefit assessment must be reviewed prior to any non-reversible procedure.
- Verbal and written witnessed consent should be standard practice.
- Common complications for the proposed procedures should be reviewed.
Informed Consent

- Always review alternative treatments.
- Include the risk of not having the procedure (informed refusal).
- No guarantees!
- Let the patient ask questions and seek a second opinion.
Informed Consent

- Does **not** protect you from legal action, but can assist your defense.

- Can enhance patient education and rapport.
Literacy and Consent

- Average reading level in U.S. = 4-6th Grade!
- Functional Illiterate rate in U.S. = 21%
- Average informed consent are written at College level literacy.
- 60% of patients do not understand a standard informed consent. (JAMA, 1995-274 (21):1, 677-82)
Literacy and Consent

- Use “Teach-back” method
  - Ex: “Tell me how you will use this medication.
  - “Can you describe to me the surgery you are planning to have?”
  - “Just to make sure I told you everything, tell me how you are going to take care of the surgical site at home.”
“I’m Sorry”

- Most patients who file lawsuits do so out of anger.
- The anger is often driven by lack of communication or failure to take responsibility.
- Studies show it works- fewer suits, lower settlements.
“I’m Sorry”

- Maryland has limited protection. Statements of apology can be used in Court.
  - Statements of sympathy cannot be used.

- Use empathy: “I’m sorry this happened to you.”

- LISTEN:
  - “Tell me more about…”
  - “I can see that you are…”
  - “I can imagine that this is…”
Complications During The Operative Procedure

- A) Soft tissue injuries
- B) Injuries to osseous structures
- C) Oroantral communications
- D) Fractures of the mandible
- E) Injuries to adjacent teeth
- F) Complications with the tooth being extracted
- G) Injuries to adjacent structures
- H) Tissue Emphysema
- I) Swallowing or aspiration of teeth, or restorations
Complications Occurring During The Postoperative Period

- A) Bleeding
- B) Delayed healing and infection
- C) Trismus, Pain And Swelling
Soft tissue injuries

1) Tearing of the mucosal flap
2) Inadvertent puncturing of the soft tissue
3) Abrasions of burns of the lips and corners of the mouth
4) Subcutaneous emphysema
Injuries to osseous structures

- Fractures of alveolar process (buccal cortical plate of the maxillary canines, maxillary molars, portions of the floor of the maxillary sinus, maxillary tuberosity labial bone of mandibular incisors)
Dentoalveolar Surgery Complications

Maxillary Sinus

- Must discuss possibility preoperatively with any posterior maxillary extraction.

- Oral-antral opening.
  - Often heal spontaneously, close primarily if seen intraoperatively, sinus precautions including blowing nose with mouth open, decongestants, head elevation of affected side, antibiotics.
  - Diagnosis with symptoms, Valsalva maneuver-pt. Bears down and blows nose with nostrils closed off. Look for fog on dental mirror.
Dentoalveolar Surgery Complications

Maxillary Sinus

- Surgical O-A Closure with flap carried over bone rather than hole. Vertical mattress sutures. Buccal flap closes most but palatal flap is sometimes required.
Fractures of the mandible during extraction is a rare complication; it is associated almost exclusively with the surgical removal of impacted third molars.
Injuries to adjacent teeth

- A) Fracture of either a restoration or a severely carious tooth
- B) Inappropriate use of extraction instruments may luxate the adjacent tooth.
- C) Injuries to teeth in the opposite arch (chips or fracture cusp)
- D) Extraction of the wrong tooth
Complications with the tooth being extracted

- A) Root fracture
- B) Root displacement tooth/roots displaced into sinus
  - Attempt removal with suction/irrigation
  - Caldwell-Luc antrostomy - incise just posterior to canine fossa. Window opened into sinus.
- C) Injuries to adjacent structures
Summary

- Prevention of complications should be a major goal of the surgeon. Skillful management of complications when they do occur is the \textit{"sine quae non\textit{}} of the wise and mature surgeon
Complications Occurring During The Postoperative Period

- A) Bleeding
  - Aspirin, Anticoagulants, Antibiotics, Alcohol, Anticancer

- B) Delayed healing and infection. Wound dehiscence, Alveolar osteitis (Dry socket)

- C) Temporomandibular Joint Problems
- Dry socket pastes containing:
  - Eugenol
  - Guaiacol
  - Chlorobutanol
  - Balsam of Peru
Dentoalveolar Surgery Complications

Infection

- Especially serious with third molar removal due to proximity to facial spaces
- Treat by airway mgmt., dependant drainage, cultures, antibiotics.
- Expect multiple bugs (>4) with anaerobes
- Do perioperative antibiotics help? Probably.
- Antibiotics first then extract? Consider for pericoronitis only or with inability to achieve local anesthesia.
Local Anesthesia Complications

- **Trismus**-occurs with muscle or blood vessel trauma-usually medial pter. M., temporalis m.

- **Facial Nerve Involvement**
  - Acute type-usually IAN block into parotid facia.
  - Delayed type-into sympathetic plexus of Ext. Carotid A. plexus at stylomastoid foramen>facial nerve.
Local Anesthesia Complications

- Anesthetic toxicity
  - Maximum doses:
    » 2% lidocaine with epi. 2 mg/pound, 300 mg max.
    » 3% mepivicaine: 2 mg/pound, 300 mg max.
  - Overdose:
    » Initial: talkative, slurred speech, drowsiness, LOC.
    » Higher OD level: seizures, decreased HR, BP, RR.
  - Epinephrine Rxn.
    » Anxiety, weakness, headache,
    » Short duration, supportive care.
Local Anesthesia Complications


- Ophthalmologic Complications-miosis, diplopia, ptosis, paresis can occur.
  - Mechanism: IAN plexus > max art. > ophthalmic art. Or pterygoid vein plexus.
Sensory Nerve Damage

- **Inferior Alveolar Nerve**
  - 0.5-5% of lower 3rd molar extractions.
  - Prevent:- preoperative assessment, look for cortical outline, plan to section teeth.
  - 96% recover spontaneously, usually within 9 months.
  - Surgical exploration-decompression, section nerve
    » Neurorrhaphy- co-apt nerve ends with epineural non-reactive sutures.
Sensory Nerve Damage

- **Lingual Nerve**
  - Less common than IAN injuries (1% of 3rds)
  - Can also affect taste, spontaneous recovery less likely (about 87%)
  - Prevent: Buccal “hockey stick” flap, minimal lingual curettage, section teeth.
  - Most common injury result- lingual adhesive neuroma.
  - Surgery less successful.
Complications of Endosseous Implants

- **Peri-implantitis**
  - Correlates to adult periodontitis
  - Treatment is to debride and graft. Remove occlusal forces.

- **Implant displacement**
Complications of Endosseous Implants

- Poor initial bone quality, quantity, or location.
  - Plan ahead!
    - Graft sockets, onlay grafting sinus lift.
    - Careful with smokers.
Complications of Endosseous Implants

- Component fracture
- Sensory nerve alteration.
  - Screw form implants can be backed off nerve.
  - Consider CT for treatment planning.
- Inappropriate forces
  - Often, fixed cases made on insufficient number of fixtures,
  - bruxism