



ORAL & MAXILLOFACIAL
S U R G E R Y

Review Of Coronectomy

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MILLER SCHOOL
of MEDICINE

Disclosure

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S U R G E R Y**

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The following For Profit relationships in the past twelve months, by presenter or spouse/partner are related to this presentation

Equipment: None

Speakers Bureau: None

Stock Shareholder: None

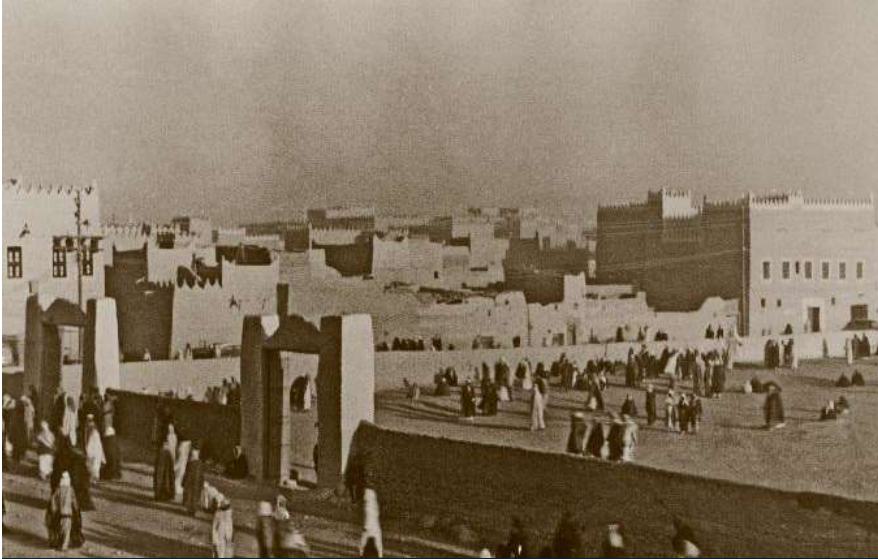
Grant/Research Support: None

Consultant: None

Coronectomy

- History
- Indication
- Contraindication
- Surgical techniques
- Complications
- Case presentation

Riyadh, Saudi Arabia



Coronectomy

- Coronectomy also called intentional root retention or partial odontectomy
- Coronectomy is an alternative procedure to complete extraction. The method aims to remove only the crown of an impacted mandibular third molar while leaving the root undisturbed, thereby avoiding direct or indirect damage to the inferior alveolar nerve (IAN)



History

- Coronectomy was first described by Ecuver and Debien in 1984 as an alternative procedure to traditional extraction of third molars
- 2004, Pogrel and colleagues performed 50 coronectomies on 41 patients who were at significantly increased risk of IAN damage from panoramic radiographic assessment, and found no postoperative cases of inferior alveolar nerve involvement
- January 2011, procedure code (D7251) for coronectomy

2004	3
2005	3
2006	2
2007	1
2008	1
2009	5
2010	5
2011	6
2012	8
2013	11
2014	6

IAN Injury

- The frequency of IAN damage after extraction of a third molar ranges from **0.4% to 8.4%**.
- It is an uncommon complication for a common procedure
- Coronectomy has been documented in the oral and maxillofacial surgery literature as a treatment alternative to extraction of third molar in patients considered at elevated risk for permanent nerve injury



Radiographic features that depict an increased risk of iatrogenic IAN damage when extracting third molars include :

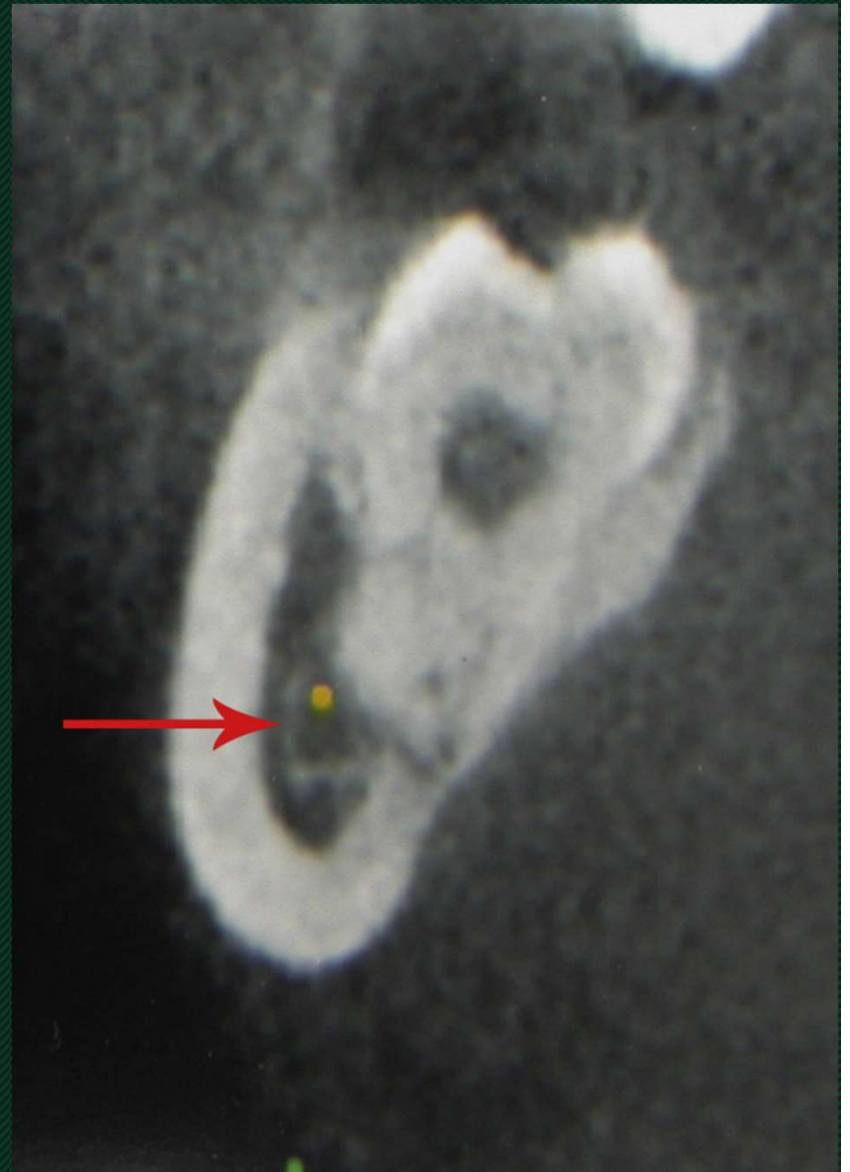
- Darkening of the root
- Narrowing of the apices
- Deflection of the root
- Diversion of the IAN canal
- Narrowing of the IAN canal
- Interruption of the white line of the IAN canal



Classification

1. **Low risk:** This occurs when there is superimposition only. There is separation of the nerve and the root with a covering of bone in between

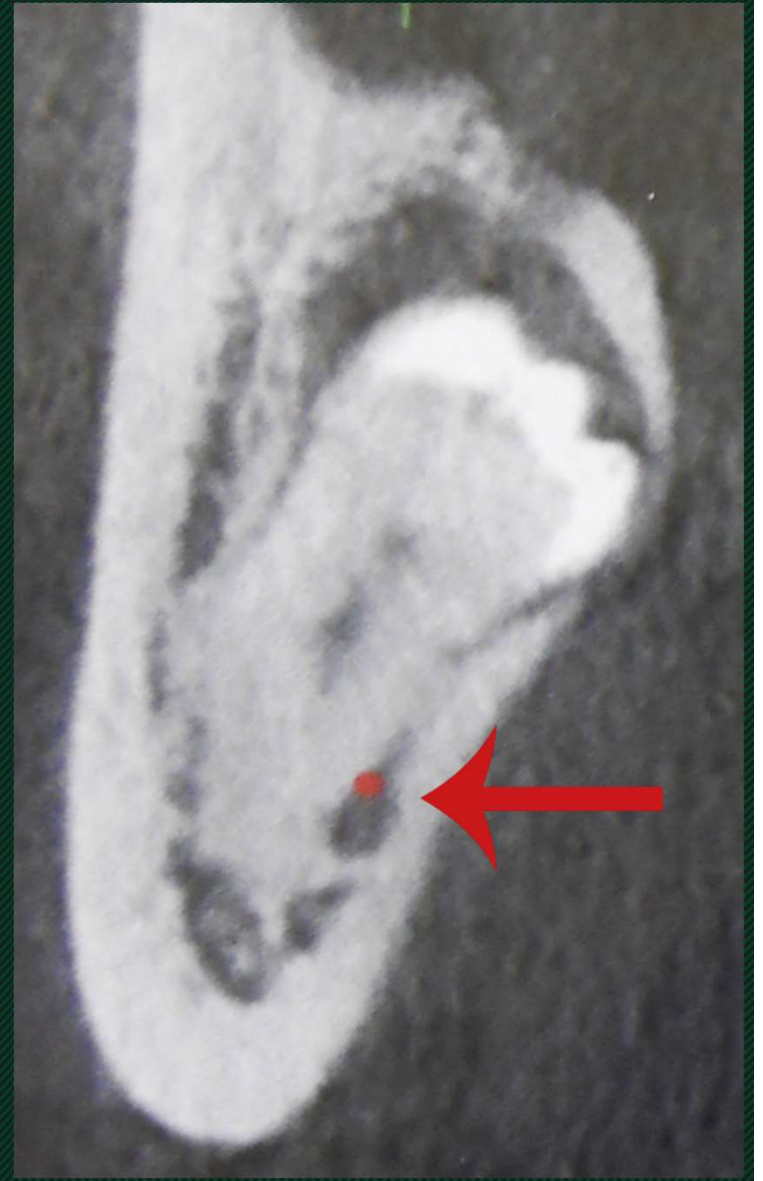
Pogrel, Coronectomy, oral and maxillofacial surgery clinics, Aug 2015



Classification

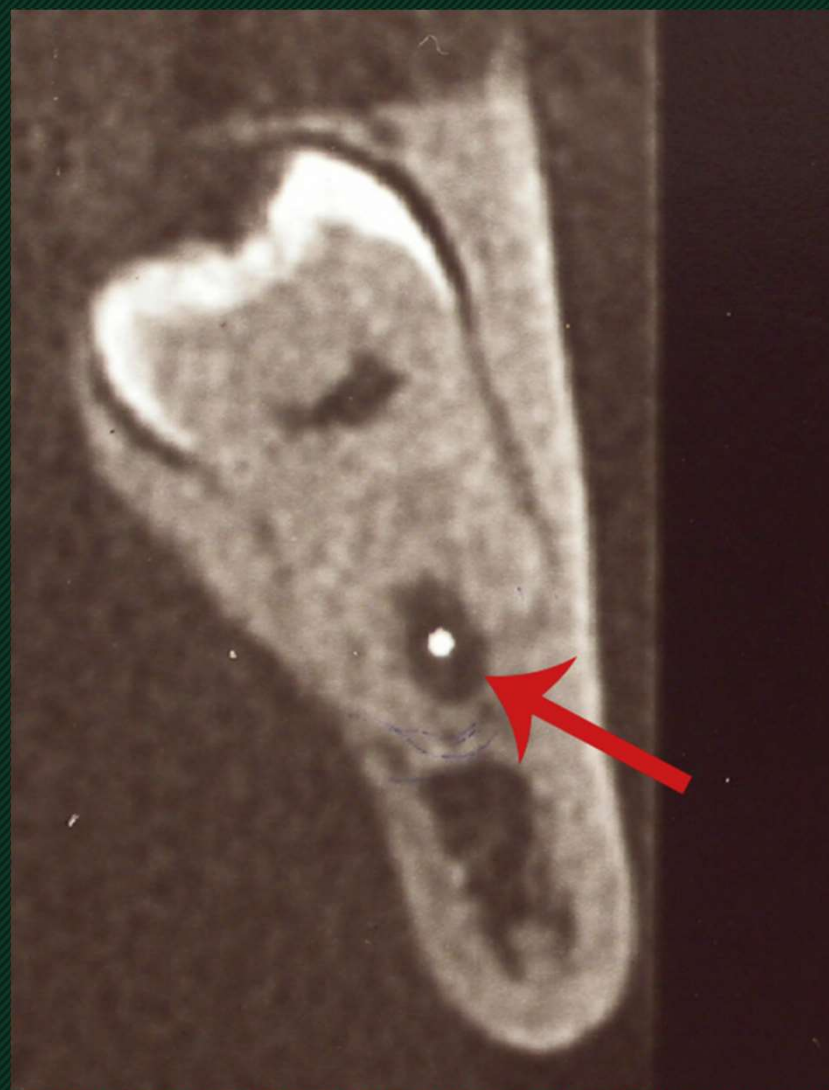
2. **Medium risk:** This occurs when the nerve is directly adjacent to the roots of the tooth or is mildly grooving the root of the tooth

Pogrel, Coronectomy, oral and maxillofacial surgery clinics, Aug 2015



Classification

3. **High risk:** This occurs when there is deep grooving of the tooth by the nerve or even perforation of the tooth root by the nerve with the roots growing around the nerve



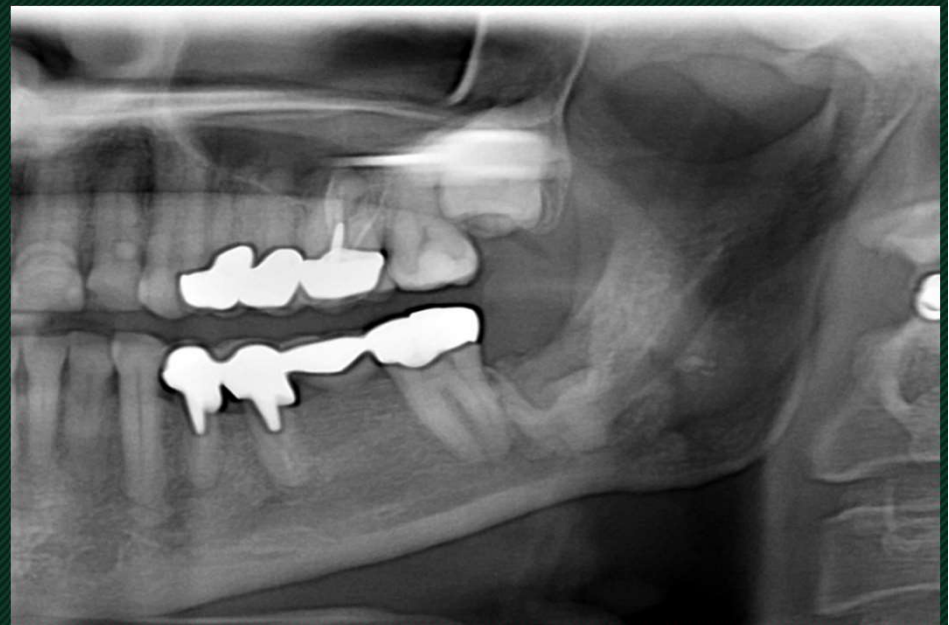
Indications

- When there is a moderate or high risk of damage to the inferior alveolar nerve
- In low-risk cases on patients older than 25
- The patient's age is important in treatment planning, in that conceptually coronectomy is believed to be more appropriate for older patients



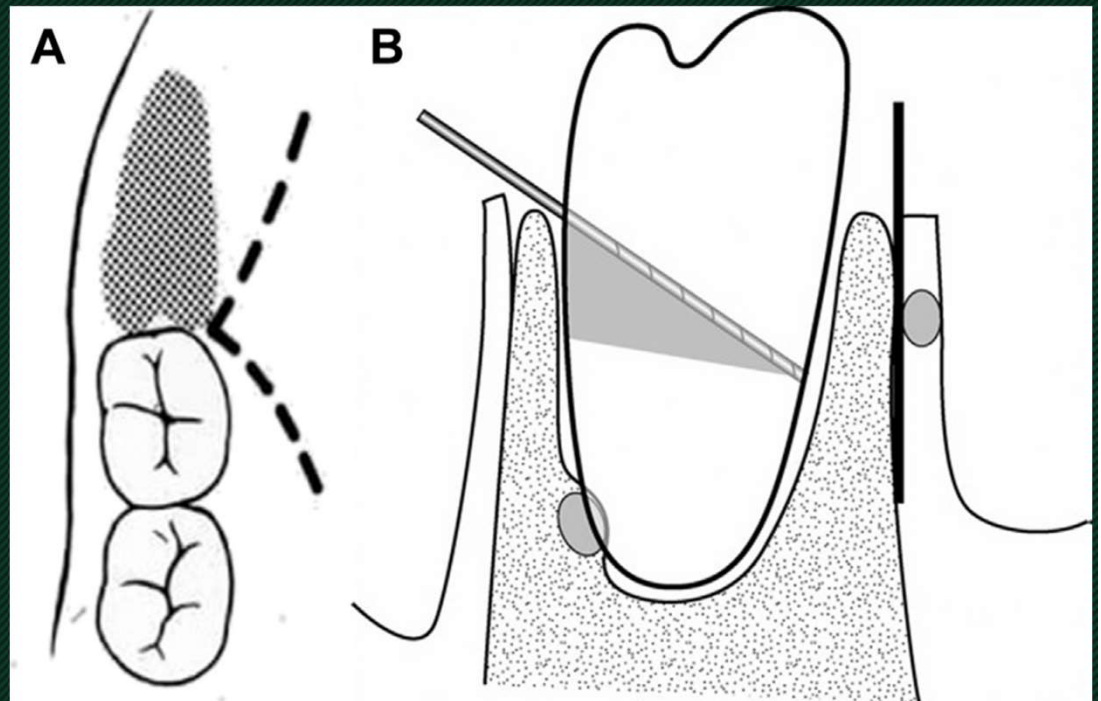
Contraindication

- Horizontally impacted tooth lying along the path of the inferior alveolar nerve
- When all of the enamel of the tooth can not be removed
- Infection involving the roots of the teeth
- Caries involving the roots of the teeth
- If the roots are mobilized during the procedure, they should be removed
- When the second molars are to be distalized orthodontically



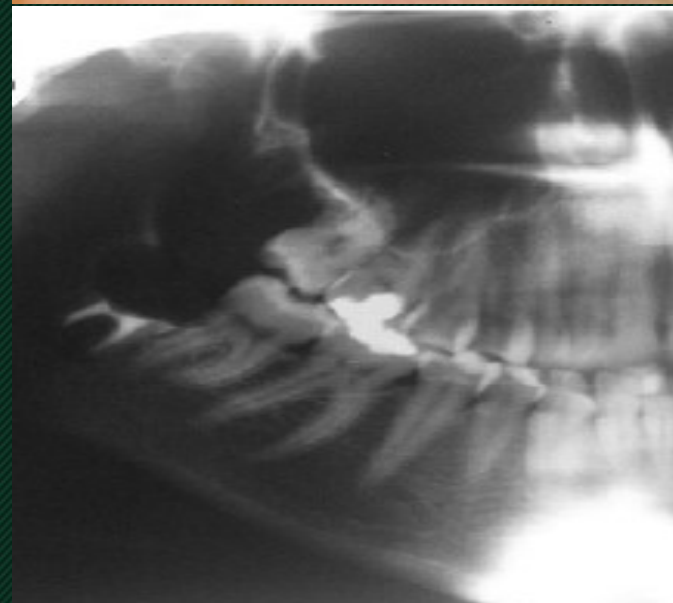
Surgical Technique

- The technique involve total sectioning of the crown of the tooth, removal of all enamel, and removal of enough of the coronal portion of the tooth such that the portion to be retained is **at east 2 to 3 mm below the alveolar crest of bone**



Root Canal Treatment

- Root canal treatment is not indicated during coronectomy. Sencimen and colleagues found that patients having coronectomy with root canal treatment had a much higher infection rate than those patients who underwent coronectomy without root canal treatment
- The investigators suggested that mobilization of the root during root canal therapy and/or prolonged procedure time may contribute to the higher infection rate in the study group



Preoperative Antibiotics

- It is believed that antibiotics should be given prophylactically so that they are in the pulp chamber of the tooth to be sectioned at the time of removal
- However, several authors have published on carrying out the technique without using any antibiotics, **and the success rates and infection rates seem similar**



Martin et al. Coronectomy as a surgical approach to impacted mandibular third molars: a systematic review. Head & Face Medicine (2015)

Post operative Antibiotics

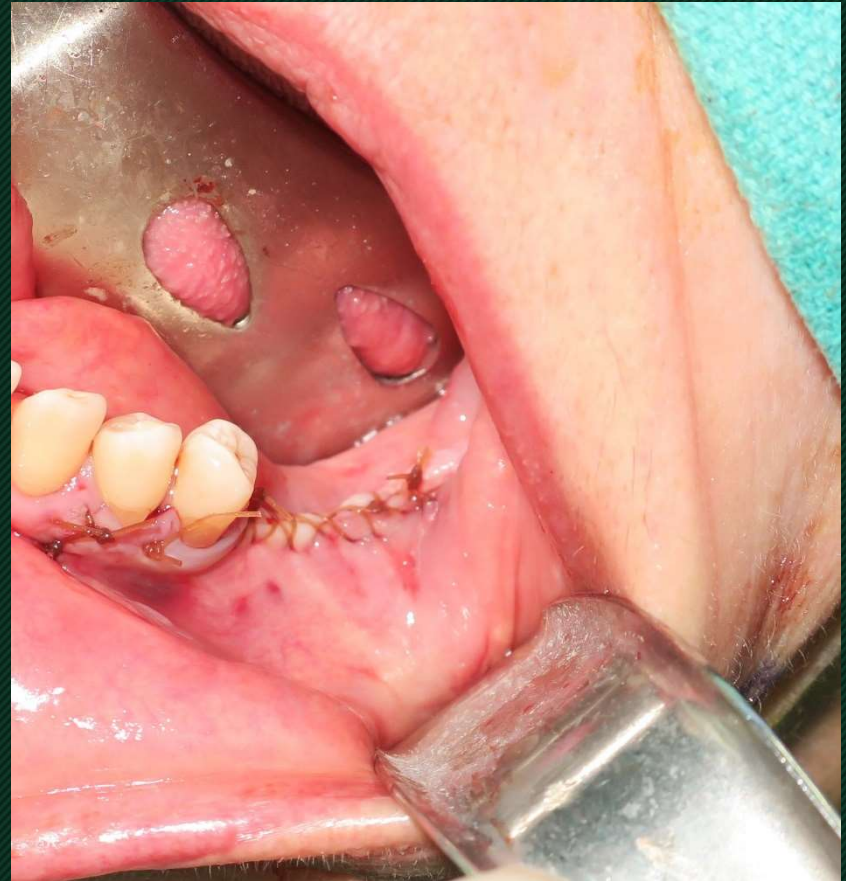
- The studies that have shown minor adverse effects were those in which antibiotic therapy was administered postoperatively
- Furthermore, the study by Monaco et al. was the only that administered antibiotic prophylaxis before coronectomy and prolonged therapy postoperatively with a very low incidence of infection



Martin et al. Coronectomy as a surgical approach to impacted mandibular third molars: a systematic review. Head & Face Medicine (2015)

Suturing

- Suturing to obtain a tension-free, water tight, primary closure of the socket. This is believed to be important for primary healing and for new bone to grow over the socket



Complications

- **Postoperative discomfort :**
less discomfort with coronectomy
- The incidence of **alveolar osteitis** is similar with coronectomy, reported in the range of **10% to 12%**
- **Delayed healing :**
- Retention of enamel during the procedure or mobilization of the root fragments during coronectomy.
These patients require an additional procedure to remove the root fragment or retained enamel
- **Infection** rates are reported as between **1% and 5.2%**, which is similar to the incidence after extraction of third molars



Complications

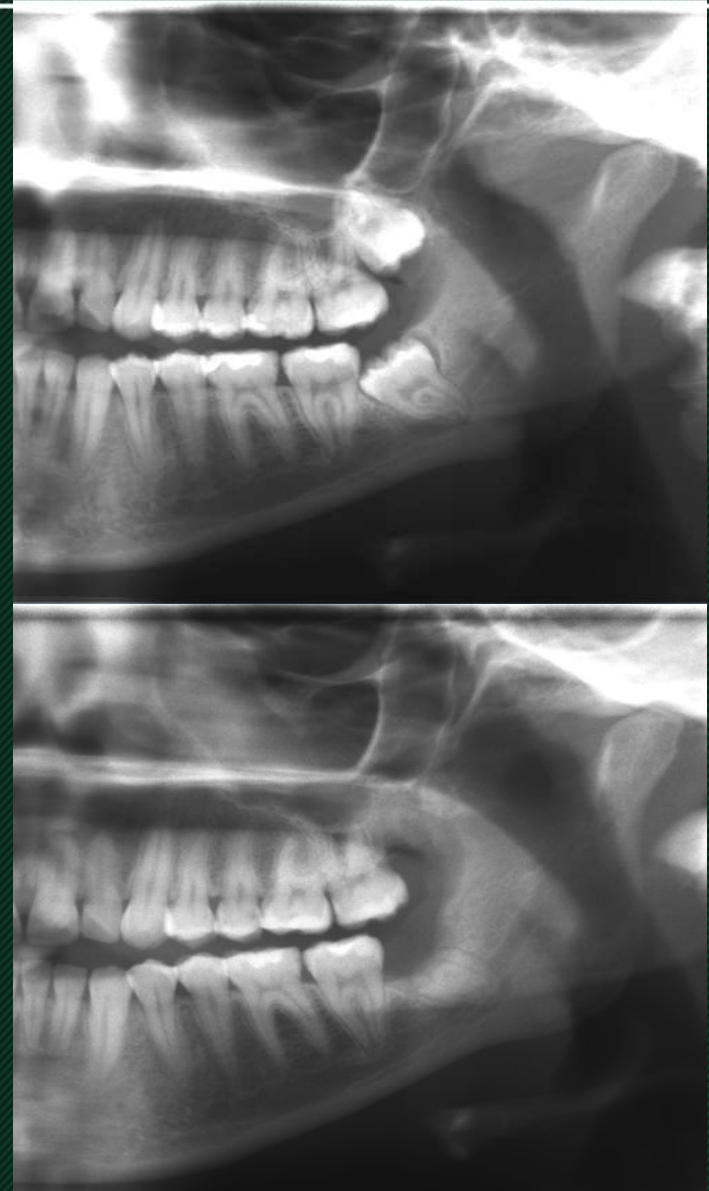
- Mobilization of the roots :
- Is the most commonly reported complication during coronectomy with an incidence of 3–9%
- Patients at higher risk are females and those with teeth with conical root formation
- Related to significant force when fracturing the crown of the tooth during the procedure
- Mobilized fragments must be removed to prevent a foreign-body reaction and poor healing



Patel V et al. Coronectomy practice. Paper 2: complications and long term management. Br J Oral Maxillofac Surg 2013

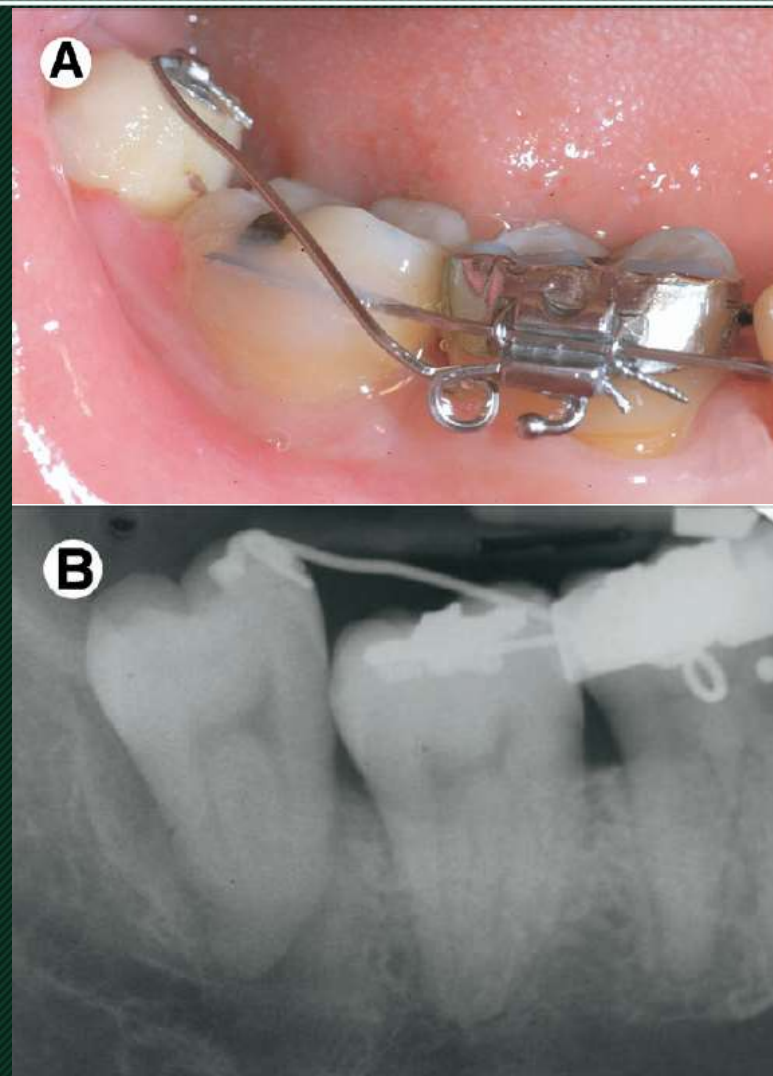
Complications

- **Migration of the roots:**
- The most commonly reported long-term consequence of coronectomy
- Migration seems to always be in a coronal direction, with **14% to 81%** of roots migrating on average 2 to 4 mm
- Although long-term follow-up studies are still needed, the coronal movement of roots seems to occur predominantly during the first 6 months postoperatively and slows down thereafter



Alternative Techniques

- Orthodontic Extraction of mandibular third molars :
- Bonetti and others have published on the technique whereby an orthodontic bracket is attached to the impacted third molar, orthodontic traction applied, and the tooth pulled away from the inferior alveolar nerve and subsequently removed without nerve involvement
- Cost
- Time



Alternative Techniques

- **Pericoronaral Ostectomy:**
- Tolstunov et al described the technique of sequential removal of small portions of the occlusal surface of the impacted third molar such that it can erupt further until it moves far enough away from the nerve so that it can be safely removed



Case Presentation

- **CC:** “I need to remove my wisdom teeth”
- **HPI:** 37 years old man presented to OMFS clinic for extraction of wisdom teeth. On radiographic examination, patient has a radiolucent lesion associated with impacted tooth #17. Incisional biopsy was performed and the result came back as dentigerous cyst
- **PMH:** Denies
- **PSX:** Denies
- **SHx:** Denies x3
- **All:** NKDA
- **Meds:** None
- **Dx:** Dentigerous cyst associated with impacted tooth #17
- **Tx:** E&C of dentigerous cyst , coronectomy of tooth #17



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pc #2
2017
31

BATTLE, GU
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DOB: 1/23/1990
Image #1

Rev. PTDPA
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Zoom

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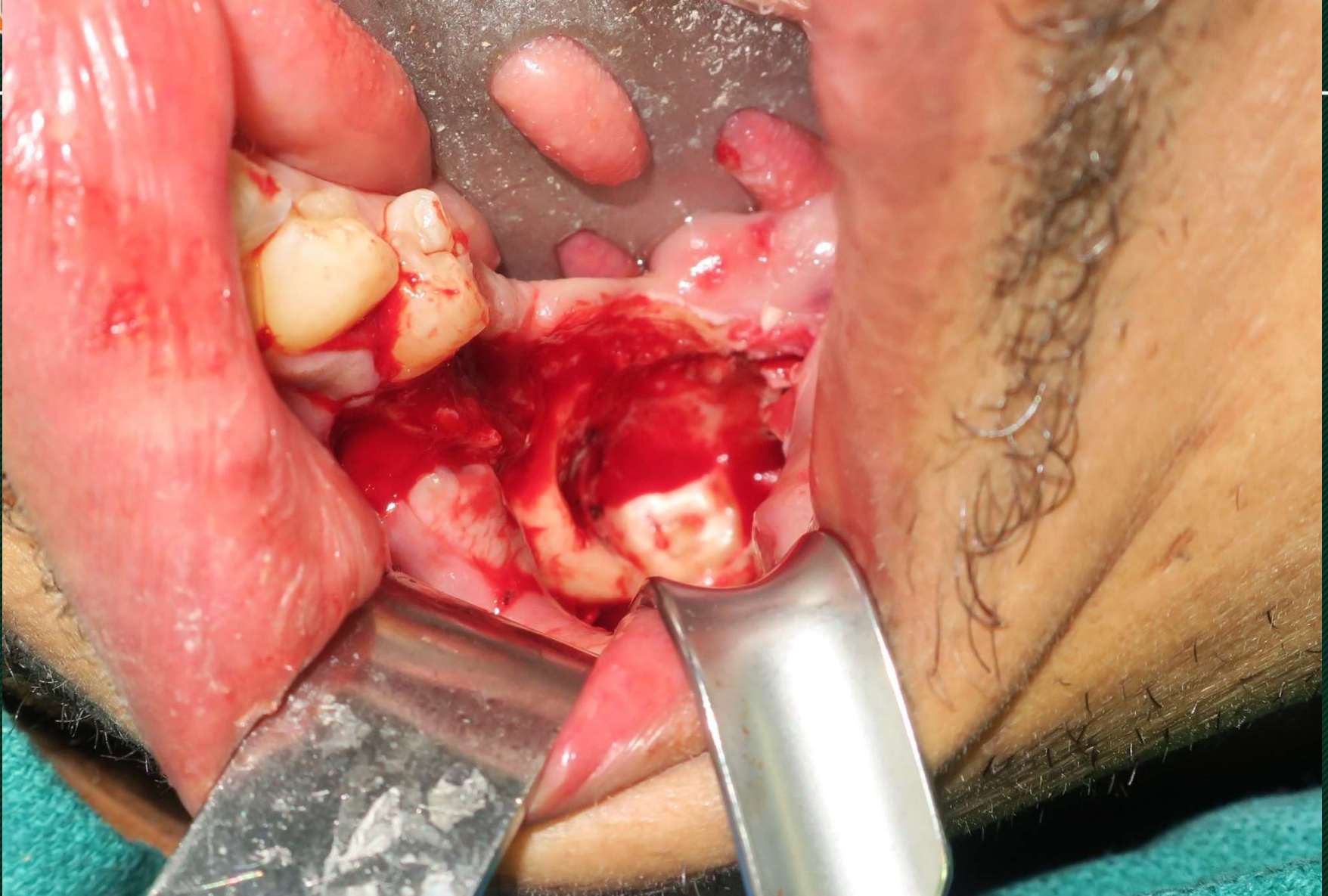


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Series #1
7/12/2017
12:00:00
Facility Name: Jackson Memorial Hospital
Date Image Acquired: July 12, 2017
Time Image Acquired: 8:29:23 PM EDT

Patient Full Name: BATTLE, QUENTIN^LARON
Patient Record Id: 4424428
Assession Number: 1270085460222000



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Rm: JMHERPKR01
Sensitivity:
Zoom: 60.5%
ORIGINAL PRIMARY

Conclusion

- Coronectomy is considered a reasonable and safe treatment alternative for patients who demonstrate elevated risk for injury to the inferior alveolar nerve with the removal of third molars
- Coronectomy is particularly appropriate for patients who are older than 25 years and who report low tolerance for the possibility of posttreatment neurosensory deficit at the consultation
- Appropriate patient selection for coronectomy is paramount. Periodic follow-up assessments are recommended



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THANK YOU



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